



Tel Aviv University
The Lester and Sally Entin Faculty of Humanities
Department of Linguistics

The Nature of Resumptive Pronouns: Evidence from Parasitic Gaps

MA thesis submitted by

Tali Arad

Thesis Advisor:

Dr Roni Katzir

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Acknowledgments

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Abstract

This thesis investigates a fundamental question regarding the nature of resumptive pronouns: Are they compatible with movement? On the one hand, like gaps, resumptive pronouns occur at the tail of A'-dependencies, and also like gaps, they are interpreted as bound variables. On the other hand, they do not show the same behavior with regard to movement-related phenomena like island-sensitivity, reconstruction, and parasitic gap licensing. Even more intriguing is the fact that not all resumptive pronouns behave on a par with respect to these phenomena; there are crosslinguistic differences, as well as differences among different kinds of resumptive pronouns within a single language, and also non-uniform behavior of the same kind of resumptive pronouns with regard to different phenomena. This non-uniform crosslinguistic and intra-linguistic behavior of resumptive pronouns raises important theoretical questions with regard to the nature of A'-dependencies, Logical Form (LF), and the relationship between the different components of grammar.

In the current study I argue that Hebrew resumptive pronouns are not compatible with movement based on evidence from parasitic gap licensing. I present acceptability judgment data that show that resumptive pronouns are not acceptable as licensors of adjunct parasitic gaps. With regard to subject parasitic gaps, I present evidence that shows that resumptive pronouns are acceptable in these constructions, but argue that this behavior does not derive from the compatibility of resumptive pronouns with movement, but rather derives from the fact that these constructions are not truly parasitic gap constructions. The issue of extraction out of subject-modifying relative clauses is further discussed in an appendix.

I note that the fact that resumptive pronouns in Hebrew do not license parasitic gaps seems incompatible with the observation that some resumptive pronouns in Hebrew (in particular, obligatory pronouns, which do not alternate with gaps) show reconstruction effects. To resolve this apparent contradiction, I suggest that the reconstruction phenomena observed with resumptive pronouns can be obtained by non-syntactic mechanisms, which do not assume that reconstruction requires movement.

To account for the asymmetry between optional and obligatory pronouns with regard to reconstruction (Bianchi 2004, Sichel to appear) without assuming that these pronouns differ with respect to their compatibility with movement, I suggest that semantic reconstruction mechanisms can apply only when syntactic reconstruction cannot. This account is formulated in terms of competition between LF-representations. To support the claim that the reconstruction effects observed with obligatory pronouns are semantic, I show that these effects do not interact with phenomena like Condition C, Condition A, and Extraposition. I also critically discuss previous semantic accounts of reconstruction and their predictions with regard to resumptive pronouns in Hebrew, and argue that there are valid non-syntactic accounts of reconstruction, which reconcile the inability of Hebrew resumptive pronouns to license parasitic gaps with their ability to allow reconstruction.

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1 Introduction

In this study I argue that Hebrew resumptive pronouns are *not* compatible with a movement derivation, based on evidence from parasitic gap licensing. This raises several questions with regard to the derivation of A'-dependencies, Logical Form (LF) and the relationship between the different components of grammar.

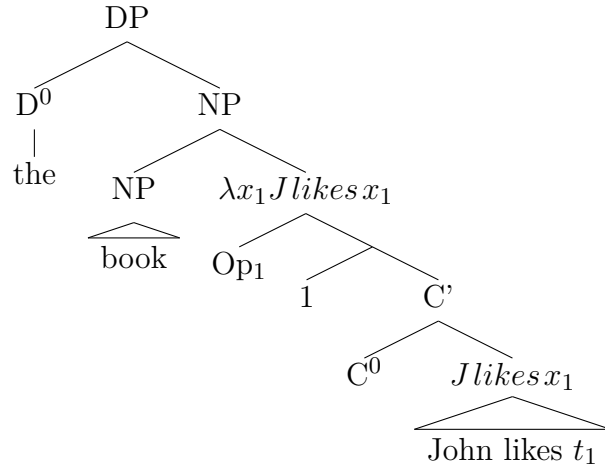
Resumptive pronouns are pronouns that occur at the tail of an A'-dependency. An immediate question is whether resumed A'-dependencies are created in the same way as gap-A'-dependencies, namely through movement. (1a) and (1b) are examples of relative clauses in Hebrew. (1a) is a gap-relative (the relativized position is realized with a gap), while (1b) is a resumed relative (the relativized position is realized with a resumptive pronoun).¹

- (1) a. *ha-iš_i še-ra'iti t_i*
the-man that-I-saw t_i
'the man that I saw'
b. *ha-iš_i še-ra'iti oto_i*
the-man that-I-saw him
'the man that I saw'

A'-movement is assumed to be the syntactic mechanism that creates bound variables (Heim & Kratzer 1998). The moving phrase leaves a trace in its original position, and this trace is interpreted as a variable bound by a binder index (λ -abstractor) which is introduced by movement, as demonstrated in (2).

¹Some Hebrew speakers do not judge simple resumed relatives as fully grammatical, and point out that resumed relatives become better when the resumptive pronoun is more deeply embedded (this is true only for optional pronouns, which alternate with gaps). I assume that resumed relatives such as (1b) are grammatical, as previously assumed in many studies on Hebrew resumptive pronouns. I do agree that resumptive pronouns become better with embedding (as noted by Erteschik-Shir 1992), and assume that this effect is related to some processing advantage that the pronoun has over the gap in this context, which I will not discuss here (but see Erteschik-Shir 1992, Dickey 1996, Alexopoulou & Keller 2007, Asudeh 2012, among others, for suggestions in this direction).

(2)



I concentrate on languages that make grammatical use of pronouns in A'-dependencies, in particular Hebrew. There are languages that use pronouns instead of gaps only in island contexts or in deep-embedding contexts (e.g., English). Chao and Sells (1983) and Sells (1984), followed by Alexopoulou & Keller (2007), Asudeh (2004; 2012), among others, distinguish between resumptive pronouns (grammatical pronouns, in languages like Hebrew) and 'intrusive' pronouns (in island- and deep-embedding contexts, in languages like English). He argues that unlike (grammatical) resumptive pronouns, intrusive pronouns do not function as bound variables but rather as referential expressions.

Since resumptive pronouns are interpreted as bound variables (Sells 1984), and since they often occur in the same contexts in which traces occur, i.e., in A'-dependencies, it seems natural to assume that they inhabit a movement structure as well. Otherwise, an additional non-movement mechanism that works in the same contexts and derives the same interpretations would have to be postulated. Namely, a mechanism of resumption, as suggested by Sells (1984), McCloskey (2002) and Asudeh (2004; 2012), among others.

Previous work on resumptive pronouns includes theories that maintain that resumptive pronouns are compatible with movement, alongside theories that maintain that resumptive pronouns are incompatible with movement. Theories that maintain that resumed A'-dependencies are not derived by movement assume instead that the resumptive pronoun is related to a base-generated antecedent by binding. For relative clauses, which I discuss in this study, such theories suggest that the pronoun is related by binding to a base-generated null operator located in Spec-CP. For example, McCloskey (2002) suggests a Minimalist analysis for Irish relative clauses in which gap relatives are derived by applying Move to a null operator that originates in the gap position and ends up in Spec-CP, from where it binds the trace it has left inside the relative clause. For resumed relatives, McCloskey suggests that the null operator is Merged into Spec-CP and from there binds a pronoun located inside the relative clause. In this analysis, gap relatives and resumed relatives are not derived from the same numeration; while the numeration of the gap relative does not contain

In contrast, theories that maintain that resumptive pronouns can be compatible with a movement derivation of the dependency either argue that resumptive pronouns can simply be the PF spell-out or the morphological exponent of the trace of the moving phrase (e.g., Engdahl 1985, Bianchi 2004, Sichel to appear), or argue that resumptive pronouns can be a stranded ‘leftover’ in some complex structure that includes both the moving phrase and the pronoun (e.g., Boeckx 2003). According to these theories, the derivation of resumed relatives does involve the movement of the antecedent. If the antecedent originates in a relative clause internal position, it must be the case that the pronoun is either a spellout of this antecedent’s trace, or a stranded leftover in some complex structure that includes both the antecedent and the pronoun. Either way, the pronoun inhabits a movement derivation.

The most obvious evidence for the incompatibility of resumptive pronouns with movement is their insensitivity to islands, which is demonstrated for Hebrew by the contrast between (3a) on the one hand and (3b) and (3c) on the other hand; while a trace inside a relative clause island results in ungrammaticality, the equivalent resumed relatives are better.

- The ability of resumptive pronouns to improve extraction across islands has been

the center of much attention in the literature (e.g., McCloskey 1979, Borer 1984, among many others); in this study, however, I concentrate on two other phenomena to investigate the compatibility of resumptive pronouns with movement, for the two following reasons. First, whether resumptives fully repair island extractions or just somewhat improve them is still an open question (e.g., Alexopoulou & Keller 2007). Second, the insensitivity of resumptive pronouns to islands actually indicates that they *are compatible with a non-movement derivation*, rather than indicating that they are not compatible with a movement derivation. This is so because in principle, it could be the case that resumptive pronouns are compatible both with a movement derivation and with a non-movement derivation (see Sichel to appear for such a claim). In this situation, resumptive pronouns could not show island-sensitivity because a non-movement derivation is available for them, rather than because the movement derivation is not available for them. In contrast, other phenomena might indicate that resumptive pronouns are *not compatible with a movement derivation*, such as *parasitic gap licensing* (Engdahl 1983) and *reconstruction*. The idea is that if a movement derivation is available for resumptive pronouns, they should in principle (perhaps with additional restrictions) show parasitic gap licensing and reconstruction. Thus, these phenomena can be used to investigate whether or not resumptive pronouns are compatible with a movement derivation.

So, in addition to the conceptual or theoretical argument for the compatibility of resumptive pronouns with movement, namely, that they occur in A'-dependencies and interpreted as bound variables, like gaps, there are also empirical arguments. Those empirical arguments come from phenomena that are assumed to be related to or to require movement, and in this study I investigate the behavior of resumptive pronouns with respect to two such phenomena: *parasitic gap licensing* and *reconstruction*. I show that the evidence from parasitic gap licensing and the evidence from reconstruction effects do not point at the same direction with regard to the nature of Hebrew resumptive pronouns. While reconstruction effects are available with some resumptive pronouns in Hebrew, the same pronouns do not license parasitic gaps. I note that this is a contradiction if movement is assumed to be a necessary condition for reconstruction and at the same time a sufficient condition for parasitic gap licensing, and suggest that these seemingly contradictory facts can be reconciled by non-movement accounts for reconstruction, which I discuss in chapters 4 and 5. I now turn to a review of the two movement-related phenomena, reconstruction and parasitic gap licensing, and their interaction with resumption.²

²It has also been suggested that resumptive pronouns are operators that covertly move at LF, leaving a trace in the relativized position (Demirdache 1991). I leave this option aside in the current study because according to this suggestion, all resumptive pronouns, including those that alternate with gaps (optional pronouns) are compatible with a movement structure and are predicted to allow reconstruction. As I discuss in section 1.1, only obligatory pronouns (pronouns that do not alternate with gaps) allow reconstruction in Hebrew (Sichel to appear), which is inconsistent with Demirdache's (1991) proposal (but see Demirdache and Percus 2011 for an elaboration of Demirdache's 1991 results, in which the resumptive moves at LF, leaves a binder and a trace behind, and goes uninterpreted). Note that the LF-movement analysis of resumption *is* in principle compatible with the inability of resumptive pronouns to license

1.1 Resumptive pronouns and reconstruction

Reconstruction is a phenomenon in which an element that is pronounced in one position is interpreted as if it is located in a lower position. For example, (4a) is a case of variable binding reconstruction. The intended ‘reconstructed’ reading, in which the friends vary with *man*, can be obtained by interpreting the pronoun *his* as a variable bound by the quantifier *every man*. In such an interpretation, the pronoun is interpreted as if it is located in the c-command domain of the quantifier, i.e., as if the *wh*-phrase *which friend of his* is located in the trace position. (4b) is a case of Condition C violation, caused by ‘reconstruction’. The ungrammaticality of (4b) shows that *John* is interpreted as if it is located in the c-command domain of *he*.

- (4) a. [Which friend of his]_i does every man_j love t_i the most?
 b. * [Which claim that John_j is an idiot]_i did he_j contest t_i?

According to the syntactic account of reconstruction (Lebeaux 1990, Chomsky 1995, Aoun et al. 2001, among others, there is also a non-syntactic account, which I discuss in chapter 4), the element is interpreted in a distinct position than the one it is pronounced in because it is located in this position in some level of representation. For example, under the Copy Theory of movement (Chomsky 1993; 1995), reconstruction effects are explained by deleting the higher copy of the moving phrase at LF while preserving its lower copy. Thus, (4a), repeated here as (5a), involves a copy of the *wh*-phrase in the trace position, which enables the quantifier to c-command the pronoun located inside it. Similarly, (4b), repeated here as (5b), involves a copy of the *wh*-phrase in the trace position which results in a Condition C violation, as *he* binds *John* (unpronounced copies are marked with angle brackets).

- (5) a. [Which friend of his]_i does every man_j love <which friend of his_j> the most?
 b. * [Which claim that John_j is an idiot]_i did he_j contest <which claim that John_j is an idiot>?

According to the syntactic account of reconstruction, the existence of reconstruction effects indicates that movement has applied. Namely, it indicates that there is a movement chain between the element which is interpreted as if it is located in a low position and that low position.

With regard to resumptive pronouns, it follows from this account of reconstruction that if reconstruction effects are observed with resumptive pronouns in relative clauses, they inhabit a structure in which there is a movement chain between the position of the pronoun and the position of the relative clause head. Indeed, the existence of reconstruction effects with resumptive pronouns has been used to argue for their compatibility with movement in Swedish (Zaenen, Engdahl & Maling 1981),

parasitic gaps, as it has been observed that parasitic gaps are not licensed by covert movement (Engdahl 1983; see Nissenbaum 2000 for an analysis that derives Engdahl’s generalization).

Lebanese Arabic (Aoun et al. 2001), and also in Brazilian Portuguese, Spanish, and Colloquial Italian (Bianchi 2004).³

Hebrew is among the languages that have been extensively discussed in the literature with regard to resumption (among Irish, Welsh, Swedish, and dialectal Arabic, see Doron 1982, Borer 1984, Sells 1984, Erteschik-Shir 1992, Shlonsky 1992, Asudeh 2004; 2012, Sichel to appear, among others). The use of resumptive pronouns in Hebrew is considered grammatical and widespread in relative clauses, and they occur both in contexts in which they alternate with gaps (i.e., optional) and in contexts in which they are obligatory.

Resumptive pronouns in direct object position and in embedded subject position are optional, while pronouns which are complements of prepositions or possessors in NPs are obligatory, i.e., they do not alternate with gaps. As in many other languages, resumptive pronouns in Hebrew do not occur in the highest subject position. This pattern is demonstrated in (6) and (7) below.

(6) Optional resumptive pronouns:

- a. *ha-iš_i še-ra'iti t_i/oto_i*
the-man that-I.saw (him)
'the man that I saw.'
- b. *ha-iš_i še-xašavti še-t_i/hu_i hofi'a ba-televizya*
the-man that-I.thought that-(he) appeared in-the-television
'the man that I thought that appeared on TV'
- c. *ha-iš_i še-xašavti še-ra'iti t_i/oto_i ba-televizya*
the-man that-I.thought that-I.saw (him) in-the-television
'the man that I thought that I saw on TV'

(7) Obligatory resumptive pronouns:

- a. *ha-iš_i še-xašavti alav_i*
the-man that-I.thought on-him
'the man that I thought about'
- b. *ha-iš_i še-beyto_i neheras*
the-man that-house.his ruined
'the man whose house was ruined'

With regard to reconstruction effects, early work (Doron 1982) suggested that Hebrew resumptive pronouns do not show reconstruction effects. Doron (1982) showed that Hebrew direct object pronouns do not allow a *de dicto* reading of the relative clause head, unlike gaps, which do allow this reading.

³According to stranding analyses of resumption, such as Boeckx 2003, resumed A'-dependencies are predicted to allow reconstruction, since the assumption is that there is a copy of the moving phrase next to the pronoun. See Boeckx (2003:155) for a discussion of his stranding analysis with regard to reconstruction.

- (8) *dani yimca et ha-iša_i še-hu mexapes t_i/#ota_i*
 Dani will.find ACC the-woman that-he seeks t_i/her_i
 ‘Dani will find the woman he seeks.’
 (ex. (3a-b) from Sichel to appear, attributed to Doron 1982. both *de dicto* and *de re* readings are available with a gap, only *de re* reading available with a direct object pronoun)

This seemed like evidence against the compatibility of resumptive pronouns with a movement derivation; if resumptives were compatible with a movement derivation, we would expect them to allow the *de dicto* reading, as gaps do (assuming that there isn’t any other factor that prevents pronouns from allowing this interpretation, see Sells 1984 and Sharvit 1999b).

However, more recent work (Bianchi 2004, Sichel to appear) has shown that although direct object pronouns, like the ones discussed in Doron (1982), do not allow *de dicto* readings and other reconstruction effects (e.g., idiomatic interpretation, anaphoric binding, and variable binding), Hebrew resumptive pronouns that occur in obligatory contexts, namely pronouns that do not alternate with gaps, do show these reconstruction effects. Sichel (to appear) shows that pronouns which are complements of prepositions (PP pronouns) and direct object pronouns which are complements of psych verbs or *only* do allow reconstruction effects. This pattern is demonstrated in (9)-(12) below.

- (9) Reconstruction for *de dicto* reading:

- a. *dani yimca et ha-iša_i še-hu mexapes t_i/#ota_i*
 Dani will.find ACC the-woman that-he seeks t_i/her_i
 ‘Dani will find the woman he seeks.’
 b. *dani yimca et ha-iša_i še-hu xolem aleha_i*
 Dani will.find ACC the-woman that-he dreams of-her
 ‘Dani will find the woman he is dreaming of.’

(ex. (3a,b) and (8a) from Sichel to appear)

- (10) Reconstruction for variable binding:

- a. *[ha-šmu’a al acmoj]_i še-kol politikai_j hikxiš t_i (*ota_i)*
 the-rumor about himself_j that-every politician_j denied t_i (*it_i)
hufca al-yedey ha-yošev roš
 was-spread by the-chair
 ‘The rumor about himself that every politician denied was spread by the chair.’
 (ex. (7) from Sichel to appear)
 b. *[ha-šmu’a al acmoj]_i še-kol politikai_j xašaš mimena_i*
 the-rumor about himself_j that-every politician_j feared from-it
hufca al-yedey ha-yošev roš
 was-spread by the-chair

‘The rumor about himself that every politician feared was spread by the chair.’

(adapted from ex. (11) from Sichel to appear)

(11) Reconstruction for variable binding, experiencer object:

- a. *ele ha-anašim_i še-margiz otam_i/*t_i še-ha-harca’a be-anglit*
 these the-people that-annoys them/*t_i that-the-lecture in-English
 ‘These are the people who it annoys that the lecture is in English.’
 (ex. (24b) from Sichel to appear)

- b. *[xaver ha-yaldut šelo_j]_i še-kol politikai_j xašad*
 friend the-childhood of-his_j that-every politician_j suspected
*še-ha-seret yargiz oto_i/*t_i katav mixtav la-orex*
 that-the-film will-annoy him_i/*t_i wrote letter to-the-editor
 ‘The childhood friend of his who every politician suspected that the film
 would annoy wrote a letter to the editor.’
 (ex. (34) from Sichel to appear)

(12) Reconstruction for variable binding, complement of *only*:

- a. *zot ha-havera_i še-zihiti rak ota_i/*t_i ba-tmuna*
 this the-friend_i that-identified.I only her_i/*t_i in-the-picture
 ‘This is the friend who I identified only her in the picture.’
 (ex. (24c) from Sichel to appear)

- b. *[ha-tmuna šel acma_j]_i še-kol yalda_j baxra rak ota_i/*t_i hudpesa*
 the-picture of herself_j that-every girl_j chose only it_i/*t_i was.printed
be-šaxor lavan
 in-black white
 ‘The picture of herself that every girl picked only it was printed in black
 and white.’
 (ex. (35) from Sichel to appear)

The (obligatory) PP pronoun allows the *de dicto* reading, unlike the (optional) direct object pronoun, as shown by the contrast between (9a) and (9b). The contrast between (10a) and (10b) shows that the PP pronoun, unlike the direct object pronoun, allows reconstruction for variable binding of the anaphor located in the relative clause head by the relative-clause-internal quantifier. (11a) shows that a direct object pronoun is obligatory as the experiencer object of a psych verb, and (11b) shows that such an obligatory direct object pronoun allows reconstruction for variable binding. Finally, (12a) shows that a direct object pronoun is obligatory as the complement of *only*, and (12b) shows that such an obligatory pronoun allows reconstruction for variable binding. See Sichel (to appear) for more reconstruction effects that demonstrate the asymmetry between optional and obligatory pronouns. I discuss these additional reconstruction effects in chapters 4 and 5.

The contrast between optional and obligatory pronouns suggests that the picture is more complicated and that Hebrew obligatory resumptive pronouns might be com-

patible with movement. I argue, however, that obligatory resumptives, like optional resumptives, are not compatible with movement, based on their inability to license parasitic gaps.⁴ I now turn to a review of parasitic gaps and previous claims with

⁴Since some Hebrew speakers do not judge simple relatives with optional resumptives as fully grammatical, it could in principle be the case that the reconstruction examples are bad with optional resumptives because they are *a priori* bad. In this case, examples in which the optional resumptive pronoun is more deeply embedded should be good with a reconstructed interpretation. Namely, when the optional pronoun is more acceptable, the reconstructed example should be more acceptable as well. Thus, if (2a) below is more acceptable than (1a), (2b) should also be more acceptable than (1b). I thank Tal Siloni (p.c) for pointing this out to me.

1. No embedding:

- a. ha-šmu'a še-dani hikxiš ota
the-rumor that-Dani denied it
'the rumor that Dani denied'
- b. ha-šmu'a al acmo še-dani hikxiš ota
the-rumor about himself that-Dani denied it
the rumor about himself that Dani denied'

2. Embedding:

- a. ha-šmu'a še-ani xoševet še-dani hikxiš ota
the-rumor that-I.think that-Dani denied it
'the rumor that I think that Dani denied'
- b. ha-šmu'a al acmo še-ani xoševet še-dani hikxiš ota
the-rumor about himself that-I think that-Dani denied it
'the rumor about himself that I think that Dani denied'

To my own judgment, (2b) is indeed better than (1b), as (2a) is better than (1a). Note however, that this explanation does not account for the contrast between readings that do not require reconstruction and readings that do require reconstruction. For example, there is a contrast between *de dicto* and *de re* readings and a contrast between idiomatic and non-idiomatic interpretations; optional resumptive pronouns allow *de re* readings but not *de dicto* readings, and allow non-idiomatic interpretations but do not allow idiomatic interpretations (see Sichel to appear and chapter 4). If the crucial factor for the grammaticality of the pronoun is embedding rather than optionality and its relation to reconstruction, then optional pronouns should be equally bad in no-embedding examples without reconstruction, which is not the case. In any case, if the lack of embedding is indeed the reason for the ungrammaticality in the above reconstruction examples, then optional pronouns might also be compatible with movement, just like obligatory pronouns. However, I show in the present study that both optional pronouns and obligatory ones do not license parasitic gaps, so if both optional and obligatory pronouns allow reconstruction, the contradiction is even broader, as the prediction with regard to optional pronouns would be that they license parasitic gaps. Another possible way to account for the presence of reconstruction with embedded optional pronouns and its absence with non-embedded optional pronouns is to argue that pronouns in deep-embedding contexts are actually 'intrusive' pronouns, which function as a processing device, and are different from grammatical resumptive pronouns in that they do inhabit a movement structure (see Asudeh 2004; 2012 for such a suggestion). Alternatively, it could be argued that these intrusive pronouns do not inhabit a movement structure, but are 'obligatory in the sense of processing'. In other words, pronouns in deep-embedding contexts could be seen as obligatory or almost obligatory repair devices that enable the processing of complex structures. In this case, the obligatoriness of the pronoun could be the crucial factor for the acceptability of the reconstruction examples, and the contrasts in (1)-(2) in this footnote would support the claim that obligatory pronouns, but not optional ones,

regard to their interaction with Hebrew resumptive pronouns.

1.2 Resumptive pronouns and parasitic gap licensing

Parasitic gap constructions (Engdahl 1983) are constructions in which a gap that occurs inside an island is exceptionally licensed by the presence of another A'-gap in the sentence, located outside the island.

As exemplified by the contrast between (13a) and (13b) and between (14a) and (14b) below, if there is no licensing gap in the sentence the parasitic gap construction is ungrammatical.

- (13) a. *The article that John filed his papers [without reading **pg**]
 b. The article that John filed **t** [without reading **pg**]
- (14) a. *Mary is the one person that [everyone who talks to **pg**] becomes famous
 b. Mary is the one person that [everyone who talks to **pg**] becomes friends with **t**

In (13), the PP headed by *without* is an adjunct island, from which movement cannot apply. However, the gap inside the island becomes grammatical when another gap occurs outside the island. In (14), the NP *everyone who talks to* is a subject island from which movement cannot apply. However, the gap inside the island becomes grammatical when another gap occurs outside the island.⁵

There is quite a consensus among transformational theories of A'-dependencies with regard to the relation between the 'true', licensing gap, and its antecedent, according to which this relation is a movement relation. Even non-movement based theories of A'-dependencies, such as Combinatory Categorical Grammar (CCG) explain parasitic gap constructions by assuming that the structure is derived by these theories' equivalent mechanism for movement (e.g., Steedman 1987). Parasitic gaps occur in many A'-movement structures such as *wh*-questions, relative clauses, topicalizations, *tough* movement, heavy-NP shift, and Scrambling constructions.

Thus, if resumptive pronouns license parasitic gaps, this is an indication for their compatibility with a movement derivation. If they do not license parasitic gaps, on the other hand, this is an indication for their incompatibility with a movement derivation.

For concreteness, I adopt Nissenbaum's (2000) analysis of parasitic gaps. Nothing hinges on that. The important ingredients of Nissenbaum's analysis are that it

allow reconstruction. I leave the investigation of pronouns in deep-embedding contexts for future research.

⁵But see Chaves (2013) and references therein for a review of counterexamples in which extraction out of subjects and adjuncts is acceptable in non-parasitic constructions, and an account in terms of extra-grammatical factors for subject islands. In the current study, I assume that adjuncts are islands for extraction. With regard to subjects, I claim that at least in Hebrew, extraction might be allowed under certain conditions. This issues are further discussed in section 3.2 and in appendix B.

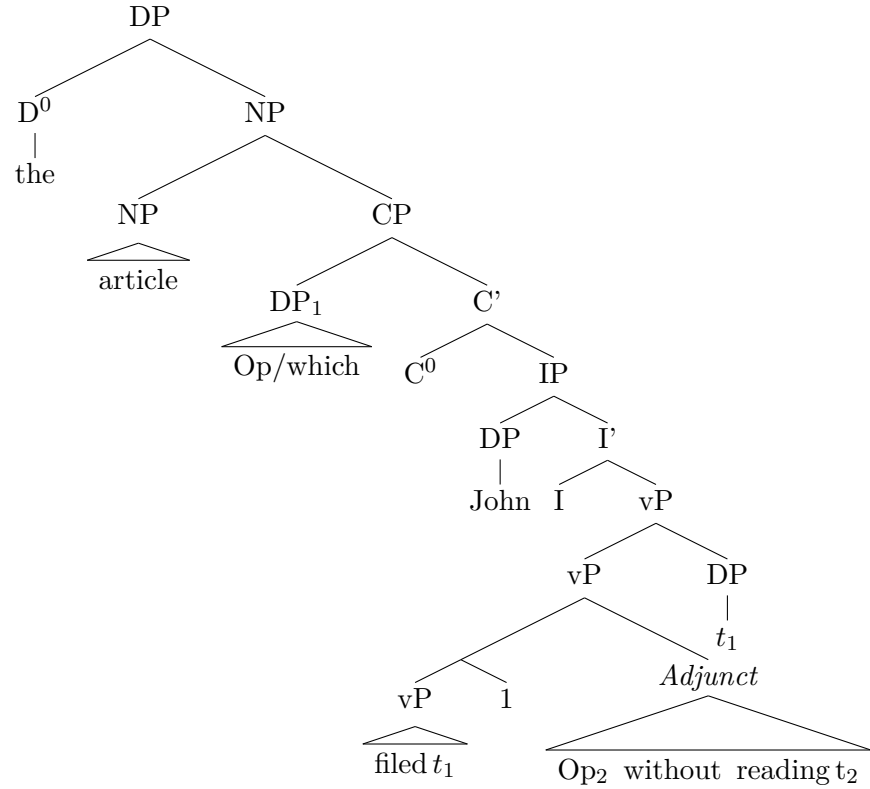
assumes that the licensing gap is related to its antecedent by movement, which is generally assumed by other theories of parasitic gaps, and that it offers a unified treatment of subject and adjunct parasitic gaps, and as such it is very conservative in the sense that it does not allow a straightforward explanation for the asymmetry between subject and adjunct parasitic gaps observed in Hebrew (to be discussed shortly). Moreover, Nissenbaum's (2000) analysis is very explicit and thus makes fine, testable predictions with regard to the ability of resumptive pronouns to license parasitic gaps.

Nissenbaum (2000) proposes that parasitic gaps are licensed by an intermediate trace of A'-movement located in the specifier position of vP, above the constituent that contains the parasitic gap, which is also located in the vP (outside the VP). Nissenbaum (2000) follows Chomsky (1986) in arguing that a parasitic gap is a trace of a null operator, located within the 'island' constituent (thus, there is no movement out of an island).⁶

The structure of a vP modified by a parasitic gap adjunct is demonstrated in (15) below.

⁶The claim that the antecedent of the parasitic gap is a null operator located within the 'island' constituent rather than the antecedent of the real gap is based on reconstruction asymmetries with regard to Condition A, Condition C, and variable binding, which demonstrate that the antecedent of the real gap does not reconstruct into the position of the parasitic gap (Kearney 1983, Chomsky 1986, Nissenbaum 1998; 2000).

- (15) The structure of a vP modified by a parasitic gap adjunct, exemplified for a relative clause:



Consider the structure in (15). If the antecedent of the parasitic gap is a null operator located within the ‘island’ constituent, this constituent is a semantic predicate. Nissenbaum (2000) argues that the semantic composition of the parasitic-gap-containing constituent with the rest of the vP is enabled by the occurrence of a DP-trace in the Spec-vP above the semantic predicate that contains the parasitic gap.⁷ The movement of a DP from within the vP turns this vP into a predicate that composes with the semantic predicate that contains the parasitic gap by Predicate Modification (Heim & Kratzer 1998), in a similar way to the composition of an NP with its relative clause modifier. This conjoined predicate is then predicated on the DP-trace which is located in Spec-vP.⁸

As demonstrated in (15), Nissenbaum (2000) assumes that the adjunct constituent in which the parasitic gap occurs is a vP-adjoined modifier. With regard to parasitic

⁷The DP in Spec-vP can either be a DP-trace, in constructions in which the A'-movement derives, for instance, a relative clause, a *wh*-question or a topicalization structure, or a lexical DP, as in a Heavy NP Shift construction. In fact, Nissenbaum claims that every A'-movement leaves an intermediate trace in the same position in which heavy NPs that undergo Heavy NP Shift occur.

⁸Nissenbaum's (2000) proposal necessitates Heim and Kratzer's (1998) analysis where the binder index (the λ -operator) is located below the DP-trace. This allows for an adjunct (in this case the parasitic gap adjunct) to be inserted between the binder index and the DP-trace, such that the conjoined predicate is a predicate of the DP-trace.

gaps that occur in subjects, Nissenbaum suggests that the subject obligatory reconstructs into Spec-vP. Like the parasitic gap adjunct, the parasitic gap subject involves a null operator, which in this case turns it into a function from individuals to individuals (or into a function from individuals to generalized quantifiers). Nissenbaum suggests that by a recursive definition of the Predicate Modification rule, this function composes with the predicate derived by the movement that leaves behind the licensing ('real') gap.⁹

The crucial prediction of Nissenbaum's (2000) proposal for the current discussion is that there must be an A'-movement trace in Spec-vP for the parasitic gap to be licensed. With regard to relative clauses, this means that a relative clause can contain a parasitic gap only if the vP in the relative clause contains a trace. This means that only a relative clause that is derived by movement can contain a parasitic gap. Crucially, if resumptive pronouns only occur in non-movement relative clauses, the prediction is that they will not license parasitic gaps.

Hebrew resumptive pronouns were argued to license subject parasitic gaps, but not adjunct parasitic gaps, as demonstrated in (16) and (17) below (Sells 1984).

(16) Subject parasitic gaps:

- a. *rina hi ha-iša_i še-[ha-anašim_j še-ani šixnati t_j levaker pg_i]*
 Rina is the-woman that-the-people that-I convinced t_j to-visit pg_i
te'aru t_i
 described t_i
 'Rina is the woman that the people that I convinced to visit described.'
- b. *rina hi ha-iša_i še-[ha-anašim_j še-ani šixnati t_j levaker pg_i]*
 Rina is the-woman that-the-people that-I convinced t_j to-visit pg_i
te'aru ota_i
 described her
 'Rina is the woman that the people that I convinced to visit described her.'
- c. * *rina hi ha-iša_i še-[ha-anašim_j še-ani šixnati t_j levaker pg_i]*
 Rina is the-woman that-the-people that-I convinced t_j to-visit pg_i
te'aru et ha-bayit
 described ACC the-house
 'Rina is the woman that the people that I convinced to visit described the house.'

(ex. (26a), (25) and (26b) from Sells 1984)

⁹Nissenbaum (2000) does not provide a detailed semantic derivation of subject parasitic gap constructions. The important point for the current discussion is that the subject parasitic gap, like the adjunct parasitic gap, is licensed inside the vP, by the existence of an intermediate DP-trace of A'-movement. Though interesting questions arise with regard to the interpretation of subject parasitic gap constructions, I assume for the current discussion that the syntactic and semantic derivation suggested by Nissenbaum works for both subject and adjunct parasitic gaps and would not discuss it any further here.

(17) Adjunct parasitic gaps:

- a. *ha-asirim_i še-hiršenu la-nehag lešaxrer t_i [bli lir'ot*
 the-prisoners that-we-allowed to-the-driver to-free t_i without to-see
pg_i]
 pg_i

‘the prisoners that we let the driver free without seeing’

- b. * *ha-asirim_i še-hiršenu la-nehag lešaxrer otam_i [bli*
 the-prisoners that-we-allowed to-the-driver to-free them without
lir'ot pg_i]
 to-see pg_i

‘the prisoners that we let the driver free without seeing’

(ex. (88a) and (88b) from Sells 1984)

- c. * *ha-asirim_i še-hiršenu la-nehag lešaxrer et*
 the-prisoners that-we-allowed to-the-driver to-free ACC
ha-azikim [bli lir'ot pg_i]
 the-handcuffs without to-see pg_i

‘the prisoners that we let the driver free the handcuffs without seeing’

Note that the subject island in these examples involves a relative clause that modifies the subject. I concentrate on parasitic gaps that occur in a subject modified by a relative clause, leaving aside parasitic gaps in subject islands that do not involve a relative clause.¹⁰ Hebrew does not seem to have parasitic gaps in subject islands that do not involve a relative clause modifier, as demonstrated in (18).

- (18) a. * *zot ha-yalda_i še-[le-ha'aric pg_i] me'acben t_i*
 this the-girl that-to-admire pg_i annoys t_i
 Intended meaning: ‘This is the girl that admiring her annoys her.’
- b. * *zot ha-yalda_i še-[ha-uvda še-lo hizmanti pg_i] icbena t_i*
 this the-girl that-the-fact that-not invited.I pg_i annoyed t_i
 ‘This is the girl that the fact that I did not invited annoyed.’
- c. * *zot ha-yalda_i še-[xaverim šel pg_i] ma'aricim t_i*
 this the-girl that-friends of pg_i admire t_i
 ‘This is the girl that friends of admire.’

(18a) involves a gap inside an infinitival clausal subject and the gap in the object position of ‘annoy’ does not license it. (18b) involves a gap inside a subject that takes a clausal complement, and the gap in the object position of ‘annoy’ does not license it either. (18c) involves a gap which is the complement of the preposition ‘of’ and again, it is not licensed by the outside gap. For (18c), it can be assumed that the parasitic gap is not licensed because Hebrew does not have preposition standing,

¹⁰I interchangeably refer to these constructions as ‘subject-modifying relative clauses’ as an abbreviation.

so it does not allow gaps to occur as complements of prepositions, regardless of the context in which the preposition occurs. With regard to (18a) and (18b), it is less clear why Hebrew does not allow the parasitic gap, and discussing this is beyond the scope of this thesis.¹¹ In any case, since Hebrew only seems to have parasitic gaps in subjects that involve a relative clause modifier, I concentrate on parasitic gaps in subject-modifying relative clauses.

The observation that Hebrew resumptive pronouns are acceptable in subject parasitic gap constructions suggests that they are compatible with movement, assuming that the licensing position in subject parasitic gap constructions must be related to its antecedent by a movement chain. In this light, their inability to license adjunct parasitic gaps is a mystery, if we assume that the two parasitic gap constructions are analyzed similarly.

However, I argue that the claim that Hebrew resumptive pronouns license subject parasitic gaps is incorrect. Though resumptive pronouns are relatively acceptable in subject parasitic gap constructions, this is not because they license parasitic gaps, but rather because what looks like subject parasitic gaps are actually ‘real’ gaps, that do not have to be licensed. Combined with a reestablishment of the previous claim that direct object pronouns do not license adjunct parasitic gaps and new evidence that shows that PP pronouns and obligatory direct object pronouns also do not license parasitic gaps, this does not only make us lose an argument for the compatibility of Hebrew resumptive pronouns with movement, but also, and more importantly, gives us a strong argument *against* the compatibility of Hebrew resumptive pronouns with movement; assuming that movement is a sufficient condition for parasitic gap licensing, the fact that resumptive pronouns do not license parasitic gaps indicates that resumptive pronouns are not compatible with movement.¹²

Note that Hebrew allows a resumptive pronoun to be fronted as in the following examples, both with direct object pronouns and PP pronouns (Borer 1984):

¹¹English equivalents of (18b) and (18c) are grammatical, while the English equivalent of (18a) is ungrammatical:

1. *This is the girl_i that to admire t_i annoys t_i
2. This is the girl_i that the fact that I didn’t invite t_i annoyed t_i
3. This is the girl_i that friends of t_i admire t_i

¹²With regard to other languages, there are claims in the literature according to which resumptive pronouns license parasitic gaps in Swedish (Engdahl 1985, Asudeh 2012) and in Standard Arabic (Wahba 1995). These resumptive pronouns were argued to show other movement-related phenomena, such as reconstruction (Swedish) and island-sensitivity (Standard Arabic). This suggests that the cross-linguistic (and possibly intra-linguistic) variation with regard to resumptive pronouns is such that there are pronouns that show compatibility with movement across all movement-related phenomena, along pronouns that do not show compatibility with movement across all movement-related phenomena. I suggest here that the seemingly contradictory behavior of Hebrew resumptive pronouns with regard to reconstruction and parasitic gap licensing may be resolved if reconstruction is no longer assumed to require movement.

- (19) a. *ra'iti et ha-yeled še-oto rina ohevet.*
 I.saw ACC the-boy that-him Rina loves
 'I saw the boy that Rina loves.'
- b. *ra'iti et ha-yeled še-alav rina xašva.*
 I.saw ACC the-boy that-about-him Rina thought
 'I saw the boy that Rina thought about.'
 (ex. (1b) and (2b) from Borer 1984)

Here I focus on non-fronted resumptive pronouns. Note that Borer (1984) argues that a relative clause with a fronted pronoun is derived by movement. If her analysis is correct, it is not surprising that a fronted pronoun licenses parasitic gaps, as argued by Shlonsky (1992) and demonstrated in (20) below.

- (20) *elu ha-sfarim_i še-otam_i dan tiyek bli likro pg_i.*
 these the-books that-them Dan filed without reading pg_i
 'These are the books that Dan filed without reading.'
 (ex. (33) from Shlonsky 1992)

It seems that fronted pronouns also allow reconstruction, regardless of whether the pronoun is obligatory or not. Consider (21) and (22).

- (21) Reconstruction for variable binding:
- a. *[ha-šmu'a al acmoj]_i še-ota_i kol politikai_j hikxiš hufca*
 the-rumor about himself that-it every politician denied was-spread
al-yedey ha-yošev roš
 by the-chair
 'The rumor about himself that every politician denied was spread by the chair.'
- b. *[ha-šmu'a al acmoj]_i še-mimena_i kol politikai_j xašaš hufca*
 the-rumor about himself that-from-it every politician feared was-spread
al-yedey ha-yošev roš
 by the-chair
 'The rumor about himself that every politician feared was spread by the chair.'
- (22) Reconstruction for *de dicto* reading:
- a. *dani yimca et ha-iša_i še-ota_i hu merapes*
 Dani will.find ACC the-woman that-her he seeks
 'Dani will find the woman he seeks.'
- b. *dani yimca et ha-iša_i še-aleha_i hu xolem*
 Dani will.find ACC the-woman that-of-her he dreams
 'Dani will find the woman he is dreaming of.'

(21) shows that there is no contrast between direct object pronouns and PP pronouns with regard to variable binding reconstruction when the pronoun is fronted, (22) shows the same lack of contrast with regard to *de dicto* readings. These facts are further discussed in chapter 4, where I offer an account for the asymmetry between optional and obligatory pronouns.

The rest of this thesis is structured as follows. In chapter 2 I present the puzzle which evidence from parasitic gap licensing and reconstruction suggests with regard to the compatibility of resumptive pronouns with movement. I note that the observation that resumptive pronouns do not license parasitic gaps seems incompatible with the observation that some resumptive pronouns allow reconstruction if movement is assumed to be a sufficient condition for parasitic gap licensing and a necessary condition for reconstruction. In chapter 3 I present empirical and experimental data that show that resumptive pronouns, even the ones that were argued to allow reconstruction, do not license parasitic gaps. The discussion of subject parasitic gaps in this chapter is accompanied by appendix B, in which I discuss the acceptability patterns of subject parasitic gap constructions more thoroughly. In chapter 4 I suggest that the contradiction between the ability of resumptive pronouns to allow reconstruction and their inability to license parasitic gaps can be resolved by arguing that the reconstructed interpretations observed with pronouns can be obtained without movement, and suggest an account in terms of competition between LF-representations that explains the contrast between optional and obligatory pronouns. I also discuss in this chapter evidence that suggests that these reconstruction cases do not interact with phenomena that were observed to interact with syntactic reconstruction. In chapter 5 I critically discuss previous semantic accounts for reconstruction and their predictions with regard to resumptive pronouns and the current competition account. Chapter 6 concludes the thesis.

2 The puzzle

In chapter 3, I present evidence that shows that Hebrew resumptive pronouns, including obligatory ones (PP pronouns and obligatory direct object pronouns), do not license parasitic gaps. This leaves us with a puzzle if what Sichel (to appear) argues with regard to the compatibility of obligatory pronouns with reconstruction is correct. Assuming that movement is a sufficient condition for parasitic gap licensing, and a necessary condition for reconstruction, the fact that PP pronouns and obligatory direct object pronouns allow reconstruction contradicts these pronouns' inability to license parasitic gaps.

In principle, this contradiction can be resolved in one of the two following ways:

1. *Non-movement PG-licensing*: Assuming that these resumptive pronouns are compatible with movement (thus they show reconstruction effects) and accounting for their inability to license parasitic gaps without assuming that resumptive pronouns are incompatible with movement, but rather that there is a different necessary condition for parasitic gap licensing in which pronouns and gaps differ.
2. *Non-movement reconstruction*: Assuming that these resumptive pronouns are not compatible with movement (thus they do not license parasitic gaps) and accounting for the reconstruction effects observed with them without assuming that reconstruction requires movement.

I argue for the *non-movement reconstruction* alternative by arguing that the reconstruction effects observed with obligatory pronouns can be obtained semantically, without assuming syntactic reconstruction and movement. I suggest an account in terms of competition between LF-representations that explains the fact that optional pronouns do not allow reconstruction while obligatory pronouns do. But before that, I argue in this chapter that the first alternative, namely, assuming that resumptive pronouns are compatible with movement but do not license parasitic gaps due to an independent reason, does not seem promising.

Let us try to pursue the *non-movement PG-licensing* alternative, namely, that resumptive pronouns are compatible with movement, but do not license parasitic gaps for another reason. This direction demands that we rethink the phenomenon of parasitic gaps. According to Nissenbaum's (2000) analysis and most other parasitic gaps analyses available on the market, it is not clear why pronouns should not license parasitic gaps if they are, like traces, the realization of a moved phrase. Namely, it is not obvious why the form of the realization should matter for licensing. Unless the phenomenon of parasitic gaps should be captured by a different theory, that

distinguishes pronouns from gaps based on something different from movement, and predicts that gaps, but not pronouns, would license parasitic gaps. To think of what such a theory of parasitic gaps might look like, we can start by stating the possible differences between gaps and pronouns, and then discussing whether and how they might be relevant for parasitic gap licensing.

2.1 A phonetic difference

Let us start with the most obvious difference between gaps and pronouns, the phonetic difference. Gaps are silent, whereas pronouns are pronounced. A theory of parasitic gap licensing in which this PF difference would be the factor that explains why phonetically null traces license parasitic gaps while pronouns do not, would have to refer to the PF of parasitic gap constructions.

A parasitic gap construction, by definition, is a construction that contains a gap. That is, the parasitic gap, unlike pronouns and like true gaps, is silent. Thus, a theory that would predict that gaps, but not pronouns, license parasitic gaps might rely on a PF requirement of parallelism, that states that the parasitic gap must be phonetically licensed by another gap. In other words, it might be the case that there is something in the phonetic form of good parasitic gap constructions that makes them better than bad parasitic gap constructions, and that something is related to the fact that good parasitic gap constructions involve two gaps, while bad parasitic gap constructions involve a pronoun and a gap. This phonetic principle might, for example, be (23).

- (23) A parasitic gap must be licensed by a position which is silent.

Unlike Nissenbaum's (2000) analysis and other parasitic gap analyses, in which the licensing of parasitic gaps is related to the semantics of the construction (for example, in Nissenbaum's analysis parasitic gaps are licensed by a movement trace so that the parasitic gap adjunct/subject could compose with the vP via Predicate Modification), (23) does not seem to be related to the syntax or semantics of the construction, and it is unclear why the phonetic content of the licensing position should matter.

Moreover, it is also unclear how such a phonetic principle could be integrated into the standard Y-model of grammar. According to the Y-model of grammar (Chomsky 1993), there is a point in the derivation in which the structure is 'spelled-out' into its phonetic form (PF). To integrate (23) into the Y-model of grammar, it would have to be argued that in the course of the derivation, before spell-out, it is already known how the licensing position will be spelled-out; that is, it should already be known whether the licensing position would have a morphological exponent or not. Given that we would like to maintain the assumption that pronouns are compatible with a movement derivation (to account for their ability to allow reconstruction), it follows that before spell-out gap-relatives and resumed relatives have the same structure. If we also want to maintain the assumption that the derivation either converges or crashes before spell-out, we would have to mark the relativized position with an index

that says whether or not this position is going to be realized with a phonetic content. This seems unlikely under the current standard model of grammar.¹

2.2 A semantic difference

Another well known difference between gaps and pronouns is that pronouns can be either bound variables or referential, while gaps can only be bound variables.² A theory of parasitic gaps in which this difference would be the factor that explains why pronouns do not license parasitic gaps while gaps do would have to refer to variables. For example, the condition on parasitic gap licensing might be (24).

(24) A parasitic gap must be licensed by a variable.

If the condition on parasitic gap licensing is something like (24) and resumptive pronouns do not license parasitic gaps, this would mean that they are not variables. However, this seems unlikely for two reasons.

First, though it has been argued that resumptive pronouns in some languages are not variables ('intrusive pronouns'; Sells 1984, Asudeh 2004; 2012, among others), it has been argued that resumptive pronouns in languages that make grammatical use of them (like Hebrew) are variables, like gaps in the equivalent gap-A'-dependencies. So, we would not expect that resumptive pronouns in Hebrew would not be variables.

Second, if pronouns are compatible with movement, as we would like to assume to account for their ability to allow reconstruction, it would be very weird to say that they are not variables, as they are related to a moved phrase by a movement chain. If resumptive pronouns are the phonetic realization of the trace of the moved phrase, it follows that at LF they are just like traces. Since traces are assumed to be variables bound by a binder index as a result of movement, resumptive pronouns, which are merely the phonetic exponent of traces, should be bound variables as well. In other words, if resumptive pronouns are the phonetic realization of traces, they

¹Chocano and Putnam (2013) suggest a condition of PG-licensing within a hybrid Minimalist Program and Optimality theory (MP-OT) framework, according to which there is a PF filter on parasitic gap licensing. They suggest that this PF filter is a Parallelism Requirement, which states that "the position of the parasitic gap licenser in the matrix clause relative to its selecting head and its co-arguments must mimic that of the PG in the embedded clause". It is possible that the inability of PP pronouns to license parasitic gaps which I demonstrate in section 3.3 might be due to a similar PF requirement, as there is indeed lack of parallelism in the case of PP pronouns, since the parasitic gap is a direct object while the PP pronoun is a complement of a preposition. If such an account can be maintained, it would reconcile the inability of PP pronouns to license parasitic gaps (argued for in section 3.3), with their ability to allow reconstruction (discussed in section 1.1). However, the inability of obligatory direct object pronouns to license parasitic gaps (argued for in section 3.4) would still need to be reconciled with their ability to allow reconstruction, as in this case the potential licenser (the obligatory pronoun) *is* located in a position which mimics the position of the parasitic gap. See also a related discussion in section 3.3, where I discuss evidence for PP pronouns' inability to license parasitic gaps.

²See Reinhart (1983*a*; 1983*b*) and Heim (1998) on the distinction between variable binding and coreference.

are variables *by definition* under the standard theory of movement that assumes that movement creates a variable that gets bound by a binder index.

With regard to stranding analyses of resumptive pronouns, such as Boeckx (2003), where the pronoun is a determiner whose complement is the moving phrase, the moving phrase's trace is the variable that should be able to license the parasitic gap. Thus, whether we assume that resumptive pronouns are compatible with movement because they are the phonetic realization of traces or because they occur in a structure from which movement has applied, the prediction is that parasitic gaps would be licensed in a construction that involves a resumptive pronoun, assuming that parasitic gaps are licensed by variables (see Boeckx 2003 for predictions of his theory with regard to parasitic gap licensing by resumptive pronouns).

To conclude, pursuing a theory of parasitic gap licensing that distinguishes pronouns from gaps based on something different than movement does not seem like the right way to go.

2.3 Different kind of movement

An additional possible way to reconcile the ability of resumptive pronouns to allow reconstruction with their inability to license parasitic gaps is to argue that resumptive pronouns are compatible with movement (and thus allow reconstruction), but this movement is not the right kind of movement that licenses parasitic gaps. For example, one might argue that pronouns are only compatible with movement which is not successive-cyclic, while gaps are compatible with successive-cyclic movement. Then, it could be argued that parasitic gaps are only licensed by the successive-cyclic movement kind.³ Note that this would actually be consistent with Nissenbaum's (2000) parasitic gap analysis, according to which, the existence of the *intermediate trace* is what enables the semantic composition of parasitic gap constructions. However, arguing that pronouns are only compatible with a non-successive-cyclic movement would mean that this kind of movement exists. This seems like an *ad hoc* assumption without independent evidence. Evidence that would support this direction would be to show, for example, that resumed A'-dependencies allow reconstruction into the pronoun position but not into intermediate positions, and more generally, to show that there are no intermediate representations of the moved phrase (this might be shown using psycholinguistic tools).

Before turning to the evidence for resumptive pronouns' inability to license parasitic gaps, let me summarize the structure of the argument that I make in this thesis.

(25) Structure of the argument:

1. Hebrew resumptive pronouns, including obligatory resumptive pronouns, do not license parasitic gaps.
2. Assuming that movement is a sufficient condition for parasitic gap licensing, this strongly suggests that Hebrew resumptive pronouns are

³I thank Danny Fox (p.c) for suggesting this option.

not compatible with movement.

3. This seems incompatible with the observation that obligatory pronouns allow reconstruction, if we assume that movement is a necessary condition for reconstruction.
4. The puzzle is resolved if we account for reconstruction effects observed with obligatory pronouns without assuming movement.

3 Evidence: Resumptive pronouns do not license parasitic gaps

In this chapter I present and discuss four kinds of evidence for the incompatibility of Hebrew resumptive pronouns with movement. In section 3.1 I show that direct object resumptive pronouns do not license adjunct parasitic gaps, but do seem to be acceptable in subject parasitic gap constructions. In section 3.2 I argue that direct object resumptive pronouns are acceptable with subject parasitic gaps because subject parasitic gaps are not truly parasitic. In section 3.3 I show that PP pronouns, which were argued to allow reconstruction and to be compatible with movement, do not license adjunct parasitic gaps. In section 3.4 I show that obligatory direct object pronouns, which were also argued to allow reconstruction and to be compatible with movement, do not license adjunct parasitic gaps. Section 3.5 concludes the evidence for the incompatibility of resumptive pronouns with movement.

I now turn to presenting the evidence.

3.1 Experiment 1: Direct object resumptive pronouns do not license adjunct parasitic gaps

In this section I show that direct object resumptive pronouns do not license adjunct parasitic gaps. I report the results of an acceptability judgment experiment that shows that adjunct parasitic gap constructions with resumptive pronouns as licensors are worse than adjunct parasitic gap constructions with gaps as licensors. This suggests that direct object resumptive pronouns do not license parasitic gaps, and hence are not compatible with movement. The results also show that there is an asymmetry between subject and adjunct parasitic gaps with respect to their acceptability with resumptive pronouns (as argued in Sells 1984). However, I argue in section 3.2 that this asymmetry does not constitute evidence for resumptive pronouns' ability to license subject parasitic gaps.

3.1.1 Participants

Ninety-three native Hebrew speakers with no relevant linguistic education completed an online acceptability judgment survey built using Qualtrics web-based software (Qualtrics, Provo, UT). Participants were recruited via social networks, and voluntarily agreed to take the survey. Seven participants stated that they had a second

native language were excluded from the analysis. In addition, other five participants were excluded because they either stated that they were not sure that they had followed the instructions correctly (three participants), stated that they had noticed a repeated pattern (one participant), or stated that acceptability cannot be rated on a scale (one participant). In addition, one participant was excluded because it took him less than four minutes to complete the survey and his answers looked random. Overall, thirteen participants were removed from the analysis for the reasons listed above. The analysis was conducted on the remaining eighty participants (31 males, 49 females, mean age=28.4, $SD=7.83$). Of these eighty participants, twenty-six completed a version of the survey that contained one stimuli list, twenty-eight completed a version of the survey that contained a second stimuli list, and twenty-six completed a version of the survey that contained a third stimuli list. The procedure according to which the different versions were created is explained in section 3.1.2.

3.1.2 Materials and design

The experimental design involved two independent factors: *Type of parasitic gap* and *Licensing*. The stimuli included twelve experimental items. Six of the items involved a parasitic gap within a subject modified by a relative clause, while the six other items involved a parasitic gap within an adjunct. Three licensing conditions were created for each of these twelve items. The first condition involved a gap as the licensor of the parasitic gap, the second involved a resumptive pronoun as the licensor of the parasitic gap, and the third involved no licensor, since the object of the verb in the outer relative clause was a lexical NP. This resulted in thirty-six experimental sentences. The three conditions of the *Licensing* factor are exemplified for the two conditions of the *Type of parasitic gap* factor in (26) and (27) below. The subject and the adjunct island boundaries are marked with square brackets. See appendix A for the full list of items.

- (26) a. Subject PG, gap licensor:
kaniti et ha-sefer_i še-[ha-anašim_j še t_j kar'u pg_i] ahavu t_i
 I.bought ACC the-book that-the-people that t_j read pg_i liked t_i
me'od.
 very-much
 'I bought the book that the people that read liked very much.'
- b. Subject PG, pronoun licensor:
kaniti et ha-sefer_i še-[ha-anašim_j še t_j kar'u pg_i] ahavu oto_i
 I.bought ACC the-book that-the-people that t_j read pg_i liked it_i
me'od.
 very-much
 'I bought the book that the people that read liked very much.'

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- c. Subject PG, no licensor:
kaniti et ha-sefer_i še-[ha-anašim_j še t_j kar'u pg_i] ahavu et
 I.bought ACC the-book that-the-people that t_j read pg_i liked ACC
ha-dmut ha-rašit me'od.
 the-character the-main very-much
 'I bought the book that the people that read liked the main character very much.'
- (27) a. Adjunct PG, gap licensor:
ele ha-sfarim_i še-hexzarti t_i [bli likro pg_i].
 these the-books that-I.returned t_i without to-read pg_i
 'These are the books that I returned without reading.'
- b. Adjunct PG, pronoun licensor:
ele ha-sfarim_i še-hexzarti otam_i [bli likro pg_i].
 these the-books that-I.returned them_i without to-read pg_i
 'These are the books that I returned without reading.'
- c. Adjunct PG, no licensor:
ele ha-sfarim_i še-hexzarti et ha-manuy [bli likro
 these the-books that-I.returned ACC the-membership without to-read
pg_i].
 pg_i
 'These are the books that I returned the (library) membership without reading.'

The thirty-six experimental sentences were distributed among three lists using a Latin Square procedure, such that each list contained four sentences from each *Licensing* condition: two from each *Type of parasitic gap* condition, and such that the lists did not contain two conditions of the same item. Overall, each of the three lists contained twelve experimental sentences: six subject parasitic gap sentences (six different items, one licensing condition from each item), and six adjunct parasitic gap sentences (six different items, one licensing condition from each item). Twenty-four fillers (twelve acceptable, twelve unacceptable) were added to each list, such that each list contained thirty-six sentences.

The thirty-six sentences of each list were distributed among four presentation pages, such that each page contained three experimental sentences and six fillers. Each page did not contain more than one sentence from each licensing condition, and contained either one or two sentences from each type-of-parasitic-gap condition. The order of the pages was randomized for each participant. Finally, the order of sentences on each page was pseudo-randomized, provided that two experimental items were never presented consecutively.

3.1.3 Procedure

Participants were randomly assigned to the three survey lists. Participants were instructed to rate the acceptability of each sentence on a 7-point scale where 1 stands for ‘completely unacceptable’ and 7 stands for ‘fully acceptable’. They were instructed not to refer to acceptability in its prescriptive or written-language sense, but rather to spoken language. In order to make participants more sensitive to actual acceptability, with the least influence possible of the sentence’s complexity, they were also instructed to rate the complexity of each sentence on a 7-point scale where 1 stands for ‘not complex’ and 7 stands for ‘very complex’. The instructions included a detailed explanation about the two scales followed by examples. Participants were instructed to imagine that according to their ratings of acceptability and complexity people would be sent either to a Hebrew course or to a rhetoric course. The idea was that an unacceptable sentence indicates that the person that uttered it is not a native Hebrew speaker, while a complex sentence indicates that the person that uttered it speaks in a cumbersome manner (see full instructions in appendix A). Each sentence was presented followed by the acceptability and complexity scales. Participants completed the survey at their own pace.

3.1.4 Results

3.1.4.1 Acceptability judgments

To test whether the two independent factors, type-of-parasitic-gap and licensing, had an effect on acceptability judgments I constructed a linear mixed-effects model with items and participants included as random factors and type-of-parasitic-gap and licensing as fixed factors. Table 3.1 reports the estimated coefficients and the expected values of acceptability for each combination of the two fixed factors. The values presented are based on the raw acceptability judgments. The same pattern of results was observed when the model was constructed based on z-score-transformed data. All p -values were estimated using the Markov Chain Monte Carlo (MCMC) method implemented in the languageR package for R (Baayen 2007, Baayen, Davidson & Bates 2008, R Development Core Team 2009).

A significant interaction of type-of-parasitic-gap and licensing was observed. In sentences with a subject parasitic gap, a pronoun as a licensor had a marginally significant negative effect on acceptability judgments ($\text{Mean}_{\text{subjectPG, gap}} = 4.82$, $SD = 1.83$; $\text{Mean}_{\text{subjectPG, pronoun}} = 4.47$, $SD = 1.81$; $p\text{MCMC} = .0418$), but sentences with no licensor were significantly worse than sentences with a gap licensor ($\text{Mean}_{\text{subjectPG, gap}} = 4.82$, $SD = 1.83$; $\text{Mean}_{\text{subjectPG, no licensor}} = 3.14$, $SD = 1.91$; $p\text{MCMC} = .0001$).

In sentences with an adjunct parasitic gap, a pronoun had a significantly greater negative effect on acceptability compared to the pronoun’s negative effect in subject parasitic gap sentences ($\text{Mean}_{\text{subjectPG, gap}} - \text{Mean}_{\text{subjectPG, pronoun}} = 0.35$; $\text{Mean}_{\text{adjunctPG, gap}} - \text{Mean}_{\text{adjunctPG, pronoun}} = 1.54$; $p\text{MCMC} = .0001$). In addition, the difference between adjunct parasitic gap sentences with a gap and adjunct parasitic gap sentences with no licensor was significantly greater than the difference between

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subject parasitic gap sentences with a gap and subject parasitic gap sentences with no licenser ($\text{Mean}_{\text{subjectPG, gap}} - \text{Mean}_{\text{subjectPG, no licenser}} = 1.67$; $\text{Mean}_{\text{adjunctPG, gap}} - \text{Mean}_{\text{adjunctPG, no licenser}} = 3.99$; $pMCMC = .0001$). Finally, sentences with adjunct parasitic gaps were rated as more acceptable than sentences with subject parasitic gaps, but only when the licenser was a gap ($\text{Mean}_{\text{subjectPG, gap}} = 4.82$, $SD = 1.83$; $\text{Mean}_{\text{adjunctPG, gap}} = 5.84$, $SD = 1.57$; $pMCMC = .0104$).

Post-hoc pairwise comparisons using Tukey correction showed that in both subject parasitic gap constructions and adjunct parasitic gap constructions the no licenser condition differed significantly from the pronoun condition (subject PG: $Z = -8.61$, $p < .0001$; adjunct PG: $Z = -16.94$, $p < .0001$).

FACTOR COMBINATION	COEF.ESTIMATE	EXP.VALUE	STD.ERROR	t-VALUE	pMCMC
subject PG, gap (Intercept)	4.81	4.81	0.27	-	-
subject PG, pronoun	-0.32	4.49	0.15	-2.08	0.0418
subject PG, no licenser	-1.68	3.13	0.15	-10.8	0.0001
adjunct PG, gap	1.03	5.84	0.35	2.94	0.0104
adjunct PG, pronoun	-1.22	4.29	0.22	-5.59	0.0001
adjunct PG, no licenser	-2.32	1.84	0.22	-10.6	0.0001

Table 3.1: Effects of Type-of-PG and Licensing on acceptability judgments

Since there is a debate in the literature with regard to the application of parametric statistical tests to judgment data (which is based on an ordinal scale), I also conducted non-parametric tests.¹ A Friedman Rank test for related samples was conducted separately for subject parasitic gap sentences and adjunct parasitic gap sentences. For subject parasitic gap sentences, a significant difference among the three licensing conditions, gap ($\text{Median}_{\text{gap}} = 5$), pronoun ($\text{Median}_{\text{pronoun}} = 5$) and no licenser ($\text{Median}_{\text{no licenser}} = 3$) was observed in both by-subject analysis ($\chi^2(2, 80) = 42.7$, $p < .0001$) and by-item analysis ($\chi^2(2, 6) = 10.2$, $p = .006$).

By-subject post-hoc pairwise comparisons using a paired Wilcoxon test with Bonferroni correction revealed a significant difference between the gap and the no licenser conditions ($Z = 5.47$, $p < 0.0001$) and between the no licenser and the pronoun conditions ($Z = -5.68$, $p < .0001$) but not between the gap condition and the pronoun condition ($Z = 1.98$, $p = .0469$). However, by-item post-hoc comparisons revealed no significant difference between the gap condition and the pronoun condition ($Z = 1.31$, $p = .25$), no significant difference between the gap and the no licenser conditions ($Z = 2.21$, $p = .0312$) and no significant difference between the no licenser and the pronoun conditions ($Z = -2.23$, $p = .0312$).²

¹See Schütze and Sprouse (to appear) for a discussion of the use of parametric tests for judgment data.

²A Bonferroni correction was applied, resulting in $\alpha = 0.016$. Thus $p = 0.0469$ and $p = 0.0312$ are not

For adjunct parasitic gap sentences, a significant difference among the three licensing conditions, gap ($\text{Median}_{\text{gap}} = 6$), pronoun ($\text{Median}_{\text{pronoun}} = 5$) and no licensor ($\text{Median}_{\text{no licensor}} = 1$), was also observed in both by-subject analysis ($\chi^2(2, 80) = 141.2, p < .0001$) and by-item analysis ($\chi^2(2, 6) = 12, p = .0024$). Unlike in subject parasitic gap sentences, post-hoc comparisons by-subject revealed a significant difference between each pair of conditions: gap and pronoun ($Z = 7.04, p < .0001$), gap and no licensor ($Z = 7.78, p < .0001$) and no licensor and pronoun ($Z = -7.75, p < .0001$). Namely, while in subject parasitic gap sentences there was no significant difference between a gap as a licensor and a pronoun as a licensor, such difference was observed for adjunct parasitic gaps. However, by-item analysis revealed no significant difference between the gap and the pronoun conditions ($Z = 2.23, p = .0312$), the gap and the no licensor conditions ($Z = 2.22, p = .0312$), and the no licensor and pronoun conditions ($Z = -2.21, p = .0312$).

To conclude, the by-subject non-parametric analysis demonstrated the same pattern of significant results as observed in the mixed-effects model analysis, while the results of the by-item analysis were not significant.³

The results suggest that subject parasitic gap constructions and adjunct parasitic gap constructions differ with regard to the effect of licensing on their acceptability. While the acceptability of adjunct parasitic gap constructions is significantly negatively affected by replacing the licensing gap with a resumptive pronoun, the acceptability of subject parasitic gap constructions is only marginally affected. Furthermore, while the acceptability of adjunct parasitic gap constructions is severely affected by replacing the gap with a lexical NP (no licensor), the acceptability of subject parasitic gap constructions is not affected that severely. These effects were observed both in a linear mixed-effects model analysis and in a non-parametric Friedman Rank test followed by by-subject post-hoc pairwise comparisons.

3.1.4.2 Complexity judgments

A certain degree of correlation was found between the acceptability ratings of all the stimuli (including fillers) and their complexity ratings (Pearson's $r = -.302$). This correlation was significant ($t(2874) = -17.02, p < .0001$).⁴ A higher correlation was observed for the experimental items, excluding fillers (Pearson's $r = -.38, t(957) = -12.61, p < .0001$). This correlation indicates that sentences that were less complex tended to be more acceptable and vice-versa, but since the correlation is not high, it seems that a relatively large portion of acceptability was not affected by complexity. I take the fact that the correlation was higher when fillers were excluded to

significant.

³Non-parametric tests are less sensitive in finding an effect. Moreover, since there were only six items in each type-of-parasitic-gap condition, it is very plausible that the by-item analyses did not have enough statistical power to yield significant results, and I take this to be a false negative.

⁴Four acceptability judgments were missing due to an unknown technical issue (three filler judgments, and one experimental judgment). Hence the lowest degrees of freedom in the correlation significance test.

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be related to the fact that there were fillers that were not complex in their structure but nevertheless completely ungrammatical (e.g., ‘myself shaved me’).

A linear mixed-effects model was constructed for the complexity judgments with items and participants included as random factors and type-of-parasitic-gap and licensing as fixed factors. Table 3.3 reports the estimated coefficients and expected complexity values for each combination of the two fixed factors. The values presented are based on the raw acceptability judgments. All p -values were estimated using the Markov Chain Monte Carlo (MCMC) method implemented in the languageR package for R. As demonstrated in Table 3.2, the results show almost the same pattern as observed in the acceptability judgments linear mixed-effects model, with some differences.

FACTOR COMBINATION	COEF.ESTIMATE	EXP.VALUE	STD.ERROR	t-VALUE	pMCMC
subject PG, gap (Intercept)	3.21	3.21	0.28	-	-
subject PG, pronoun	0.24	3.45	0.15	1.54	0.1328
subject PG, no licensor	1.57	4.78	0.15	10.3	0.0001
adjunct PG, gap	-1.3	1.82	0.37	-3.71	0.0018
adjunct PG, pronoun	0.11	2.17	0.22	0.51	0.608
adjunct PG, no licensor	1.17	4.56	0.22	5.38	0.0001

Table 3.2: Effects of Type-of-PG and Licensing on complexity judgments

A significant interaction of type-of-parasitic-gap and licensing was observed. In sentences with a subject parasitic gap, a pronoun as a licensor had no significant negative effect on complexity judgments ($\text{Mean}_{\text{subjectPG, gap}} = 3.2$, $SD = 1.59$; $\text{Mean}_{\text{subjectPG, pronoun}} = 3.47$, $SD = 1.8$; $pMCMC = .1328$), but sentences with no licensor were significantly more complex than sentences with a gap licensor ($\text{Mean}_{\text{subjectPG, gap}} = 3.2$, $SD = 1.59$; $\text{Mean}_{\text{subjectPG, no licensor}} = 4.77$, $SD = 1.83$; $pMCMC = .0001$). This pattern is parallel to the pattern observed in the acceptability judgments results; while the no licensor condition is significantly less acceptable and more complex than the gap licensor condition, there is no significant difference between the pronoun condition and the gap condition in acceptability or in complexity.

With regard to sentences with an adjunct parasitic gap, a pronoun did not have a significantly greater negative effect on complexity judgments compared to the pronoun’s negative effect in subject parasitic gap sentences ($\text{Mean}_{\text{subjectPG, gap}} - \text{Mean}_{\text{subjectPG, pronoun}} = -0.269$; $\text{Mean}_{\text{adjunctPG, gap}} - \text{Mean}_{\text{adjunctPG, pronoun}} = -0.34$; $pMCMC = .608$). The difference between adjunct parasitic gap sentences with a gap and adjunct parasitic gap sentences with no licensor was significantly greater than the difference between subject parasitic gap sentences with a gap and subject parasitic gap sentences with no licensor ($\text{Mean}_{\text{subjectPG, gap}} - \text{Mean}_{\text{subjectPG, no licensor}} = -1.57$; $\text{Mean}_{\text{adjunctPG, gap}} - \text{Mean}_{\text{adjunctPG, no licensor}} = -2.73$; $pMCMC = .0001$). This pattern

is only partially parallel to the pattern observed in the acceptability judgments results; while the difference between the no licenser and the gap conditions in adjunct parasitic gaps compared to subject parasitic gaps is greater both in acceptability and in complexity, the size of the difference between the pronoun and the gap conditions in adjunct parasitic gaps compared to subject parasitic gaps was not significantly greater in complexity, as it was in acceptability.

Finally, the mixed model analysis showed that sentences with adjunct parasitic gaps were rated as less complex than sentences with subject parasitic gaps when the licenser was a gap ($\text{Mean}_{\text{subjectPG, gap}} = 3.2$, $SD = 1.59$; $\text{Mean}_{\text{adjunctPG, gap}} = 1.82$, $SD = 1.15$; $pMCMC = .0018$). Mixed effects models that were constructed separately for each licensing condition showed that adjunct parasitic gaps were also rated as less complex than subject parasitic gaps in the pronoun condition ($\beta = -1.27$, $p = .004$), but not in the no licenser condition ($\beta = -0.21$, $p = .67$). This pattern is only partially parallel to the acceptability pattern; adjunct parasitic gap sentences were both more acceptable and less complex in the gap condition, but they were less complex but also *less* acceptable in the pronoun condition.

3.1.5 Discussion

3.1.5.1 Acceptability judgments

The results demonstrate that subject parasitic gap and adjunct parasitic gap constructions are not affected in the same way by the licensing factor. While pronouns significantly reduce the acceptability of adjunct parasitic gap constructions, they only have a marginal negative effect on subject parasitic gap constructions.⁵ Moreover, adjunct parasitic gap constructions with no licenser are much worse compared to their gap equivalents than subject parasitic gap constructions with no licenser are.

The fact that pronouns do not significantly affect the acceptability of subject parasitic gap constructions is compatible with Sells' (1984) claim that Hebrew resumptive pronouns license subject parasitic gaps. However, the fact that no licensing had a significantly greater effect on the acceptability of adjunct parasitic gaps compared to subject parasitic gaps raises the question of whether subject parasitic gap constructions are truly what they are assumed to be. Namely, if subject parasitic gap constructions are relatively acceptable with no licensing gap or pronoun, it might be the case that the gap inside the subject-modifying relative clauses is in fact not a parasitic gap which must be licensed, but rather a real gap, which does not have to be licensed. If subject parasitic gap constructions are not parasitic gap constructions in Hebrew, then the apparent licensing of the alleged parasitic gap by a pronoun is straightforwardly explained; since the gap is a real gap, it does not have to be licensed by another gap. In this case the gap position inside the subject is a true relativized

⁵I do not have an explicit account for the significant difference found between the no-licenser condition and the pronoun condition in subject parasitic gap constructions (according to which the no-licenser condition was significantly worse). For a discussion of subject parasitic gaps and what governs their acceptability see section 3.2 and appendix B.

position.

The possibility that the gap inside the subject-modifying relative clause is not parasitic has several implications. First, if Hebrew subject parasitic gap constructions do not involve parasitic gaps, then the claim that they are acceptable with resumptive pronouns (as argued in Sells 1984) does not indicate a gap-like behavior of resumptive pronouns anymore. Thus, any resumptive pronoun analysis that argues for gap-like properties of resumptive pronouns based on the Hebrew parasitic gap facts cannot be maintained. This strongly suggests that resumptive pronouns, at least the direct object pronouns tested in the present experiment, are not compatible with a movement derivation.

Second, the possibility that subject parasitic gap constructions in Hebrew do not involve a parasitic gap supports Nissenbaum's (2000) unified analysis of subject and adjunct parasitic gaps, according to which both subject and adjunct parasitic gaps are licensed by the presence of an intermediate A'-trace in Spec-vP. If Hebrew resumptive pronouns were shown to truly license parasitic gaps in subjects but not in adjuncts and it was shown that subject parasitic gap constructions do involve a parasitic gap, Nissenbaum's unified treatment of subject and adjunct parasitic gaps would have been weakened, as some account for the fact that the two kinds of parasitic gaps differ with respect to their licensing by resumptive pronouns would have to be provided.

Third, if subject parasitic gap constructions involve a real gap, it follows that Hebrew allows extraction out of a problematic construction in a problematic position, namely, it allows movement out of a relative clause (a relative clause island) in subject position (a subject island). Hebrew generally does not allow extraction out of subjects. Thus, the fact that extraction out of a subject is possible here must be accounted for. With regard to the problematic construction, i.e., the relative clause, it has been suggested that some relative clauses allow extraction (in some languages). A detailed account for the possibility to extract out of subjects and out of relative clauses is beyond the scope of this thesis, but I do discuss this issue more thoroughly in appendix B.

Experiment 1 suggests that subject parasitic gap constructions do not involve parasitic gaps. However, as the no licensor condition did differ significantly from the gap condition, the question of whether subject parasitic gap constructions with a lexical NP are acceptable or not must be more closely examined. Moreover, the sentences in the no licensor condition all involved a transitive verb with a lexical NP complement. If no licensing is necessary, we would expect that an intransitive verb with no potential relativized position would also be grammatical. To test whether Hebrew speakers generally accept gaps inside subject-modifying relative clause with no licensing gap, speakers provided their judgments in a short questionnaire that included the two kinds of no licensing examples: examples with a transitive verb with a lexical NP complement and examples with an intransitive verb. The judgments and conclusions of this questionnaire are discussed in section 3.2 and are more thoroughly discussed in appendix B.

With regard to adjunct parasitic gaps, Experiment 1 suggests that resumptive pronouns generally do not license them. Moreover, the fact that the acceptability

judgments for the no licensor condition were relatively very low (Mean=1.84) and significantly differed from the judgments of gap-licensed adjunct parasitic gap constructions, strongly supports the claim that gaps inside adjunct islands are truly parasitic gaps that must be licensed by a real gap.⁶ This conclusion is compatible with Sells' (1984) and Shlonsky's (1992) observation that Hebrew resumptive pronouns do not license adjunct parasitic gaps. Importantly, Experiment 1 only included direct object resumptive pronouns, so it can only be concluded that direct object pronouns do not license adjunct parasitic gaps, and that they probably cannot inhabit a movement structure. The question of whether PP pronouns behave differently is examined in Experiment 2 discussed in section 3.3.

A note has to be made about the fact that adjunct parasitic gap constructions with a gap licensor were rated significantly higher than their subject equivalents. I take this difference to be related to the overall processing difficulty of the two constructions. First, subject parasitic gap constructions involve two relative clauses, which plausibly increases their processing difficulty and consequently reduces their acceptability. Second, while the parasitic gap in an adjunct is licensed by a gap that precedes it, the subject parasitic gap precedes the licensing gap, which might also increase the processing difficulty associated with this construction. See appendix B for a discussion of the processing of subject parasitic gap constructions in light of the claim that the parasitic gap might not be parasitic.

A final note has to be made with regard to the a possible objection to the interpretation of the experimental results. As I noted in chapter 1, some speakers find resumed relative clauses less acceptable than gap-relative clauses. These speakers would judge the simple resumed relative clause in (28b) as worse than the simple resumed relative clause in (28a).

- (28) a. *ze ha-yeled_i še-pagašti t_i.*
this the-boy that-I.met t_i
'This is the boy that I met.'
- b. *ze ha-yeled_i še-pagašti oto_i.*
this the-boy that-I.met him_i
'This is the boy that I met.'

Thus, one could argue that parasitic gap constructions with resumptive pronouns are worse than parasitic gap constructions with gaps simply because resumptive pronouns are generally worse than gaps, rather than due to licensing issues. Note, however, that it has been claimed that resumptive pronouns become better when the sentence is more complex, for example, when it involves multiple levels of embedding, islands and so on (e.g., Erteschik-Shir 1992, Alexopoulou & Keller 2007, among others).

⁶I do not have an account for the significant difference observed between the pronoun condition and the no licensor condition, according to which the no licensor condition was significantly worse. The important issue for the question of resumptive pronouns' compatibility with movement is whether they behave like gaps in parasitic gap constructions, and the answer to this question is negative, according to Experiment 1.

Since parasitic gap constructions are relatively complex, we would expect pronouns to be relatively good with them. The fact that pronouns are not good with them suggests that the problem is related to grammatical issues, like licensing, rather than to processing issues (see related discussion in footnote 4 in chapter 1).

Moreover, recall that participants were also asked to provide ‘complexity’ judgments on a different scale and that the results only showed a low correlation (Pearson’s $r = -.38$) between acceptability and complexity. Thus, there seems to be a considerable amount of ‘grammaticality’ involved in the acceptability judgments of parasitic gap constructions. Additionally, the statistical analysis for the complexity judgments showed that the size of the difference between the pronoun and the gap licensing conditions in adjunct parasitic gaps compared to subject parasitic gaps was not significantly greater in adjunct parasitic gaps. Namely, the complexity results did not show the asymmetry between subject and adjunct parasitic gaps with regard to the pronoun condition. This strongly suggests that the acceptability results do follow from the inability of pronouns to license parasitic gaps rather than from processing factors.

3.1.5.2 Complexity judgments

The fact that the correlation between acceptability and complexity was not high suggests that the results of the acceptability judgments reflect some notion of acceptability that is independent of complexity. With regard to the different effect of the licensing factor on the two different parasitic gap constructions, adjunct parasitic gaps and subject parasitic gaps, this suggests that the relative acceptability of subject parasitic gap constructions with resumptive pronouns is due to the grammar of Hebrew, which presumably allows extraction out of a subject-modifying relative clause. Further support for the claim that the difference between subject parasitic gaps and adjunct parasitic gaps with regard to licensing by resumptive pronouns is due to the grammar is observed in the fact that in the complexity judgments, unlike in the acceptability judgments, pronouns did not have a significantly greater negative effect in adjunct parasitic gaps compared to subject parasitic gaps. That is, it seems that although pronouns in adjunct parasitic gap constructions have a greater negative effect on their acceptability compared to pronouns in subject parasitic gap constructions, they do not have a greater negative effect on complexity. This strongly suggests that the difference between adjunct parasitic gaps and subject parasitic gaps with regard to licensing by resumptive pronouns is due to the grammar rather than due to processing considerations.

Though not high, the fact that there was some correlation between the acceptability results and the complexity results, suggests that some of the differences observed in the acceptability results might be due to processing considerations. In appendix B I explore this possibility.

In the next section I investigate the acceptability of subject parasitic gap constructions and show that the gap inside the subject-modifying relative clause might be a real gap, rather than parasitic.

3.2 Subject parasitic gaps are not truly parasitic

In this section I argue that the asymmetry between subject and adjunct parasitic gaps with regard to their acceptability with resumptive pronouns argued for in the literature (Sells 1984) and observed in the Experiment 1 is not due to the fact that resumptive pronouns license subject parasitic gaps but not adjunct parasitic gaps, but rather due to the fact that subject parasitic gaps are actually real gaps, which do not have to be licensed. I show that there are relatively acceptable Hebrew subject parasitic gap constructions with no licensing gap or pronoun, and argue, based on this evidence, that the alleged subject parasitic gaps are real gaps. However, I do not provide in this section an account for the possibility to extract out of subject-modifying relative clauses and for the relative acceptability of different subject parasitic gap constructions since it does not affect the main question of this thesis. The crucial point is that the fact that there are acceptable subject parasitic gap constructions with no licensing gap or pronoun indicates that the acceptability of resumptive pronouns in these constructions cannot be taken as evidence for their ability to license parasitic gaps and for their compatibility with movement. The possibility to extract out of subject-modifying relative clauses and the factors that govern the acceptability of subject parasitic gap constructions are thoroughly discussed in appendix B, which is dedicated to this purpose.

Experiment 1, discussed in section 3.1, showed that subject parasitic gap constructions with resumptive pronouns as licensors are only marginally worse than their gap equivalents. It also showed that replacing the licensing gap with a lexical NP in a subject parasitic gap construction does not affect its acceptability as severely as it affects the acceptability of the equivalent adjunct parasitic gap construction.

It seems then, that there is indeed an asymmetry between subject and adjunct parasitic gap constructions with regard to their acceptability when the licensing position is occupied by a resumptive pronoun. However, I argue that this asymmetry follows from the fact that subject parasitic gaps are not truly parasitic in Hebrew.

Consider the subject parasitic gap constructions in (29).

- (29) a. *ze ha-seret_i še-kol mi še-ra'a t_i ahav t_i*
 this the-movie that-every who that-saw t_i liked t_i
 'This is the movie that everyone that saw liked.'
- b. *ze ha-seret_i še-kol mi še-ra'a t_i ahav et ha-saxkan ha-raši*
 this the-movie that-every who that-saw t_i liked ACC the-actor the-main
 'This is the movie that everyone that saw liked the main actor.'
- c. *ze ha-seret_i še-kol mi še-ra'a t_i halax ha-bayta*
 this the-movie that-every who that-saw t_i went home
ve-hit'abed
 and-killed.himself
 'This is the movie that everyone that saw went home and killed himself.'

(29a) is a subject parasitic gap construction with a licensing gap, (29b) is a subject

parasitic gap construction with no licensor, in which the matrix predicate is a transitive verb with a lexical NP object. (29c) also involves no licensor, but differs from the (29b) in that the matrix verb is an intransitive, that is, it does not take an NP complement.

Interestingly, it turns out that Hebrew speakers generally judge examples like (29c) as relatively acceptable, and as better than examples like (29b). However, some examples like (29b) are judged as relatively acceptable and as better than examples like (29c). In other words, there is variation among speakers and among items with respect to the relative acceptability of subject parasitic gap constructions with no gap or resumptive pronoun as the potential licensor of the parasitic gap.

Providing an account for the general trend whereby examples like (29c) are relatively acceptable while examples like (29b) are relatively not acceptable is not simple. On the one hand, the acceptability of examples like (29c) suggests that the gap in these constructions is not a parasitic gap, but rather a real gap. On the other hand, this seems incompatible with the relative unacceptability of examples like (29b); if the gap does not have to be licensed by another gap, why are examples like (29b) relatively unacceptable? Moreover, if the gap in the subject-modifying relative clause does not have to be licensed, why are most of the examples like (29c) better than examples like (29b)?

In appendix B I provide more details about the acceptability of subject parasitic gap constructions based on an acceptability judgment questionnaire that was distributed among Hebrew speakers. I discuss possible accounts for the relative acceptability of examples like (29b) and the relative unacceptability of examples like (29c), and also suggest a possible account for the variation among speakers and among items with respect to the relative acceptability of examples like (29b) compared to examples like (29c).

In appendix B I also discuss accounts for the possibility that the gap inside the subject-modifying relative clause is a real gap. The possibility that movement applies out of a subject modified by a relative clause certainly calls for further investigation and independent evidence, since the extraction is both from a problematic position (a subject island) and from a problematic construction (a relative clause, which is both an adjunct and a complex NP). Therefore, in appendix B I review claims with regard to the possibility to extract out of subjects and out of relative clauses and evaluate them with regard to the Hebrew data.

For the main question of the current study - whether or not resumptive pronouns are compatible with movement - it is sufficient to note that the fact that there are subject parasitic gap constructions with no gap or resumptive pronoun as a licensor that are relatively acceptable, suggests that subject parasitic gap constructions are not truly parasitic. Rather, the alleged parasitic gap within the subject-modifying relative clause is a real gap, which does not require a licensor. In other words, it is sufficient to assume that Hebrew allows extraction out of subject-modifying relative clauses under certain circumstances and that there is an explanation for the trend observed with regard to relative acceptability of examples like (29c) and examples like (29b) and its variation. Assuming that the gap inside the subject-modifying relative

clause does not require a licensor in the pure sense of a relativized position, Sells' (1984) claim that Hebrew resumptive pronouns license subject parasitic gaps based on their acceptability in subject parasitic gap constructions is a misinterpretation of the data; what seems like licensing of a parasitic gap by a resumptive pronoun is actually a case in which the gap in the subject-modifying relative clause is a real gap, which does not require a licensor.

My interim conclusion is that direct object resumptive pronouns do not license parasitic gaps (adjunct or subject). Thus, they are not compatible with movement. This is consistent with the observation that Hebrew direct object pronouns do not allow reconstruction. In section 3.3 I discuss parasitic gap licensing by PP pronouns, which were claimed to allow reconstruction, and show that PP pronouns, like direct object pronouns, do not license parasitic gaps.

3.3 Experiment 2: PP pronouns do not license adjunct parasitic gaps

I have established that direct object resumptive pronouns do not license parasitic gaps in Hebrew, and argued that this constitutes evidence for their incompatibility with movement. Importantly, this is compatible with the observation that direct object pronouns do not allow reconstruction.

Since pronouns which are complements of prepositions do allow reconstruction (Sichel to appear, see also section 1.1), the prediction, assuming that reconstruction requires movement, is that these pronouns, unlike direct object pronouns, would license parasitic gaps.

However, I show in this section that this prediction is not borne out. PP pronouns do not license adjunct parasitic gaps. I report an acceptability judgment experiment which did not show evidence for adjunct parasitic gap constructions with PP pronouns as licensors being better than their direct object pronouns equivalents. Note that in this section and in section 3.4 I concentrate on adjunct parasitic gap constructions, as subject parasitic gaps are arguably not truly parasitic.

3.3.1 Participants

Seventy-four native Hebrew speakers with no relevant linguistic education completed an online acceptability judgment survey built using Qualtrics web-based software (Qualtrics, Provo, UT). Participants were recruited via social networks, and voluntarily agreed to take the survey. Seven participants that stated that they had a second native language were excluded from the analysis. In addition, other four participants were excluded because they stated that they had advanced linguistic knowledge. In addition, one participant was excluded because he or she gave the same rating for all experimental items. Overall, twelve participants were removed from the analysis for the reasons listed above. The analysis was conducted on the remaining sixty-two participants (19 males, 43 females, mean age=28.2, $SD=6.34$). Of these sixty-two

participants, twenty completed a version of the survey that contained one stimuli list, twenty-three completed a version of the survey that contained a second stimuli list, and nineteen completed a version of the survey that contained a third stimuli list. The procedure according to which the different versions were created is explained in section 3.3.2.

3.3.2 Materials and design

The stimuli included nine experimental items, which were all adjunct parasitic gap constructions. Three *Licensing* conditions were created for each of these nine items. The first condition involved a direct object gap as the licensor of the parasitic gap (gap), the second involved a direct object resumptive pronoun (DO-pronoun) as the licensor of the parasitic gap, and the third involved a PP pronoun (complement of preposition, PP-pronoun) as the licensor of the parasitic gap, resulting in twenty-seven experimental sentences. The three licensing conditions are exemplified in (30) below.

The twenty-seven experimental sentences were distributed among three lists using a Latin Square procedure such that each list contained three sentences from each *Licensing* condition, and such that the lists did not contain two conditions of the same item. Overall, each of the three lists contained nine experimental sentences: three gap sentences, three DO-pronoun sentences, and three PP-pronoun sentences. Eighteen fillers (eight acceptable, ten unacceptable) were added to each list, such that each list contained twenty-seven sentences.

The order of the presentation of the twenty-seven sentences of each list (experimental and fillers) was pseudo-randomized for each participant, provided that two experimental items were never presented consecutively.

- (30) a. Adjunct parasitic gap, gap licensor:
zot ha-simla_i še-ibadeti t_i bli lilboš pg_i
 this-is the-dress that-I.lost t_i without to-wear pg_i
 ‘This is the dress that I lost without wearing.’
- b. Adjunct parasitic gap, direct object pronoun licensor:
zot ha-simla_i še-ibadeti ota_i bli lilboš pg_i
 this-is the-dress that-I.lost it_i without to-wear pg_i
 ‘This is the dress that I lost without wearing.’
- c. Adjunct parasitic gap, PP pronoun licensor:
zot ha-simla_i še-šafaxti aleha_i mic bli lilboš pg_i
 this-is the-dress that-I.spilled on-it_i juice without to-wear pg_i
 ‘This is the dress that I spilled juice on without wearing.’

3.3.3 Procedure

Participants were randomly assigned to the three survey lists. As in Experiment 1, participants were instructed to rate the acceptability of each sentence on a 7-point

scale where 1 stands for ‘completely unacceptable’ and 7 stands for ‘fully acceptable’. They were instructed not to refer to acceptability in its prescriptive or written-language sense, but rather to spoken language. In order to make participants more sensitive to actual acceptability, with the least influence possible of the sentence’s complexity, they were also instructed to rate the complexity of each sentence on a 7-point scale where 1 stands for ‘not complex’ and 7 stands for ‘very complex’. The instructions included a detailed explanation about the two scales followed by examples. Participants were instructed to imagine that according to their ratings of acceptability and complexity people would be sent either to a Hebrew course or to a rhetoric course. Each sentence was presented followed by the acceptability and complexity scales. Participants completed the survey at their own pace.

3.3.4 Results

3.3.4.1 Acceptability judgments

To test whether the licensing factor had an effect on acceptability judgments I constructed a linear mixed-effects model with items and participants included as random factors and licensing as a fixed factor. Table 3.3 reports the estimated coefficients and the expected acceptability values for each licensing condition. The values presented are based on the raw acceptability judgments. The same pattern of results was observed when the model was constructed based on z-score-transformed data. All p -values were estimated using the Markov Chain Monte Carlo (MCMC) method implemented in the languageR package for R (Baayen 2007, Baayen et al. 2008, R Development Core Team 2009).

CONDITION	COEF.ESTIMATE	EXP.VALUE	STD.ERROR	t-VALUE	pMCMC
gap (Intercept)	5.34	5.34	0.24	-	-
direct object pronoun	-1.22	4.12	0.13	-9.13	0.0001
PP pronoun	-1.02	4.33	0.13	-7.63	0.0001

Table 3.3: Effect of Licensing on acceptability judgments of adjunct PGs

Parasitic gap constructions with a direct object pronoun as a licensor were rated significantly worse than their gap-licensor equivalents ($\text{Mean}_{\text{gap}} = 5.35$, $SD = 1.65$; $\text{Mean}_{\text{DO pronoun}} = 4.14$, $SD = 1.68$; $p\text{MCMC} = .0001$).

In addition, parasitic gap constructions with a PP pronoun as a licensor were rated significantly worse than their gap equivalents ($\text{Mean}_{\text{gap}} = 5.35$, $SD = 1.65$; $\text{Mean}_{\text{PP pronoun}} = 4.29$, $SD = 1.83$; $p\text{MCMC} = .0001$).

In post-hoc pairwise comparisons using Tukey correction no significant difference was found between the direct object pronoun condition and the PP pronoun condition ($Z = 1.5$, $p = .289$).

Since there is a debate in the literature with regard to the application of parametric statistical tests to judgment data (which is based on an ordinal scale), I also conducted non-parametric tests. A Friedman Rank test for related samples was conducted. A significant difference among the three licensing conditions, gap ($\text{Median}_{\text{gap}} = 6$), DO-pronoun ($\text{Median}_{\text{DO-pronoun}} = 4$) and PP-pronoun ($\text{Median}_{\text{PP-pronoun}} = 5$) was observed in both by-subject analysis ($\chi^2(2, 62) = 30.5, p < .0001$) and by-item analysis ($\chi^2(2, 9) = 10.07, p = .006$).

By-subject post-hoc pairwise comparisons using a paired Wilcoxon test with Bonferroni correction revealed a significant difference between the gap condition and the DO-pronoun condition ($Z = 4.94, p < .0001$) and between the gap condition and the PP-pronoun condition ($Z = 4.51, p < .0001$) but not between the DO-pronoun condition and the PP-pronoun condition ($Z = -0.74, p = .459$).

By-item post-hoc comparisons revealed a significant difference between the gap condition and the DO-pronoun condition ($Z = 2.67, p = .0078$), but revealed no significant difference between the gap and the PP-pronoun condition ($Z = 2.27, p = .0312$)⁷ and between the DO-pronoun and the PP-pronoun condition ($Z = -0.25, p = .94$).

To conclude, the by-subject non-parametric analysis demonstrated the same pattern of significant results as observed in the mixed-effects model analysis, while the results of the by-item analysis did not show a significant difference between the gap and the PP-pronoun conditions.⁸

The results show no evidence for PP pronouns being better in parasitic gap constructions compared to direct object pronouns. These results were observed both in a linear mixed-effects model analysis and in a non-parametric Friedman Rank test followed by by-subject post-hoc pairwise comparisons. The results suggest that both direct object pronouns and PP pronouns do not license adjunct parasitic gaps.

3.3.4.2 Complexity judgments

A certain degree of correlation was found between the acceptability ratings of all the stimuli (including fillers) and their complexity ratings (Pearrson's $r = -.22$). This correlation was significant ($t(1672) = -9.05, p < .0001$). A lower correlation was observed for the experimental items, excluding fillers (Pearson's $r = -.14, t(556) = -3.25, p < .005$). This correlation indicates that sentences that are less complex tend to be more acceptable and vice-versa, but as the correlation is not high, it seems that a relatively large portion of acceptability was not affected by complexity.

A linear mixed-effects model was constructed for the complexity judgments with items and participants included as random factors and licensing as a fixed factor. Table 3.4 reports the estimated coefficients and the expected values of complexity for the each licensing condition. The values presented are based on the raw acceptability judgments. All p -values were estimated using the Markov Chain Monte Carlo

⁷When using Bonferroni correction for multiple comparisons $\alpha = 0.05$ is divided in the number of comparisons (3). Thus, $p = 0.0312$ is not-significant as it is greater than 0.0167.

⁸Non-parametric tests are less sensitive in finding an effect. For this reason, and due to the low number of items (9), I take this to be a false negative.

(MCMC) method implemented in the languageR package for R. As demonstrated in Table 3.4, the results show almost the same pattern as observed in the acceptability judgments linear mixed-effects model, with some differences.

CONDITION	COEF.ESTIMATE	EXP.VALUE	STD.ERROR	t-VALUE	pMCMC
gap (Intercept)	2.16	2.16	0.16	-	-
direct object pronoun	0.39	2.56	0.12	3.4	0.001
PP pronoun	0.48	2.65	0.12	4.17	0.0001

Table 3.4: Effect of Licensing on complexity judgments

The complexity ratings for the gap condition were the lowest followed by the direct object condition and the PP pronoun condition.

A significant effect of licensing on complexity was observed. Parasitic gap constructions with a DO-pronoun as a licensor were significantly more complex than their gap-licensor equivalents ($\text{Mean}_{\text{gap}} = 2.16$, $SD = 1.42$; $\text{Mean}_{\text{DO-pronoun}} = 2.55$, $SD = 1.46$; $p\text{MCMC} = .001$). In addition, parasitic gap constructions with a PP-pronoun as a licensor were significantly more complex than their gap-licensor equivalents ($\text{Mean}_{\text{gap}} = 2.16$, $SD = 1.42$; $\text{Mean}_{\text{PP-pronoun}} = 2.65$, $SD = 1.46$; $p\text{MCMC} = .0001$).

Post-hoc pairwise comparisons using Tukey correction showed no significant difference between the DO-pronoun condition and the PP-pronoun condition ($Z = 0.77$, $p = .72$).

This pattern of results is to some extent parallel to the pattern observed in the acceptability judgments results; both the DO-pronoun licensing condition and the PP-pronoun licensing condition differ from the gap condition, while there is no significant difference between the DO-pronoun and the PP-pronoun conditions. Note, however, that while the acceptability results show that the PP-pronoun condition is numerically slightly more acceptable than the DO-pronoun condition, the complexity results show an opposite pattern, as the PP-pronoun condition is numerically slightly more complex than the DO-pronoun condition. This, together with the low value of the correlation between complexity and acceptability, suggest that the acceptability results presented above do not derive from complexity issues but rather from grammaticality issues.

3.3.5 Discussion

3.3.5.1 Acceptability judgments

The results do not show evidence for PP pronouns being better than direct object pronouns as licensors of adjunct parasitic gaps. Namely, PP pronouns behave more like direct object pronouns than like gaps with regard to parasitic gap licensing. This

suggests that PP pronouns, like direct object pronouns, and unlike gaps, are not compatible with movement.

Importantly, the results are inconsistent with the observation that PP pronouns allow reconstruction, assuming that reconstruction requires movement. In section 3.4 I discuss parasitic gap licensing by other obligatory pronouns, i.e., direct object pronouns which are complements of *only* or of a psych verb, and show that they too, do not seem to license parasitic gaps.

3.3.5.2 Complexity judgments

The fact that the correlation between acceptability and complexity was low suggests that the results of the acceptability judgments reflect some notion of acceptability that is independent of complexity. Namely, the pattern of the acceptability results, according to which PP pronouns behave more like direct object pronouns than like gaps with regard to parasitic gap licensing, seems to follow from grammatical factors rather than from extra-grammatical factors.

The fact that adjunct parasitic gap constructions with PP pronouns were rated as slightly more complex than adjunct parasitic gap constructions with direct object pronouns might be related to the fact that the parasitic gap is in a direct object position, like direct object pronouns and unlike PP pronouns. I do not have an explicit account for the relation between this fact and the complexity ratings.

Chocano and Putnam (2013) suggest a condition on parasitic gap licensing within a hybrid Minimalist Program and Optimality theory (MP-OT) framework, according to which there is a PF filter on parasitic gap licensing. They suggest that this PF filter is a Parallelism Requirement, which states that “the position of the parasitic gap licenser in the matrix clause relative to its selecting head and its co-arguments must mimic that of the parasitic gap in the embedded clause”. It is possible that the inability of PP pronouns to license parasitic gaps is due to a similar PF requirement, as there is indeed lack of parallelism since the parasitic gap is a direct object while the PP pronoun is a complement of a preposition. If such an account can be maintained, it would reconcile the inability of PP pronouns to license parasitic gaps with their ability to allow reconstruction.

However, a closer look into the acceptability results of Experiment 2 by items does not support this PF explanation. For one item, presented in (31) below, in which the PP pronoun was an indirect object of a verb that also takes a direct object, the PP-pronoun condition was actually *better* than the gap condition. In all other items, in which there was no additional argument of the verb beside the PP-pronoun, the PP-pronoun condition was never better than the gap condition (see appendix A for the full list of stimuli used in Experiment 2). This is unexpected if a parallelism requirement is what stands behind the inability of PP pronouns to license parasitic gaps; if the condition on parasitic gap licensing truly requires the position of the licenser to mimic the position of the parasitic gap, we would expect an example in which the licensing gap is an indirect object of a verb that also takes a direct object to be *worse* than examples in which the licenser PP pronoun is the only argument

of the verb.

- (31) a. gap licensor:
zot ha-simla_i še-ibadeti t_i [bli lilboš pg_i]
 this-is the-dress that-I.lost t_i without to-wear pg_i
 ‘This is the dress that I lost without wearing.’
- b. DO pronoun licensor:
zot ha-simla_i še-ibadeti ota_i [bli lilboš pg_i]
 this-is the-dress that-I.lost her_i without to-wear pg_i
 ‘This is the dress that I lost without wearing.’
- c. PP pronoun licensor:
zot ha-simla_i še-šafaxti aleha_i mic [bli lilboš pg_i]
 this-is the-dress that-I.spilled on-it_i juice without to-wear pg_i
 ‘This is the dress that I spilled juice on without wearing.’

I conclude that the results of Experiment 2 do not support a PF account as suggested in Chocano and Putnam (2013). Moreover, Chocano and Putnam’s (2013) account does not explain the inability of obligatory direct object pronouns to license parasitic gaps (argued for in section 3.4), as in this case the potential licensor (the obligatory pronoun) *is* located in a position which mimics the position of the parasitic gap. I turn to obligatory direct object pronouns next.

3.4 Obligatory direct object pronouns do not license adjunct parasitic gaps

In this section I argue that direct object pronouns in obligatory contexts (i.e., as experiencer objects and as complements of *only*) do not license parasitic gaps.

Obligatory direct object pronouns are observed to allow reconstruction (Sichel to appear), as showed in (11b) and (12b), repeated here as (32b) and (33b).

- (32) Reconstruction for variable binding, experiencer object:
- a. *ele ha-anašim_i še-margiz otam_i/*t_i še-ha-harca’a be-anglit*
 these the-people that-annoys them/*t_i that-the-lecture in-English
 ‘These are the people who it annoys that the lecture is in English.’
 (ex. (24b) from Sichel to appear)
- b. *[xaver ha-yaldut šelo_j]_i še-kol politikai_j xašad*
 friend the-childhood of-his_j that-every politician_j suspected
*še-ha-seret yargiz oto_i/*t_i katav mixtav la-orex*
 that-the-film will-annoy him_i/*t_i wrote letter to-the-editor
 ‘The childhood friend of his who every politician suspected that the film would annoy wrote a letter to the editor.’
 (ex. (34) from Sichel to appear)

(33) Reconstruction for variable binding, complement of *only*:

- a. *zot ha-havera_i še-zihiti rak ota_i/*t_i ba-tmuna*
 this the-friend_i that-identified.I only her_i/*t_i in-the-picture
 ‘This is the friend who I identified only her in the picture.’
 (ex. (24c) from Sichel to appear)
- b. *[ha-tmuna šel acma_j]_i še-kol yalda_j baxra rak ota_i/*t_i hudpesa*
 the-picture of herself_j that-every girl_j chose only it_i/*t_i was.printed
be-šaxor lavan
 in-black white
 ‘The picture of herself that every girl picked only it was printed in black and white.’
 (ex. (35) from Sichel to appear)

(32b) and (33b) show that when a direct object pronoun is in an environment in which a gap is ungrammatical, it allows reconstruction for variable binding. Example (32b) shows that a direct object pronoun which is the experiencer object of a psych verb allows reconstruction. Example (33b) shows that a direct object pronoun which is the complement of *only* allows reconstruction. In both environments, the gap alternative is ungrammatical, as shown in (32a) and (33a).

If reconstruction requires movement, the prediction is that these pronouns would license parasitic gaps. However, I argue that this prediction is not borne out. The results of an acceptability judgment questionnaire show that adjunct parasitic gap constructions with obligatory direct object resumptive pronouns as licensors are not better than adjunct parasitic gap constructions with no licensor at all.

3.4.1 The questionnaire

Since the constructions investigated in this section are very complex, and since it was difficult to come up with good controls for them, I preferred to get the judgments from fellow linguists, who I could ask to determine whether the obligatory direct object pronoun parasitic gap constructions are grammatical or ungrammatical in a more straightforward way.

Eight monolingual native Hebrew speakers were asked to provide their acceptability judgments for parasitic gap constructions.

For each sentence, they had to determine whether it was grammatical or ungrammatical, and to rate its acceptability on a 5-point scale.

The questionnaire involved adjunct parasitic gap constructions with obligatory direct object pronouns as the potential licensors of the parasitic gap and control parasitic gap constructions in which there was no potential licensing gap or pronoun in direct object position.

The adjunct parasitic gap constructions with obligatory direct object pronouns were of two kinds: (1) the resumptive pronoun was the experiencer object of a psych verb (2) the resumptive pronoun was a complement of *only*. The questionnaire included four items of each type. The two types are exemplified in (34) and (35) respectively.

(34) Experiencer object of a psych verb:

a. Experiencer object:

*ele ha-anašim_i še-hirgiz otam_i/*t_i še-ha-harca'a be-anglit*
 these the-people that-annoyed them that-the-lecture in-English
[bli še-hizmanu pg_i be-ofen iši].
 without that-we.invited pg_i in-manner personal

‘These are the people that it annoyed that the lecture is in English without inviting personally.’

b. Control 1:

ele ha-anašim_i še-t_i hayu ba-harca'a [bli še-hizmanu pg_i
 these the-people that-t_i were in-the-lecture without that-we.invited pg_i
be-ofen iši].
 in-manner personal

‘These are the people that were in the lecture without inviting personally.’

c. Control 2:

ele ha-anašim_i še-ha-kenes haya muclax [bli
 these the-people that-the-conference was successful without
še-hizmanu pg_i be-ofen iši].
 that-we.invited pg_i in-manner personal

‘These are the people that the conference was successful without inviting personally.’

(35) Complement of *Only*:

a. Complement of *Only*:

zot ha-yalda_i še-zihiti rak ota_i [bli še-pagašti pg_i kodem].
 this the-girl that-I.identified only her without that-I.met pg_i before
 ‘This is the girl that I identified only her without meeting before.’

b. Control:

zot ha-yalda_i še t_i šalxa li mixtav [bli še-pagašti pg_i
 this the-girl that t_i sent to-me a-letter without that-I.met pg_i
kodem].
 before

‘This is the girl sent me a letter without meeting before.’

The control sentences were of the two following kinds: (1) they involved a real gap in subject position, which should not license the parasitic gap in the adjunct as the licensing gap should not c-command the parasitic gap (see Culicover 2001) or (2) they did not involve any potential licensing position. The two types are exemplified in (34b) and (34c) respectively. The control sentences were included in the questionnaire to verify that the parasitic gaps are indeed parasitic, i.e., need a true gap to be licensed.

The control sentences were built to match the obligatory resumptive pronoun sentences in terms of lexical material, minus some modifications that were made for

the sake of grammaticality and sentence plausibility. Note that the complement-of-*only* examples were only provided with one kind of control, due to issues of sentence plausibility. See appendix A for the full list of items.

3.4.2 Results

Table 3.5 presents the mean 5-point scale ratings and the mean percent of speakers that chose ‘grammatical’ for each kind of parasitic gap construction.

	obligatory RP as licensor	no direct object RP/gap (both b and c controls demonstrated in (34) above)	gap in subject position (only examples like (34b) above)	no potential licensing position (only examples like (34c) above)
mean rating (1-5 scale)	2.38	2.31	2.75	2.02
mean percent of speakers that chose ‘grammati- cal’	35	32	43	25

Table 3.5: Judgments of parasitic gap constructions

As Table 3.5 shows, the parasitic gap constructions with an obligatory pronoun (mean rating = 2.38, mean percent of speakers that chose ‘grammatical’ = 35) were only slightly better than the constructions with no licensing direct object gap or pronoun (mean rating = 2.31, mean percent of speakers that chose ‘grammatical’ = 32).

Moreover, the absolute value of the mean rating for parasitic gap constructions with obligatory direct object pronouns is relatively low (mean rating = 2.38 on a 5-point scale).

In addition, parasitic gap constructions with no direct object gap or resumptive pronoun that could in principle license the parasitic gap are bad, strongly supporting that claim that adjunct parasitic gaps are truly parasitic in Hebrew, and thus they must be licensed.

Interestingly, there seems to be a difference between parasitic gap constructions with a potentially licensing gap in the subject position (mean rating = 2.75, mean percent of speakers that chose ‘grammatical’ = 43) and parasitic gap constructions with no potentially licensing position (mean rating = 2.02, mean percent of speakers

that chose ‘grammatical’ = 25). This result is incompatible with the observation that the licensing gap (the ‘true’ gap) cannot c-command the parasitic gap (Engdahl 1983, see Culicover 2001 for a review). I will not discuss this issue any further here.⁹

The results suggest that obligatory direct object resumptive pronouns do not license parasitic gaps. This strongly suggests that these pronouns are not compatible with movement.

Assuming that reconstruction requires movement, this result is inconsistent with Sichel’s (to appear) claim that direct object pronouns as complements of *only* and as the experiencer objects of psych verbs allow reconstruction.

3.5 Interim conclusion

I have shown that Hebrew resumptive pronouns do not license parasitic gaps. Assuming that movement is a sufficient condition for parasitic gap licensing, this strongly suggests that Hebrew resumptive pronouns are not compatible with movement.

This argument is stronger than previous arguments for the incompatibility of resumptive pronouns with movement based on reconstruction facts; as I mentioned in section 1.1, Doron (1982) and Sichel (to appear) show that optional resumptive pronouns in Hebrew do not allow reconstruction. The current argument from parasitic gap licensing is stronger because reconstruction phenomena may require more than movement *per se*. Namely, it might be the case that movement of a null operator does not allow reconstruction but movement of the relative clause head does (as suggested in the Raising structure, e.g., Bhatt 2002). If resumptive pronouns are only compatible with null-operator movement, the prediction is that they would not allow reconstruction. Unlike reconstruction, parasitic gap licensing is assumed to require movement *per se*, since the crucial point is that the licensing position should be related to its antecedent by movement. Hence, if resumptive pronouns were compatible with a movement derivation we would expect them to license parasitic gaps, which they do not. Therefore, we do not only lose the argument from parasitic gaps for the compatibility of resumptive pronouns with movement, we actually have an argument against their compatibility with movement.

I now turn to a discussion of how the apparent contradiction between the ability of obligatory resumptive pronouns to allow reconstruction and their inability to license parasitic gaps may be resolved.

⁹Note that the questionnaire did not include comparison of the examples with the c-commanding subject gap to examples with a non-c-commanding gap. When the potentially licensing gap does not c-command the parasitic gap, the construction is acceptable, as demonstrated in (1) below.

1. ele ha-anašim še-ra’inu t_i baharca’a [bli še-hizmanu pg_j be-ofen iši].
these-the-people that-we.saw t_i in-the-lecture without that-we-invited pg_j in-manner personal
‘These are the people that we saw in the lecture without inviting.’

4 Resolving the puzzle

4.1 The answer is not a non-movement parasitic gap theory

Recall that we had two alternatives for resolving the contradiction between resumptive pronouns' ability to allow reconstruction and their inability to license parasitic gaps: the *non-movement PG-licensing* alternative and the *non-movement reconstruction* alternative.

As I explained in chapter 2, the *non-movement PG-licensing* alternative requires that we posit a different parasitic gap theory in which the crucial factor that explains why gaps license parasitic gaps while pronouns do not is not movement, but rather some other difference between gaps and pronouns. As I have argued, building the account around a phonetic difference does not seem promising under the current standard model of grammar, and building it around a semantic difference between gaps and pronouns does not seem possible if we want to assume that both are compatible with movement, since if gaps and pronouns are both compatible with movement, they are both variables (or at least part of a structure that involves a variable, if we adopt the stranding analysis of resumption). Also, assuming that pronouns are compatible with a kind of movement that is sufficient for reconstruction but not for parasitic gap licensing seems *ad hoc*.

Therefore, I argue for the *non-movement reconstruction* alternative. I argue that PP pronouns and obligatory direct object pronouns are not compatible with movement but do allow reconstruction because these reconstruction effects can be obtained without movement. This is possible under the semantic approach to reconstruction (Cresti 1995, Rullmann 1995, Lechner 1998, Sharvit 1999*a*; 1999*b*, Sternefeld 2000, among others), and more generally, by using semantic mechanisms, rather than syntactic mechanisms, to obtain the required interpretations. To account for the asymmetry between optional and obligatory pronouns with regard to reconstructed interpretations I suggest a competition mechanism between LF-representations, according to which syntactic reconstruction, when available, is the preferred way to derive the reconstructed interpretations. When syntactic reconstruction is unavailable, semantic reconstruction can apply, and derive the intended interpretations.

The remainder of this chapter is structured as follows. In section 4.2 I briefly present the semantic approach to reconstruction and discuss its implications with regard to resumptive pronouns. In section 4.3, I assume that reconstructed interpretations can be obtained without movement, using semantic tools, and concentrate on the competition mechanism that derives the contrast between optional and oblig-

atory pronouns in allowing these interpretations. I argue that optional pronouns do not allow semantic reconstruction because there exists a gap-LF with an indistinguishable interpretation, which wins the competition. Obligatory pronouns do allow semantic reconstruction because there is no gap-LF with an indistinguishable interpretation that can compete with them. I discuss possible formulations of the competition mechanism and suggest that the competition is formulated as a condition on the application of semantic reconstruction, according to which it can apply only in the absence of syntactic reconstruction. Then, in section 4.4, I investigate whether the reconstruction effects observed with pronouns are cases of syntactic reconstruction, using diagnostics recently discussed in Heycock (2012), and show that many of these reconstruction effects do not pass these diagnostics. I show that the same reconstruction effects do not pass these diagnostics in gap-relatives. Based on these facts, I suggest that the competition between syntactic and semantic reconstruction is broader; when syntactic reconstruction results in a violation of another syntactic condition (e.g., Condition C), semantic reconstruction can apply, and if it can derive the intended meaning, this meaning would be observed without a violation of the relevant syntactic condition.

In chapter 5, I discuss each of the reconstruction effects observed with pronouns and review possible accounts for them suggested in the literature, which do not rely on syntactic reconstruction and movement. Chapter 5 further supports my main claim: that resumptive pronouns are not compatible with movement, by showing that semantic tools can be used to account for reconstruction effects. Despite the diversity of the suggested accounts for reconstruction, they all share the property of being semantic in nature: they do not rely on a syntactic mechanism, but rather use semantic tools to derive the intended meanings. The diversity of the semantic mechanisms used to obtain the reconstructed meanings also supports my claim that the competition is between a syntactic, ‘straightforward’, way to obtain certain meanings, and a semantic, ‘less straightforward’ way to obtain them. This raises important questions with regard to the relationship between the syntax and the semantics and the architecture of grammar. Answering these questions requires further investigation which I leave for future research.

4.2 Semantic reconstruction

In this section I briefly present the semantic approach to reconstruction and its implications with regard to resumptive pronouns. Under the semantic approach to reconstruction, there are reconstruction effects that do not require a low copy of the moving phrase. Rather, these accounts attribute some reconstruction effects to the ability of the trace to bear a higher semantic type, such as $\langle\langle e, t \rangle, t \rangle$ (e.g., Lechner’s 1998 account for scope reconstruction), $\langle s, \langle et, t \rangle \rangle$ (e.g., von Stechow & Heim’s 2011 account for *de dicto* readings of raised subjects), or $\langle e, e \rangle$ (e.g., Sharvit’s 1999*a*; 1999*b* account for functional readings). In chapter 5 I show that not all reconstruction effects can be explained relying on higher type variables, and that some of the effects

might be explained by other semantic (i.e., non-syntactic) mechanisms, which do not assume movement. Thus, I use the term ‘semantic reconstruction’ very broadly, to refer to any non-syntactic mechanism that derives the intended ‘reconstructed’ meaning.

With regard to pronouns, including resumptive pronouns, the question of whether they should allow semantic reconstruction amounts to whether resumptive pronouns may or may not bear higher semantic types, or allow the required semantic mechanisms to apply. Semantic reconstruction does not assume that some element is located at some level of representation in a different position than its surface position, but rather assumes that the interpretative effect is the result of a different semantic composition. Thus, in principle, semantic reconstruction does not necessarily require movement. As long as pronouns allow the semantic mechanisms that derive the reconstructed meaning to apply, they should allow the same reconstruction effects that gaps allow. Therefore, it is in principle possible for pronouns that are not compatible with movement to nevertheless allow reconstruction effects.¹

Some issues arise from this possibility that should be discussed.

First, some reconstruction effects that were observed to exist with pronouns (Sichel to appear) are probably not easy to account for using semantic reconstruction. While syntactic reconstruction easily accounts for reconstruction effects by simply ‘undoing’ movement and allowing a phrase to be interpreted in its original position, accounting for some of the reconstruction effects observed with pronouns using semantic reconstruction is more complex and requires more assumptions.² For example, reconstruction for anaphoric binding is easily accounted for with syntactic reconstruction, according to which the relative clause head is interpreted in the low position at LF and thus an anaphor located inside it can be bound from within the relative clause; it is less obvious how it would be accounted for using semantic reconstruction.

¹Another possible account for reconstruction without movement is the NP-ellipsis analysis of resumption. Guillot and Malkawi (2006) and Guillot (2008) suggest such an account for reconstruction with resumptives, which is based on Elbourne’s (2001) analysis of pronouns as determiners with NP-deleted complements. This account explains reconstruction effects in a very similar way to the syntactic, Copy Theory account, as it assumes that there is a copy of the antecedent in the thematic position. If this account is adopted, all reconstruction effects that can be explained by the Copy Theory of movement can be explained for resumptive pronouns quite straightforwardly, since this analysis can be viewed as the non-movement equivalent for the stranding analysis of resumption. Since obtaining the reconstructed interpretations under this account is obvious, the discussion is less interesting, and I will not discuss it any further here. Note, in addition, that according to this account, the availability of reconstruction is related to the internal structure of pronouns. Thus, to account for the asymmetry between optional and obligatory pronouns one would have to argue that they differ in their internal structure. This might be a possible claim with regard to direct object pronoun vs. PP pronouns, but it is difficult to see how one could argue that optional direct object pronouns, which block reconstruction, differ in their internal structure from obligatory direct object pronouns, which allow reconstruction. Another non-movement internal-structure analysis of resumption is Rouveret (2008). See Rouveret (2011) for a discussion of internal-structure analyses of resumption and interpretive asymmetries related to optionality.

²But see Jacobson (2004) for claims against the assumption that obtaining reconstructed interpretations using syntactic reconstruction is easy.

tion (but see Jacobson 1994; 2004, Sternefeld 2000, and Cecchetto 2005 for semantic accounts of binding, which do not rely on c-command). In the current chapter I assume that there are non-syntactic ways to obtain the reconstructed interpretations without discussing *how* these interpretations are obtained. The semantic mechanisms that arguably derive these interpretations are thoroughly discussed in chapter 5.

Second, if PP pronouns and obligatory direct object pronouns allow reconstruction effects because these effects are semantic, and semantic reconstruction is assumed to derive from the occurrence of a higher semantic type (or the application of semantic mechanisms, for that matter), it follows that PP pronouns and obligatory direct object pronouns can bear this higher type (or, more generally, allow the semantic mechanisms to apply). However, it is not obvious why there should be a difference between PP pronouns and obligatory direct object pronouns on the one hand and optional direct object pronouns on the other hand; if semantic reconstruction is available for PP pronouns and obligatory direct object pronouns, why shouldn't it be available for optional direct object pronouns? I suggest an answer to this question in section 4.3. The account that I suggest does not assume that the asymmetry between optional and obligatory pronouns derives from a difference between them with regard to their compatibility with a movement structure (as suggested in Sichel to appear), but rather assumes that reconstructed meanings can in principle be obtained either with semantic reconstruction or with syntactic reconstruction, but that syntactic reconstruction is preferred, when available. Since obligatory resumptives do not alternate with gaps, they allow semantic reconstruction to apply, in the absence of an alternative syntactic reconstruction solution which requires a movement structure.

4.3 The competition account

In this section I suggest a competition account to explain the asymmetry between optional and obligatory pronouns with regard to reconstruction, which does not assume that these two kinds of pronouns differ with regard to their compatibility with movement. I do not discuss how those reconstruction effects are obtained without movement, but rather simply assume that there is a non-syntactic, non-movement way to obtain them, which is in principle available for both optional and obligatory pronouns. I concentrate on accounting for the asymmetry, arguing for competition between LF-representations that yield the reconstructed meanings. Before I proceed to this new account, I review a previous account which is based on competition, but which does assume that some resumptive pronouns are compatible with movement.

4.3.1 The syntactic competition account (Sichel to appear)

Sichel (to appear) offers an account in terms of syntactic reconstruction for the asymmetry between obligatory resumptive pronouns and optional resumptive pronouns with regard to reconstruction effects. Her account is based on the three following

assumptions.³

The first assumption is that relative clauses are **structurally ambiguous**. The assumption is that in order to get a low interpretation of the relative clause head, it has to be interpreted in a low position at LF. Thus, the traditional relative operator structure, in which the relative clause head originates outside of the relative clause CP (Chomsky 1977), is not compatible with reconstruction. Sichel (to appear) assumes that the grammar involves three different relative clause structures.

In the *Raising structure* (e.g., Bhatt 2002) the relative clause head moves from the relative clause internal position, leaving a trace behind. In this structure the relative clause head must be interpreted inside the relative clause.

In the *Matching structure* (e.g., Sauerland 2003) there is an internal head that originates inside the relative clause CP and an external head that originates outside of the relative clause CP. The internal head deletes under identity with the external head and the external head must be interpreted.

In the *Head external no-movement structure*, the relative clause head originates outside of the relative clause CP, and the relativized position is realized with a pronoun. The pronoun is bound by a relative operator, externally merged into Spec-CP (e.g., McCloskey 2002).

Both the Matching and the Head-external structures are needed because relative clauses were observed to escape Condition C violations when the relative clause head includes an R-expression and the relativized position, realized with a trace, is in the c-command domain of a pronoun coindexed with that R-expression. This suggests that unlike *wh*-questions, in which a similar configuration results in a Condition C violation, relative clauses are compatible with a structure in which the external relative clause head, rather than an internal copy of the relative clause head, can be interpreted. The Matching structure is thus needed to account for the lack of Condition C violations in relative clauses, and it is taken to be the movement-head-external structure of relative clauses.⁴ Since resumptive pronouns show insensitivity to island-violations, a non-movement, head-external structure is also needed.

The second assumption is that the reconstruction phenomena observed with obligatory resumptive pronouns are due to **syntactic reconstruction**. i.e., a low interpretation of the relative clause head at LF. In particular, these reconstruction phenomena require the Raising structure.

The third assumption is that the Raising structure is subject to an **Economy principle** according to which it can be realized with a resumptive pronoun only when

³For a discussion of different theories of competition between gaps and pronouns which assume or do not assume that resumptive pronouns are compatible with movement see Salzmann (2009).

⁴In principle, the traditional, null-operator movement structure of relative clauses (Chomsky 1977) is also compatible with the lack of Condition C effects in relative clauses, as this structure does not involve any internal representation of the relative clause head. However, it has been argued that the null-operator movement structure is not a part of the grammar (Safir 1999, see also Bhatt 2002). Sichel (to appear) follows Safir (1999) among others, and assumes that the only movement structure in which the relative clause head can be interpreted externally is the Matching structure.

there is no gap alternative. Hence the relation between optionality and reconstruction. Since only obligatory pronouns can possess a Raising structure, which is the structure that allows syntactic reconstruction, only they show reconstruction effects.⁵

In principle, it can be argued that there is competition between gaps and pronouns within the semantic approach to reconstruction, i.e., without assuming that resumptive pronouns are compatible with movement. For example, one could argue that pronouns can bear a higher semantic type only when there is no gap alternative. I suggest that there is competition between LF-representations that produce the same meaning (i.e., the same truth conditions), and that an LF that produces the relevant meaning using a gap wins over an LF that produces that meaning using a pronoun. I assume that the competition is limited to ‘special’ interpretations, i.e., reconstructed interpretations, because resumptive pronouns in Hebrew and in other languages that have grammatical resumptives do allow non-reconstructed interpretations, even when they alternate with gaps. With regard to languages like English, which do not have grammatical resumptives, it could in principle be argued that the range of the competition is wider such that pronouns cannot even function as type-*e* variables in A’-dependencies. Alternatively, one could argue that the difference between languages like Hebrew and languages like English has nothing to do with the range of competition, but rather simply has to do with the fact that languages like English do not have a resumption mechanism in their grammars. I leave this decision for future research.

How the competition of LF-representations works is not an easy question to answer. I discuss a possible competition mechanism below, suggesting answers for the following questions:

1. What are the ‘candidates’ that compete?
2. What makes those candidates suitable for competition?
3. Where does the competition take place? Does it take place in the grammar or is it rather an issue of processing or production?

Under the competition account that I offer, PP pronouns and obligatory direct object pronouns, which occur in environments in which there is no gap alternative, would allow semantic reconstruction effects. Direct object pronouns, on the other hand, which occur in environments in which there is a gap alternative, would not allow

⁵The reconstruction effects observed with Hebrew obligatory resumptive pronouns are argued to be consistent with the Raising structure (Bhatt 2002, Sichel to appear). The Matching structure (Sauerland 2003, Hulsey & Sauerland 2006) might also be compatible with (at least some) syntactic reconstruction effects of the relative clause head, as it involves an internal head. See Bhatt (2002), Hulsey & Sauerland (2006) for discussion. The question of whether reconstruction effects are compatible with the Matching structure does not bear on the current discussion. What is crucial is that a relative clause structure which includes an internal representation of the relative clause head allows this head to be interpreted internally. If optional pronouns cannot inhabit this internal-head structure, it follows that they would not allow (syntactic) reconstruction.

semantic reconstruction effects. If the only kind of reconstruction that pronouns allow is semantic, as they are not compatible with movement, it follows that optional pronouns would not allow any kind of reconstruction.

4.3.2 The semantic competition account

The observation that we need to account for is that there are interpretations that are allowed with pronouns only when they cannot be obtained with gaps. I suggest that this observation can be explained within an account that is based on competition, but which does not assume that pronouns that allow reconstruction have to be compatible with movement. The account will be stated in terms of competition between LF-representations.⁶ I describe the outlines of how this competition mechanism might look like.

I start by suggesting that the availability of reconstructed interpretations with resumptive pronouns is governed by a condition on assigning a pronoun a higher semantic type. I then demonstrate how this condition derive the asymmetry between optional and obligatory pronouns. Then, I discuss the questions that this condition raises with regard to the LFs that compete, and suggest that the condition might be stated as a condition on the application of semantic reconstruction, according to which it can apply only in the absence of a (similar enough) LF which is derived by syntactic reconstruction. Following that, I discuss the advantages and disadvantages of each of these two conditions, and argue that the second condition, i.e., the one that is stated in terms of competition between syntactic reconstruction and semantic reconstruction, is more plausible, despite the fact that it forces a comparison of less close LFs. This conclusion is further supported by the evidence discussed in section 4.4, which shows that there is no interaction between gap-relatives with reconstructed interpretations and Condition C, Condition A, and Extraposition, which are phenomena that were observed to interact with syntactic reconstruction. This suggests that semantic reconstruction is also available when syntactic reconstruction clashes with other syntactic conditions and thus supports the formulation of the competition in terms of semantic reconstruction vs. syntactic reconstruction rather than its formulation in terms of a condition on the interpretation of pronouns. The formulation of the competition in terms of syntactic vs. semantic reconstruction is also supported by the discussion in chapter 5, where I show that some of the reconstruction effects observed with pronouns are probably not accounted for by higher-semantic types, but rather by other semantic mechanisms. I also discuss in the current section the

⁶The competition cannot be between identical numerations if we assume that pronouns are incompatible with movement. Once pronouns are not the spell-out of traces, gap-relatives and resumed relatives are derived from different numerations (i.e., pronouns are lexical items). Thus, if the competition is between identical numerations, the prediction is that there would be no interpretations that would only be available with gaps, because the competition mechanism would not compare gap-relatives to resumed-relatives, as they are not derived from the same numeration. Clearly, this prediction is not borne out as there are interpretations, i.e., reconstructed interpretations, which are available with gaps but not with pronouns (see also Salzmann 2009).

possibility that the competition applies extra-grammatically. Finally, I discuss the fact that there is no reconstruction into islands in resumed relatives in Hebrew and how this fact might be reconciled with the current competition account.

Basically, the competition account will state that when some ‘special’ interpretation can be obtained with a gap, it cannot be obtained with a pronoun. If we assume that the reconstruction effects observed with resumptive pronouns are obtained by assigning the pronoun a higher semantic type, we can start by stating the following condition.

(36) **Condition on pronoun interpretation:**

A pronoun cannot bear a semantic type higher than type-*e* if replacing the pronoun with a gap yields an indistinguishable interpretation.

(36) is a condition on assigning semantic types to pronouns. Note that this condition refers to semantic types higher than type-*e*. I assume that a pronoun can always bear the semantic type of an individual, i.e., *e*, for two reasons, a theoretical one and an empirical one.

Theoretically, it would be weird to prevent a pronoun from bearing its default semantic type. As pronouns usually refer to individuals or function as individual variables, type-*e* is the default semantic type for them.

Empirically, this condition cannot refer to type-*e* pronouns, since gaps and pronouns alternate in direct object and embedded subject and object positions in Hebrew when the interpretation does not require reconstruction. That is, only semantic types higher than type-*e* should be subject to this condition because only interpretations that require reconstruction are not observed with optional pronouns.

I demonstrate the competition for the case of reconstruction for variable binding, based on semantic accounts developed in Jacobson (1994), Sharvit (1999*a*; 1999*b*), and Cecchetto (2005). However, I do not adopt any of these accounts exactly as it is, but rather suggest an account in the spirit of these accounts. I also do not present a full semantic composition for the variable binding example, but rather use it to demonstrate an outline of how the competition might work, which would suffice for the purpose of the exposition. I later discuss the details of how the competition is carried out, and in chapter 5 I discuss semantic accounts for variable-binding reconstruction in more detail. Consider (37).⁷

⁷I use a relative clause which is embedded in an identity sentence because it has been argued that there is a reconstruction contrast between identity and no-identity (predicative) sentences (Geach 1964, Jacobson 1994, Cecchetto 2005), according to which non-identity sentences do not allow a quantifier to bind a pronoun outside of its syntactic scope while identity sentences do allow such non-c-command quantifier binding. According to Cecchetto (2005), (1) is grammatical while (2) is ungrammatical. See further discussion in section 5.1. 5.

1. The one accident of his_i that everyone_i remembers is the one that affected him first.
2. *The one accident of his_i that everyone_i remembers affected him first.

- (37) a. * *ha-te'una šeloj še-kol exadj zoxer ota_i hi zo*
 the-accident of-his that-every one remembers it is the-one
še-karta loj biglal xoser rikuz.
 that-happened to-him because lack concentration
 ‘The one accident of his that everyone remembers is the one that happened to him because he wasn’t focused.’
 (adapted from ex. (29a) in Cecchetto 2005)
- b. *ha-te'una šeloj še-kol exadj mityaser biglala_i hi zo*
 the-accident of-his that-every one suffers because-of-it is the-one
še-karta loj biglal xoser rikuz.
 that-happened to-him because lack concentration
 ‘The one accident of his that everyone suffers because of it is the one that happened to him because he wasn’t focused.’

In (37a), the relativized position is realized with a direct object pronoun. Cecchetto (2005) argues that the functional reading⁸ in (37) can be obtained as functional readings of *wh*-questions are obtained, through ‘indirect binding’ (Jacobson 1994, Sharvit 1999a), namely, without syntactic reconstruction, but rather through the use of a functional trace.⁹ However, since the same reading can be obtained with syntactic reconstruction if we replace the resumptive pronoun with a gap, the derivation with the resumptive pronoun, which requires assigning the pronoun a functional semantic type, is ruled out.

In (37b), on the other hand, the relativized position is a complement of a preposition, and must be realized with a resumptive pronoun. Since we cannot replace the pronoun with a gap in this case, there is no competition between the gap-derivation and the resumed derivation, and the reconstructed interpretation (the functional interpretation) can be obtained with the pronoun via semantic reconstruction, i.e., by assigning the resumptive pronoun a higher semantic type: a functional type. I further discuss the semantic account for the functional reading in section 5.1. For now, I concentrate on the way the competition is carried out.

Two questions arise with regard to the competition procedure. The first question is how the equivalent gap-LF is constructed. Since gaps are compatible with a movement derivation, the equivalent LF can in principle be derived using syntactic reconstruction, namely, interpreting the lower copy of the relative clause head at LF, resulting in binding of the pronoun located inside it by the quantifier ‘everyone’.

⁸The functional reading is a reading in which the relative clause (e.g., ‘accident of his that everyone remembers’) denotes a set of functions from individuals to individuals rather than a set of individuals. In this reading, every person has a different accident that happened to that person which he remembers. Contrastingly, in the individual reading, there is only one accident that happened to some individual and everyone remembers this individual’s accident.

⁹Cecchetto (2005) takes the asymmetry between identity and predicative sentences as an argument against syntactic reconstruction as a possible account for variable binding without c-command. However, I do not assume this, but merely assume that bound variable readings without c-command *can* be obtained semantically, without syntactic reconstruction.

Therefore, the resumed LF where the pronoun bears a higher semantic type can be compared with an LF which does not involve a higher semantic type for the gap, but rather involves interpretation of the relative clause head in a low position. Thus, the two LFs compared can either be two LFs with a higher-type variable (one resulting from the resumed relative clause and one from the gap relative clause) or one LF with a higher-type variable (resulting from the resumed relative clause) and one LF with a low copy of the relative clause head (resulting from the gap relative clause).

The second question is related to the first, and has to do with the option in which the gap-LF is constructed using syntactic reconstruction. This option raises the question of what stands behind the condition suggested in (36). If the equivalent gap-LF is constructed with syntactic reconstruction, it might be the case that what stands behind (36) is a preference for syntactic reconstruction over semantic reconstruction. Assuming that the reconstructed gap-LF is the result of a movement structure in which the relative clause head originates in the relativized position and is interpreted there, the fact that a pronoun does not allow reconstruction can be viewed as a preference of the LF that is derived by syntactic reconstruction (which can only be obtained in a movement-compatible gap-relative) over the LF that is derived by semantic reconstruction (which is the only way to obtain a reconstructed interpretation in resumed relatives, which are not compatible with movement).

The competition is then carried out as follows. The grammar ‘knows’ that the intended meaning, which is a reconstructed one, can only be obtained with semantic reconstruction, as the resumed relative is incompatible with movement. However, in order for the semantic mechanism (e.g., assigning the pronoun a higher semantic type) to apply, the grammar has to verify that the same interpretation cannot be obtained with syntactic reconstruction, i.e., with a gap-relative in which the relative clause head is interpreted inside the relative clause. When the resumptive pronoun in the resumed relative is optional, such a syntactic reconstruction LF exists, and thus semantic reconstruction cannot apply to the resumed relative to derive the intended meaning. Thus, we do not see reconstruction effects with optional resumptives. Contrastingly, when the resumptive pronoun in the resumed relative is an obligatory pronoun, the syntactic reconstruction LF does not exist (as there is no gap alternative), and semantic reconstruction can apply to the resumed relative to derive the intended meaning.

The immediate question at this point is why the syntactic reconstruction solution should be preferred over the semantic reconstruction solution. A possible answer is that syntactic reconstruction is more ‘economic’ than semantic reconstruction. Thus, if syntactic reconstruction can apply (and this can happen only with a gap) semantic reconstruction cannot apply. Since pronouns are not compatible with movement, the only reconstruction they allow is semantic. As gaps are compatible with movement, they allow syntactic reconstruction. Therefore, if the pronoun can be replaced with a gap, semantic reconstruction cannot apply.

Why is syntactic reconstruction more ‘economic’ than semantic reconstruction? The answer to this question might be that syntactic reconstruction, unlike semantic reconstruction, ‘comes for free’; while semantic reconstruction requires type-shifting

(or the application of other semantic mechanisms), syntactic reconstruction, under the Copy Theory of movement (Chomsky 1993), only requires interpreting the low copy of the relative clause head instead of its high copy. Since one of the copies must be deleted at LF anyway, it is not more ‘expensive’ to delete the higher copy than to delete the lower one.¹⁰

Thus, if we assume that the LF of the gap-relative compared to the resumed relative is constructed with syntactic reconstruction, (36) might be reduced to (38).

(38) **Condition on semantic reconstruction:**

Semantic reconstruction cannot apply if an indistinguishable interpretation can be obtained with syntactic reconstruction.

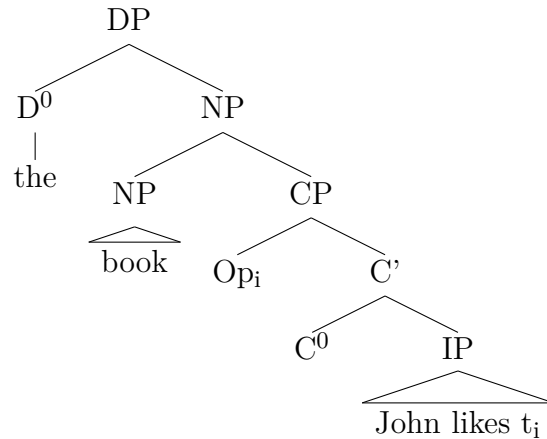
I will soon further discuss the question of what stands behind the preference for a gap-relative to get the reconstructed meaning. But before that, note that (36) is actually inadequate. Replacing the resumptive pronoun with a gap is not enough. If we assume that pronouns are not compatible with movement, the relative clause structure in which the pronoun occurs must be a no-movement structure. Gaps, on the other hand, occur only in movement structures. Thus, replacing the pronoun with a gap actually means replacing the no-movement structure with a movement structure. This means that the competition has to be between non-identical LFs, i.e., between two LFs that are not the result of the same syntactic structure.

A possible way to solve this problem is to assume that both gap- and resumed relatives are derived with a null operator, and not by movement of the relative clause head (i.e., the gap-relative does not possess the Raising or the Matching structure). In this case, the two LFs are almost identical, apart from the fact that the gap-LF contains a gap related to the relative operator by a movement chain, while the pronoun is related to the relative operator by binding, and the fact that the gap-LF involves intermediate traces of the null-operator.¹¹ The two relative clause structures are presented in (39) and (40) below (for simplification, the structures do not include the vP level). Note that the resumed relative structure in (40) is predicted not to allow parasitic gap licensing; if the relative operator (Op) is externally Merged into the structure, it follows that it is not related to the relativized position by movement, and thus parasitic gaps are predicted not to be licensed in a relative clause which possesses this structure.

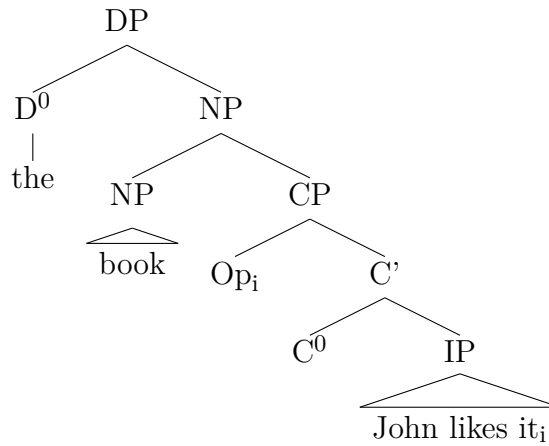
¹⁰See Cecchetto (2005) for a discussion of why syntactic reconstruction should in principle be preferred. See Jacobson (2004) for claims against the assumed simplicity of syntactic reconstruction.

¹¹For the current discussion it should be assumed that there are intermediate traces, as it was argued that the intermediate trace in Spec-vP is what licenses the parasitic gap (Nissenbaum 2000, see discussion in section 1.2 of the current thesis).

(39) The null-operator head-external structure:



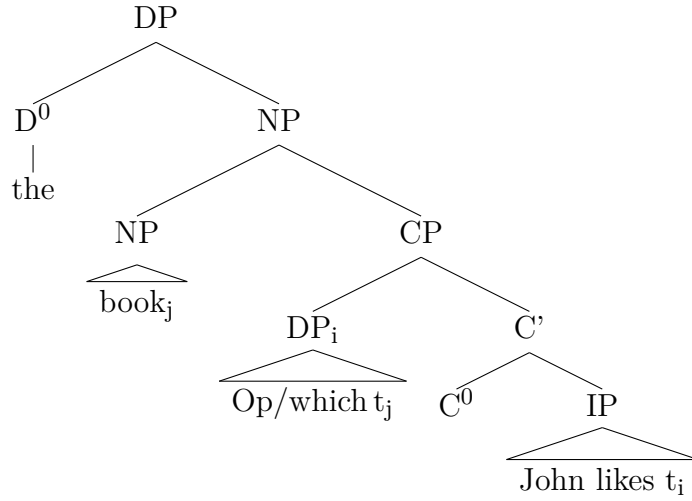
(40) The no-movement head-external structure:



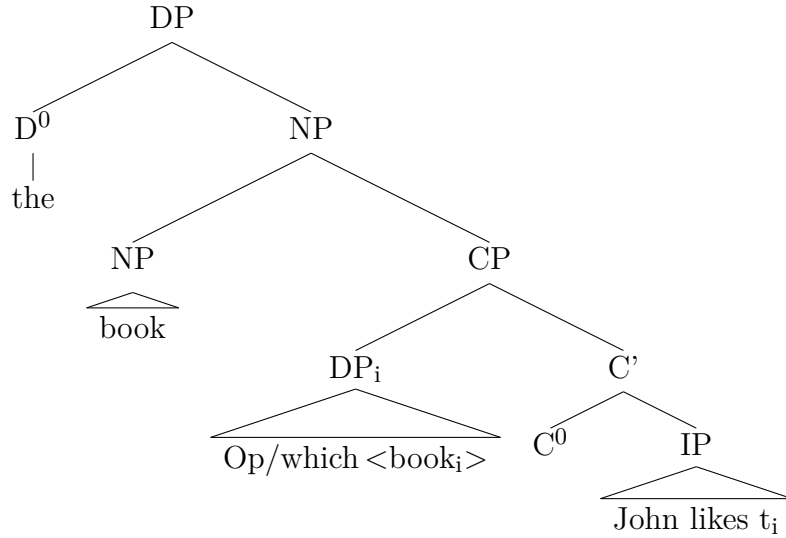
Note however, that if we assume that gap relatives are derived by movement of a relative operator, without movement of the relative clause head, it is not obvious anymore that reconstruction effects are syntactic, as there is no low copy of the relative clause head. In that case, we would have to preserve (36) and say that the gap-LF involves a higher semantic type for the gap.

Therefore, if we would like to argue that the competition is between an LF which is the result of semantic reconstruction and an LF which is the result of syntactic reconstruction, we would have to assume that the gap-relative clause involves an internal representation of the relative clause head. The two suggested relative clause structures that involve an internal copy of the relative clause head are presented in (41) and (42) below.

(41) The Raising structure (Bhatt 2002/Sauerland 2003):



(42) The Matching structure (Bhatt 2002/Sauerland 2003):



To define the competition mechanism that derives the asymmetry between optional and obligatory pronouns more precisely, and to better understand the advantages and disadvantages of each of (36) and (38), I now discuss in more detail the possible LFs that might compete with the resumed-LF.

I assume, as a starting point, that the LF compared to the resumed relative's LF can be any relative clause structure. Namely, the resumed-LF which is a no-movement head-external relative clause can be compared to any of the following structures: the Raising structure, the Matching structure or the null-operator head-external structure. I now discuss each of these relative clause structures and the possible LFs that it might yield. I then state which LFs would compete in each formulation of the competition, suggested in (36) and (38), and the advantages and disadvantages of each formulation.

The Raising structure, presented in (41), involves a low copy of the relative clause head and thus allows for reconstruction effects to be easily accounted for under syntactic reconstruction.

The Matching structure, presented in (42), is more problematic, since the low copy is a copy of an internal head that is deleted under identity with the external relative clause head, rather than a copy of the relative clause head itself, but some of the reconstruction effects observed in relative clauses were argued to be compatible with this structure as well (see Bhatt 2002), so it can in principle yield an LF in which the reconstruction effects are accounted for by syntactic reconstruction.

Finally, the null-operator structure, presented in (39), is arguably incompatible with syntactic reconstruction since the relative clause head is generated externally, and there is no copy of it in the relativized position. Thus, if this is the gap-LF which the resumed LF is compared to, (36) cannot be reduced to (38), as this relative clause structure only allows semantic reconstruction, resulting from assigning the gap a higher semantic type, and not from LF-interpretation of a low copy.

Given these relative clause structures for the gap-relative, we can in principle assume that the competition on the reconstructed interpretation is between the resumed-LF (1) and either one of the LFs in (2)-(6).¹²

1. An LF of a no-movement head-external RC, in which a pronoun is a variable of type higher than *e*.
2. An LF of a movement head-external RC, in which a gap is a variable of type higher than *e*.
3. An LF of a Raising RC, in which a gap is a variable of type higher than *e*.
4. An LF of a Raising RC, in which the relative clause head's low copy is interpreted.
5. An LF of a Matching RC, in which a gap is a variable of type higher than *e*.
6. An LF of a Matching RC, in which the internal head's low copy is interpreted.

As I explained before, there is only one possible LF for a resumed relative, assuming that resumptive pronouns are incompatible with movement, which is LF (1). To derive the inability of optional pronouns and the ability of obligatory pronouns to allow reconstruction effects, we can argue that (1) either competes with (2), (3) or (5), in which case the reconstructed interpretations are derived using semantic reconstruction and the competition condition is (36), or that (1) competes with (4) or (6), and then the competition is between an LF which involves semantic reconstruction (i.e., (1)), and an LF that involves syntactic reconstruction (i.e., (4) or (6)), and

¹²I will not discuss which interpretations can or cannot be the result of a Matching structure. If it turns out that the Matching structure does not allow some reconstruction interpretations to be derived syntactically, (6) would not be a candidate in the competition.

the competition condition is (38). Each of these two options of competition has its advantages and disadvantages.

The first option, namely, that the competition is between two LFs that involve a higher type variable, might be favored because it allows us to compare almost identical LFs, if we compare (1) to (2). The gap-relative and the resumed relative can be assumed to possess almost identical LFs, since both involve a variable bound by an operator. These LFs are demonstrated in (43) and (44) below (see also Salzmann 2009). The semantic type presented is only for the demonstration and can be any other high semantic type that would derive the intended meaning. Since under this option we are assuming that the gap-LF, like the resumed-LF, involves a higher type variable (and not a low copy), we can give up the competition between (1) and (3) or (1) and (5), since these LFs are much less close to (1), as they involve movement of the relative clause head. Thus, in case it is assumed that the gap-LF is constructed by assigning the gap a higher semantic type rather than by syntactic reconstruction, the competition should be preferably narrowed to (1) and (2), which are much closer than (1) and (3) or (1) and (5).

(43) $[Op_i \dots t_i] \lambda\mathcal{P}_{\langle e, e \rangle} \dots \mathcal{P}$ gap relative

(44) $[Op_i \dots pron_i] \lambda\mathcal{P}_{\langle e, e \rangle} \dots \mathcal{P}$ resumed relative

This kind of competition is stated in terms of almost identical LFs. If a gap relative and a resumed relative yield almost identical LFs, the gap relative ‘wins’. Note that we still have to say that the competition is only between LFs that involve a variable of a semantic type higher than e , since the Hebrew facts are such that interpretations that do not involve reconstruction effects are possible both with pronouns and with gaps. In other words, we have to somehow rule out a competition between the LFs in (45)-(46), which can stand, for instance, for *de re* readings.

(45) $[Op_i \dots t_i] \lambda x \dots x$ gap relative

(46) $[Op_i \dots pron_i] \lambda x \dots x$ resumed relative

The disadvantages of this kind of competition, where the LFs that compete are (1) and (2) and the competition is formulated in terms of a condition on assigning the pronoun a higher semantic type, are that (a) it requires us to assume a condition according to which gap-LFs are preferred over resumed LFs only when the type of the variable implemented by the gap or the pronoun is higher than e , which seems like an *ad hoc* restriction; and (b) it requires us to assume that the reconstruction effects observed in gap relatives are also the result of semantic reconstruction, but this might be redundant in the case of gap relatives, as they are also compatible with syntactic reconstruction.

The second option, namely, to assume that the resumed LF (1) competes with the gap-LF (4) or (6) might be favored because it allows deriving the reconstruction effects observed with gaps from syntactic reconstruction, i.e., from the interpretation of the

lower copy of the relative clause head.¹³ Moreover, this kind of competition allows us to reduce the condition on pronouns to a condition on kinds of reconstructions, i.e., we can assume that semantic reconstruction cannot apply if a ‘similar enough’ LF can be produced using syntactic reconstruction. This condition might also be *ad hoc* at the moment, but motivating it on independent grounds seems relatively plausible and an interesting direction for further investigation. For example, it could be argued that syntactic reconstruction is preferred because it ‘comes for free’, as it only requires the interpretation of the lower copy instead of the higher copy. Semantic reconstruction, on the other hand, involves type-shifting of the variable into a non-default semantic type (or the application of other semantic mechanisms), which could be argued to be more expensive. Clearly, more work needs to be done investigating syntactic and semantic reconstruction to independently motivate such a claim.

Note also that under the semantic vs. syntactic story of competition, we do not have to explain why non-reconstructed interpretations (e.g., *de re* readings) are possible with gaps as well as with pronouns. Since these interpretations do not require semantic reconstruction (or any kind of reconstruction), the condition that favors syntactic reconstruction over semantic reconstruction simply does not apply to them.

The disadvantage of the syntactic vs. semantic reconstruction competition story, in which the resumed LF (1) competes with the gap-LF (4) or (6), is that the competing LFs are much less close, as (1) involves a higher-type variable while (4) or (6) involve a low representation of the relative clause head. Thus, in this case we would have to define the circumstances under which two non-identical LFs can compete. That is, we would have to determine what makes two LFs similar enough for competition to apply. This raises some questions which I discuss below.

If the competing LFs are not identical, we might want to say that the competition is among identical LF-interpretations, or identical truth conditions. *Prima facie*, this would cause an empirical problem for movement operations that do not change the truth conditions such as Topicalizations, because the non-topicalized LF would always win. However, note that this is not a problem if our condition is restricted to reconstructed interpretations. However, if there is reconstruction in topicalized structures, as argued for (47), the prediction is that the non-topicalized LF would always win over the topicalized one. This problem is resolved if the condition only applies to LFs that involve *semantic* reconstruction rather to LFs that involve any kind of reconstruction, as I defined it in (38).

- (47) A book, it is obvious everyone will buy.
(ex. (70) from Sportiche 2006)

In sum, I conclude that the competition is between LFs which are at least ‘similar enough’ (what ‘similar enough’ means requires further investigation) and that the condition that stands behind it either refers to the possibility of pronouns to bear a semantic type higher than *e* or to a preference of syntactic reconstruction over

¹³If the Matching structure does not allow the reconstructed interpretations, the competition is narrowed to (1) vs. (4).

semantic reconstruction. The former allows comparison of almost identical LFs, but seems *ad hoc* and does not refer to syntactic reconstruction which should be available with gaps, while the latter seems less *ad hoc* and does refer to syntactic reconstruction, but results in a comparison of non-identical LFs.

Although choosing between these two competition stories requires further investigation of semantic and syntactic reconstruction and competition in grammar, I assume in what follows that the competition is between semantic reconstruction and syntactic reconstruction, due to its less *ad hoc* nature. This choice is further supported by the fact that some of the reconstruction phenomena observed with resumptive pronouns are unlikely to be accounted for using higher-type variables, but rather require an account that uses other non-syntactic tools (see chapter 5). Thus, the notion of semantic reconstruction seems to be very broad, and does not seem to specifically refer to higher-type variables.

The choice in the semantic vs. syntactic reconstruction competition over the condition on assigning the pronoun a higher semantic type is also supported by data discussed in section 4.4, which suggest that the semantic reconstruction solution might also be available in cases in which syntactic reconstruction clashes with other syntactic conditions. I show in section 4.4 that there is no interaction of reconstruction phenomena with the Binding Conditions, and Extraposition. This is true both for gap-relatives and obligatorily and optionally resumed relatives. This suggests two things that support the semantic vs. syntactic competition account. First, this observation suggests that gaps too, allow semantic reconstruction when syntactic reconstruction results in a violation. This indicates that the condition cannot be stated as a condition on the interpretation of a pronoun which can or cannot be replaced with a gap. Second, the observation that optionally resumed relatives allow reconstruction when a low interpretation of the relative clause head results in a violation suggests that it is not the case that a resumed-relative is compared to an almost identical null-operator gap-relative, which only allows semantic reconstruction which would not result in any syntactic violation. Rather, it is the case that when syntactic reconstruction of the relative clause head in the gap-relative results in a violation, there is no syntactic reconstruction solution that can win over the semantic reconstruction solution, which can then apply to the resumed-LF. In this case, the optionally resumed relative allows semantic reconstruction. This observation and its predictions are further discussed in section 4.4.

Further support for formulating the competition story in terms of a condition on the application of semantic reconstruction is the fact that both optional and obligatory pronouns allow reconstruction when fronted. This was demonstrated in (21)-(22), repeated here as (48)-(49).

(48) Reconstruction for variable binding:

- a. *[ha-šmu'a al acmoj]_i še-ota_i kol politikai_j hikxiš hufca*
 the-rumor about himself that-it every politician denied was-spread
al-yedey ha-yošev roš
 by the-chair

‘The rumor about himself that every politician denied was spread by the chair.’

- b. *[ha-šmu’a al acmoj]_i še-mimena_i kol politikai_j xašaš hufca*
 the-rumor about himself that-from-it every politician feared was-spread
al-yedey ha-yošev roš
 by the-chair

‘The rumor about himself that every politician feared was spread by the chair.’

(49) Reconstruction for *de dicto* reading:

- a. *dani yimca et ha-iša_i še-ota_i hu mexapes*
 Dani will.find ACC the-woman that-her he seeks
 ‘Dani will find the woman he seeks.’
- b. *dani yimca et ha-iša_i še-aleha_i hu xolem*
 Dani will.find ACC the-woman that-of-her he dreams
 ‘Dani will find the woman he is dreaming of.’

The fact that when the pronoun is fronted (and thus presumably inhabits a movement structure) the contrast between optional and obligatory pronouns disappears supports the option that the condition is a condition on semantic reconstruction, which can apply in the absence of the syntactic option. When the syntactic reconstruction option is available for the resumed relative, there is no contrast between optional and obligatory pronouns. If, however, the competition is between two LFs which are derived by semantic reconstruction, it is less clear why there should be such a difference between fronted and non-fronted pronouns.

In the discussion of the competition story, I have already referred to two of the questions that I mentioned before with regard to the competition. I suggested that the candidates that compete are LF-representations and that they should be ‘similar enough’ to compete with each other. I now briefly discuss the third question, namely, where the competition takes place.

The issue of transderivational competition is extensively discussed in Jacobson (1998). Jacobson argues against the idea that transderivational competition is carried out in the grammar. She discusses different kinds of cases in which one derivation is preferred over another and shows how these cases might be accounted for using processing or production accounts.

For the current case of competition, the suitable case that Jacobson describes is the following (her ‘Case B’, Φ stands for *phonetic form*, M stands for *meaning*, and D stands for *derivation*).

(50) Case B: Two derivations D_1 and D_2 .

D_1 pairs Φ_1 with M_1

D_2 pairs Φ_2 with M_1

Each step of D_1 and D_2 is licensed by the grammar, but D_2 involves more steps than D_1 .

Since the availability of reconstruction effects with resumptive pronouns depends on optionality, we have to assume that the competition is between a gap derivation and a pronoun derivation. This suits Case B because it refers to two different phonetic forms that have the same meaning.

According to Jacobson (1998), the competition in Case B can be accounted for by assuming a ‘lazy encoder’. In her account, the encoder computes the shortest route, i.e., the route with the fewer derivational or ‘encoding’ steps. In other words, the speaker won’t go into the trouble of D_2 , if the same meaning can be achieved with D_1 .¹⁴ This seems like a plausible option to account for the preference of the gap derivation over the resumed one, assuming that we can argue that the resumed derivation involves more steps. This seems relatively plausible if the gap derivation is the result of deleting the high copy instead of the low copy (i.e., syntactic reconstruction) while the resumed derivation involves type-shifting, which is an additional operation.¹⁵ However, if the gap-LF is also the result of semantic type-shifting, exactly like the resumed derivation, it would not be easy to argue that the gap derivation involves fewer steps.¹⁶

Note that we cannot base the relative complexity of the gap and the pronoun derivations solely on the syntactic derivation of the different relative clause structures. This is so because if the gap derivation was preferred due to the simplicity of the movement derivation compared to the no-movement derivation, the prediction would be that gap relatives would always win over resumed relatives, which is clearly not the case in Hebrew, in which gaps and resumptive pronouns alternate in the direct object and the embedded subject positions when the intended meaning does not require reconstruction.

To conclude, I have suggested that the competition is among LFs that are ‘similar

¹⁴Another case of competition that Jacobson discusses is Case A, in which the same phonetic form is paired with two different meanings. If we would try to argue that the reconstruction facts are the result of this kind of competition, we might argue that ‘reconstructed’ interpretations do not surface with resumptive pronouns because the processor is ‘lazy’. Namely, we could assume that the non-reconstructed interpretation requires less computational steps, because reconstruction with pronouns requires type-shifting, which is an additional step. Thus, the non-reconstruction derivation always wins over the reconstruction one. With regard to gaps, the reconstructed interpretation is not more complex because under the Copy Theory of traces, it does not matter which copy we delete. This explains why the reconstructed meaning occurs with gaps but not with pronouns. However, this does not explain why we do get the reconstructed meaning with obligatory pronouns; if pronouns are incompatible with movement, the same argument for the unavailability of the (semantic) reconstructed meaning should hold for obligatory pronouns. It seems, then, that we have to assume that the competition is between a gap derivation and a pronoun derivation, rather than between a reconstructed interpretation and a non-reconstructed interpretation. Thus, it is not a Jacobson’s Case-A competition, but rather a Case-B competition as we are talking about different PFs with the same meaning rather than about two meanings of the same PF.

¹⁵Even if it could not be argued that a gap derivation involves fewer steps, one could base the notion of ‘simple derivation’ on some other factor of complexity according to which semantic reconstruction is more complex or more expensive than syntactic reconstruction.

¹⁶Also, it is not obvious why the resumed derivation should be more complex according to any factor in this case.

enough’, which have different phonetic forms (what ‘similar enough’ means still needs to be defined), and that the grammar involves a condition that states that semantic reconstruction can apply only when syntactic reconstruction cannot apply. I also discussed the current case of competition in light of Jacobson’s (1998) suggestion that competition might be extra-grammatical. Obviously, the competition mechanism suggested here should be defined more explicitly and accurately. This requires further investigation of competition in grammar, which I leave for future research.

A final important note has to be made with regard to island contexts. Reconstruction into syntactic islands with resumptive pronouns is not possible in Hebrew, as demonstrated for variable binding in (51) (see also Sichel to appear, and Aoun & Li 2003 for the lack of reconstruction into islands in Lebanese Arabic).

- (51) a. * *[ha-šmu’a al acmoj]_i še-rina makira [kol politikai_j še t_j*
the-rumor about himself that-Rina knows every politician that t_j
hikxiš t_i] hufca al-yedey ha-yošev roš
denied t_i was-spread by the-chair
‘The rumor about himself that Rina knows every politician that denied
was spread by the chair.’
- b. * *[ha-šmu’a al acmoj]_i še-rina makira [kol politikai_j še t_j*
the-rumor about himself that-Rina knows every politician that t_j
hikxiš ota_i] hufca al-yedey ha-yošev roš
denied it_i was-spread by the-chair
‘The rumor about himself that Rina knows every politician that denied
it was spread by the chair.’
- c. * *[ha-šmu’a al acmoj]_i še-rina makira [kol politikai_j še t_j*
the-rumor about himself that-Rina knows every politician that t_j
xašaš mimena_i] hufca al-yedey ha-yošev roš
feared from-it was-spread by the-chair
‘The rumor about himself that Rina knows every politician that feared
it was spread by the chair.’

The examples in (51) involve relativization from a relative clause island (*every politician that denied/feared*), and the bound-variable interpretation is blocked with a gap, with a direct object pronoun, and with a PP pronoun. The problem for the current proposal is that since in the case of syntactic islands a gap derivation is not available, the current competition account predicts that semantic reconstruction with a resumptive pronoun would be possible. Since it is not possible, we would have to somehow prevent a resumed relative clause which involves an island from entering a competition on a reconstructed meaning, since if this kind of structure would enter such competition it would be the only candidate and win by default. This problem does not arise in Sichel’s (to appear) account, because she attributes reconstruction effects to syntactic reconstruction, which is arguably not a possible option when the structure involves an island, if it is assumed that there is no movement out of islands.

At this point I only have a stipulation to account for the lack of reconstruction into islands under the current competition story. I assume that resumptive pronouns in islands are always a ‘repair mechanism’, even in languages like Hebrew, in which resumptive pronouns are also used grammatically in non-island contexts. I assume that such pronouns (‘intrusive’ pronouns in Sells’ 1984 terminology) repair a derivation that was meant to be a movement derivation, but had ‘crashed’ due to the presence of the island. I further stipulate that the grammatical status of such derivation differs from the grammatical status of non-island derivations. Since it is a bad derivation that had been repaired it is not a fully grammatical derivation. I further stipulate that such a derivation cannot receive a more complex interpretation, which involves semantic reconstruction, because its non-fully grammatical status prevents further computations (like those that are needed for semantic reconstruction) from applying. Thus, pronouns within islands allow a non-reconstructed interpretation, but not a reconstructed one. In other words, the idea is that an intrusive pronoun is a repair device whose role is merely to save the derivation from a complete crash. Once it has done so, further computations are unavailable. This idea about the (un)grammatical status of resumptive pronouns in islands is consistent with the observation that resumptive pronouns do not bring island structures into full acceptability (e.g., Alexopoulou & Keller 2007 for English, Greek and German). Similar results were observed for Hebrew relative clauses; resumed island relative clauses were better than gap island relative clauses, but were nevertheless far from fully grammatical (Farby et al. 2010).

Note that to maintain this suggestion with regard to the grammatical status of pronouns inside islands, we would also need to explain why grammatical resumptive pronouns cannot occur inside islands, and how it is that LF ‘realizes’ that the derivation would have crashed without a pronoun. A stipulation might be that the mechanism of grammatical resumption is such that we start with a movement structure and then replace it with a binding structure. Thus, if a movement structure is not possible (as in the case of islands), a grammatical resumed structure would not be possible either. Therefore, there are no grammatical resumptive pronouns in island contexts, and island resumptives are not grammatical resumptives but rather intrusive pronouns, whose role is solely to save the derivation from a complete crash. Note that this resumption mechanism is predicted not to license parasitic gaps; for example, it could be that when we move to a binding structure we lose intermediate representations of the moving phrase. This would leave us without an intermediate trace above the parasitic gap-containing adjunct, which according to Nissenbaum’s (2000) theory, would prevent the structure from licensing the parasitic gap. This suggestion obviously requires further elaboration and explicit implementation which I leave for future research.

4.4 Reconstruction effects as non-syntactic reconstruction cases

In the previous sections, I argued that Hebrew resumptive pronouns are not compatible with movement, based on the observation that they do not license parasitic gaps. Of particular importance was the observation that obligatory pronouns, which are observed to allow reconstruction (Sichel to appear) do not license parasitic gaps. In section 4.3 I suggested an account in terms of competition between LF-representations according to which semantic reconstruction can apply only when syntactic reconstruction cannot apply.

To complete the argument, I argue in this section that the reconstruction effects observed with resumptive pronouns in Hebrew can be accounted for using semantic reconstruction. What I mean by ‘semantic reconstruction’ is simply that ‘reconstructed’ interpretations, i.e., cases in which the relative clause head is interpreted as if it is located in a lower position, can be due to a semantic mechanism rather than due to a syntactic mechanism. Hence, my definition of ‘semantic reconstruction’ is very broad, and the use that I make of this term is not limited to the semantic reconstruction mechanism suggested by Cresti (1995) and Rullmann (1995) and implemented for example in Lechner (1998). I assume that different ‘reconstructed’ interpretations can be given different semantic accounts. What is common to these different accounts is that they are semantic, namely, they do not apply in the syntax as syntactic reconstruction, but rather apply in the semantic component and use semantic ‘tools’.

To argue that the reconstruction effects observed with resumptive pronouns in Hebrew are not cases of syntactic reconstruction one should (a) show evidence for their non-interaction with phenomena that were observed to interact with syntactic reconstruction; and (b) show that there are non-syntactic accounts that derive the intended reconstructed interpretations. Therefore, my discussion of the reconstruction phenomena is divided into two parts.

The first part is this section, in which I discuss diagnostics for syntactic reconstruction assumed in the literature (and recently discussed in Heycock 2012) and show that the reconstruction effects observed with pronouns in Hebrew do not seem to pass these diagnostics. In particular, I show that there is no interaction between these reconstruction effects and Condition C, anaphor binding from a higher position, and Extraposition. I argue that this lack of interaction suggests that the reconstruction phenomena observed with pronouns at least *can* be accounted for without syntactic reconstruction. I also show in this section evidence that suggests that semantic reconstruction is also available with gaps and with optional pronouns when syntactic reconstruction would clash with other syntactic conditions. This further supports the choice to state the competition in terms of competition between syntactic reconstruction and semantic reconstruction; when syntactic reconstruction clashes with other syntactic conditions, semantic reconstruction becomes available, and as long as semantic mechanisms can in principle derive the intended interpretation, reconstruction

would be observed.

The second part is chapter 5, in which I turn to the question of *how* the reconstruction phenomena observed with pronouns in Hebrew may be accounted for semantically. I discuss each of these reconstruction phenomena and review key proposals that have been made in the literature to account for them without syntactic reconstruction. The reader will notice that the proposed accounts may be more complete or more convincing with regard to some phenomena than with regard to others, and that many of the reconstruction phenomena require further investigation to arrive at a full semantic account for them. However, providing full semantic accounts for all reconstruction phenomena observed with pronouns is beyond the scope of this thesis, and I leave this for future research. Though diverse, the semantic accounts share in common the fact that they do not use syntactic tools, but rather non-syntactic tools.

Since there is still a debate in the literature with regard to which reconstruction effects are syntactic and which are semantic, and whether or not some reconstruction effects can be obtained in both ways, my purpose in this section and in chapter 5 is to set the ground for future investigation of the puzzle presented in the current study. If it turns out that all reconstruction effects observed with resumptive pronouns in Hebrew can be accounted for without syntactic reconstruction (i.e., without movement), it would support the direction that I argued for here, namely, that Hebrew resumptive pronouns are not compatible with movement and that this fact can be reconciled with their ability to allow reconstruction by using semantic reconstruction. However, if it turns out that we cannot account for all reconstruction effects observed with pronouns without assuming movement, the other direction, which I argued against here, would have to be reconsidered. Namely, the non-movement parasitic gap licensing option would have to be further investigated, assuming that some resumptive pronouns are compatible with movement, but do not license parasitic gaps due to some other requirement on parasitic gap licensing which they do not obey.

To argue that reconstruction effects observed with resumptive pronouns in Hebrew are semantic rather than syntactic, I show that these reconstruction effects do not pass diagnostics of syntactic reconstruction. Diagnostics of syntactic reconstruction have to do with the interaction of reconstruction effects with the Binding Conditions. The argument goes as follows. Assuming that the Binding Conditions involve hierarchical, structural requirements, interaction between the Binding Conditions and reconstruction effects strongly suggests that reconstruction effects also have a structural source. If an element behaves with respect to the Binding Conditions as if it is located in a lower position than its surface position, this means that it syntactically reconstructs into that lower position. In particular, interaction of Condition C and Condition A with reconstruction effects are diagnostics of syntactic reconstruction. Another phenomenon that interacts with syntactic reconstruction which I discuss is Extraposition. I explain the logic behind this discussion below.

4.4.1 Condition C

The logic behind the use of Condition C as a diagnostic for syntactic reconstruction is as follows. If the presence of an R-expression in the relative clause head combined with the presence of a coindexed expression in the relative clause CP results in a Condition C violation, this is an indication for the reconstruction of the relative clause head into a position in which it is c-commanded by the coindexed expression. In other words, to the extent that Condition C is a syntactic phenomenon, dependent on c-command, a Condition C violation in a context in which the R-expression is not c-commanded by a coindexed expression in its surface position is an indication for syntactic reconstruction of the phrase containing the R-expression into the c-command domain of the coindexed expression (Heycock 1995, Fox 1999). This configuration is demonstrated in (52) below.

- (52) [NP ... R-expression_j ...]_i ... pronoun_j t_i

Based on this diagnostic, Heycock (1995) and Fox (1999) argue that scope reconstruction is syntactic. Their claim is based on the following scope ambiguities pattern in *wh*-questions.

- (53) a. [How many stories]_i does she_j want you to invent t_i?
 (*want*>*many*; **many*>*want*)
 b. [How many stories]_i does she_j want you to reinvent t_i?
 (*want*>*many*; *many*>*want*)
 (ex. (5) from Heycock 2012)
- (54) a. * [How many stories about Diana]_i does she_j want you to invent t_i?
 b. [How many stories about Diana]_i does she_j want you to reinvent t_i?
 (ex. (6) from Heycock 2012)

As the contrast between (53a) and (53b) shows, high scope for the existential (*many*>*want*) is anomalous for a verb of creation like *invent*, but possible for a verb like *reinvent*. Therefore, (54a) is ungrammatical; the only possible scope is *want*>*many* but this scope results in a Condition C violation as the pronoun *she* c-commands the R-expression *Diana*. The high scope for *many* is possible in (54b), hence there is no Condition C violation in this case. If scope reconstruction was not syntactic, we would expect (54a) to be grammatical, as the low scope for *many* would not result in a configuration that induces a Condition C violation.

With regard to reconstruction in relative clauses, Sauerland (2003) argues that reconstruction for variable binding, idiomatic interpretation, and scope interacts with Condition C. Namely, low interpretation of the relative clause head results in a Condition C violation when the relative clause head includes an R-expression coindexed with a lower expression. However, Heycock (2012) argues, contra Sauerland (2003), that some reconstruction effects observed in relative clauses do not interact with Condition C, suggesting that they are not cases of syntactic reconstruction. In particular, she argues that low readings of adjectives, *only* and superlatives and reconstruction

for idiomatic interpretation do not result in a Condition C violation, which suggests that these reconstruction effects are not syntactic.

With regard to the current discussion of reconstruction with resumptive pronouns, the prediction is as follows. If the reconstruction effects observed with resumptive pronouns in Hebrew are not syntactic, but rather semantic, as suggested by the observation that resumptive pronouns in Hebrew do not license parasitic gaps, and thus are not compatible with movement, the prediction is that these reconstruction effects would not interact with Condition C. I argue that this prediction is borne out. There is no interaction between the reconstruction effects observed with PP pronouns (obligatory pronouns) in Hebrew and Condition C.^{17 18}

No interaction of Condition C and reconstruction for variable binding

Sichel (to appear) shows that PP pronouns allow reconstruction for variable binding, as demonstrated in (10b), repeated here as (55).

- (55) *[ha-šmu'a al acmo_j]_i še-kol politikai_j xašaš mimena_i hufca*
 the-rumor about himself that-every politician feared from-it was-spread
al-yedey ha-yošev roš
 by the-chair
 'The rumor about himself that every politician feared was spread by the chair'

If the reconstruction for variable binding observed with PP pronouns is not syntactic, but rather semantic, we would expect it not to interact with Condition C. This prediction is borne out, as demonstrated in (56) below.

- (56) *[ha-šmu'a alav_k ve-al rina_j]_i še-hi_j xašva še-kol*
 the-rumor about-him and-about Rina that-she thought that-every
politikai_k xošeš mimena_i be'ecem lo hifrida oto_k bixlal.
 politician fears of-it in-fact not frightened him at-all
 'The rumor about him_k and Rina_j that she_j thought that every politician_k fears in fact did not frightened him_k at all.'

In (56), the relative clause head contains both a pronoun coindexed with a quantified expression located inside the relative clause CP, and an R-expression coindexed with a pronoun located in the relative clause CP. If reconstruction for variable binding was syntactic, it would result in the R-expression *Rina* occurring in the c-command domain of *she*, which would induce a Condition C violation. However, this does not

¹⁷In what follows I demonstrate this claim for variable binding, *de dicto* readings, anaphoric binding and low readings of *only*. I was not able to come up with examples that test the interaction of Condition C with idiomatic interpretation and its interaction with amount readings, which are also argued in Sichel (to appear) to be a case of reconstruction possible with PP pronouns.

¹⁸I demonstrate the lack of interaction with Condition C, Condition A and Extraposition for PP pronouns, rather than for obligatory direct object pronouns, because the structures discussed are already quite complex, and constructing and testing examples which also involve *only* and psych verbs is very difficult.

seem to be the case. It seems that the bound variable interpretation of the pronoun and the coindexing of the R-expression with the lower pronoun can coexist. Note also that (56) is not worse than (57), in which the coindexed pronoun is replaced with an R-expression.

- (57) *[ha-šmu'a alav_k ve-al rina_j]_i še-ruti xašva še-kol*
 the-rumor about-him and-about Rina that-Ruti thought that-every
politikai_k xošeš mimena_i be'ecem lo hifxida oto_k bixlal.
 politician fears of-it in-fact not frightened him at-all
 'The rumor about him_k and Rina_j that Ruti thought that every politician_k
 fears in fact did not frightened him_k at all.'

This suggests that reconstruction for variable binding with PP pronouns is not a case of syntactic reconstruction.

No interaction of Condition C and *de dicto* readings

Sichel (to appear) shows that PP pronouns allow a *de dicto* reading of the relative clause head, as demonstrated in (9b), repeated here as (58).

- (58) *dani yimca et ha-iša_i še-hu xolem aleha_i*
 Dani will.find ACC the-woman that-he dreams of-her
 'Dani will find the woman he is dreaming of'
 (ex. (8a) from Sichel to appear)

Again, if reconstruction for the *de dicto* reading observed with PP pronouns is not syntactic, the prediction is that it would not interact with Condition C. This prediction is indeed borne out. In (59), the relative clause head can receive a *de dicto* interpretation despite the fact that it contains an R-expression coindexed with a relative clause-internal expression.

- (59) *[ha-nefeš ha-te'oma šel Dani]_i še-hu_j xolem aleha_i kol layla doma*
 the-soul the-twin of Dani that-he dreams of-her every night is.similar
la-baxura še-hu pagaš be-hodu kše-haya ca'ir.
 to-the-girl that-he met in-India when-he.was young
 'The soul mate of Dani that he dreams of every night looks like the girl that
 he met in India when he was young.'

If (59) is indeed grammatical (and it is to my own judgment) this suggests that *de dicto* readings with PP pronouns are not a case of syntactic reconstruction.

No interaction of Condition C and anaphoric binding

Finally, reconstruction for anaphoric binding observed with PP pronouns also does not seem to interact with Condition C. As shown in Sichel (to appear), PP pronouns allow reconstruction for anaphoric binding. This is demonstrated in (60).

- (60) *[ha-šmu'a al acmo_j]_i še-dani xašaš mimena_i hufca al-yedey*
the-rumor about himself that-Dani feared from-it was-spread by
rani
Rani
‘The rumor about himself_j that Dani_j feared was spread by Rani.’
(ex. (9) from Sichel to appear)

As in other reconstruction effects discussed above, if reconstruction for anaphoric binding with PP pronouns is not syntactic, no interaction is expected with Condition C. As in other reconstruction effects, this prediction is borne out. (61) shows that an anaphor located inside a relative clause head that also contains an R-expression coindexed with a relative clause-internal pronoun, can be bound by another R-expression also located inside the relative clause CP.

- (61) *[ha-šmu'a al acmo_k ve-al rina_j]_i še-hi_j xašva še-dani_k*
the-rumor about himself_k and-about Rina_j that-she_j thought that-Dani_k
xošēš mimena_i be'ecem lo hiḥxida oto_k biḥlal.
fears of-it in-fact not frightened him_k at-all
‘The rumor about himself_k and about Rina_j that she_j thought that Dani_k
fears in fact did not frightened him_k at all.’

(61) is not worse than (62), in which the pronoun coindexed with *Rina* is replaced with an R-expression.

- (62) *[ha-šmu'a al acmo_k ve-al rina_j]_i še-ruti xašva še-dani_k*
the-rumor about himself_k and-about Rina_j that-Ruti thought that-Dani_k
xošēš mimena_i be'ecem lo hiḥxida oto_k biḥlal.
fears of-it in-fact not frightened him_k at-all
‘The rumor about himself_k and about Rina_j that Ruti thought that Dani_k
fears in fact did not frightened him_k at all.’

If (61) is indeed grammatical, then reconstruction for anaphoric binding with PP pronouns cannot be syntactic, because if it were syntactic it would induce a Condition C violation.

No interaction of Condition C and low readings of *only* and superlatives

Bhatt (2002) argues that low readings of *only* and superlatives like *first* or *last* constitute evidence for a low representation of the relative clause head inside the relative clause. (63) from Bhatt (2002) has a “low” reading where *first* is interpreted in the scope of *say*, and a “high” reading where it is not interpreted in the scope of *say*.¹⁹

¹⁹Bhatt (2002) argues that the low reading is the result of reconstruction of the noun+modifier, while Hulsey and Sauerland (2006) argue that it is the result of binding of world variables and can be viewed as a special case of scope reconstruction. The specific syntactic account for the low readings in these cases is not crucial for the current discussion.

- (63) the first book that John said Tolstoy had written.
‘High reading’: In 1990, John said that Tolstoy had written *Anna Karenina*; in 1991, John said that Tolstoy had written *War and Peace*; Hence the book referred to is *Anna Karenina*.
(i.e., the order of *saying* matters, order of *writing* is irrelevant)
‘Low reading’: John said that the first book that Tolstoy had written was *War and Peace*. Hence the book referred to is *War and Peace*.
(i.e., the order of *writing* matters, order of *saying* is irrelevant)
(ex. (20) from Bhatt 2002)

To support the claim that reconstruction in this case is syntactic, Bhatt (2002) and Bhatt and Sharvit (2005) show that the position of an NPI (e.g., *ever*) determines which reading is available; when the NPI is located in the lower clause, the high reading is blocked (64), whereas when the NPI is located in the higher clause, the low reading is blocked (65).²⁰

- (64) The longest book John said Tolstoy had ever written was *Anna Karenina*.
High reading: *; Low reading: OK
(65) The longest book John ever said Tolstoy had written was *Anna Karenina*.
High reading: OK; Low reading: *
(ex. (6) and (5) from Bhatt & Sharvit 2005)

Heycock (2012) argues that these are not cases of syntactic reconstruction, by showing that they do not interact with Condition C. She argues that the low occurrence of *ever* in (66) does not result in a Condition C violation, as (66) is not more degraded than (67).

- (66) That is the best picture of Moss_j that she_j thought she would ever see.
(67) That is the best picture of Moss_j that she_j ever thought she would see.
(ex. (18a) and (19a) from Heycock 2012)

In Arad (2010) I argued that optional resumptive pronouns in Hebrew, unlike gaps, do not allow low readings of superlatives. The fact that (69a) is ungrammatical suggests that the resumptive pronoun does not allow the low interpretation of the relative clause head, which is forced by the low occurrence of *ever* (*ey-pa’am* in Hebrew). The fact that there is no contrast between (68a) and (68b) shows that a gap allows both the low reading and the high reading.

- (68) a. *ha-sefer ha-rišon_i še-dani amar še-tolstoy ey-pa’am katav t_i*
the-book the-first that-Dani said that-Tolstoy ever wrote t_i
‘The first book that Dani said that Tolstoy ever wrote’
High reading: *; Low reading: OK

²⁰See Heycock (2012) for a discussion of NPI licensing in these examples.

- b. *ha-sefer ha-rišon_i še-dani ey-pa'am amar še-tolstoy katav t_i*
the-book the-first that-Dani ever said that-Tolstoy wrote t_i
‘The first book that Dani ever said that Tolstoy wrote’
High reading: OK; Low reading: *
- (69) a. **ha-sefer ha-rišon_i še-dani amar še-tolstoy ey-pa'am katav oto_i*
the-book the-first that-Dani said that-Tolstoy ever wrote it
‘The first book that Dani said that Tolstoy ever wrote’
High reading: *; Low reading: *
- b. *ha-sefer ha-rišon_i še-dani ey-pa'am amar še-tolstoy katav oto_i*
the-book the-first that-Dani ever said that-Tolstoy wrote it
‘The first book that Dani ever said that Tolstoy wrote’
High reading: OK; Low reading: *

Interestingly, PP pronouns, unlike direct object pronouns, do seem to allow low readings of superlatives. The low reading of the superlative *first* is allowed in (70a). In a scenario in which what Dani said is that Tolstoy had talked about some book of his before he had talked about his other books (70a) can be uttered (on this scenario what matters is the order of *talking* by Tolstoy, rather than the order of *saying* by Dani).

- (70) a. *ha-sefer ha-rišon_i še-dani amar še-tolstoy ey-pa'am diber*
the-book the-first that-dani said that-Tolstoy ever talked
alav_i
about-it_i
‘The first book that Dani said that Tolstoy ever talked about’
High reading: *; Low reading: OK
- b. *ha-sefer ha-rišon_i še-dani ey-pa'am amar še-tolstoy diber*
the-book the-first that-Dani ever said that-Tolstoy talked
alav_i
about-it
‘The first book that Dani ever said that Tolstoy talked about’
High reading: OK; Low reading: *

If PP pronouns are not compatible with movement, as suggested by their inability to license parasitic gaps discussed in section 3.3, the prediction is that the low readings of *only* and superlatives with them would not interact with Condition C. This prediction is borne out. An R-expression located in the relative clause head can coexist with a coindexed expression inside the relative clause, even when a low interpretation of *only* is forced by an NPI located in the most deeply embedded clause.

- (71) a. [*ha-tmuna ha-yexida šel Bar Refaeli_j*]_i *še-hi_j xašva še-ha-soxen*
the-picture the-only of Bar Refaeli_j that-she_j thought that-the-agent
šela_j ey-pa'am haya meruce mimena_i culma be-šaxor lavan.
of-her_j ever was satisfied from-it was.taken in-black white

‘The only picture of Bar Refaeli_j that she_j thought that her_j agent was ever satisfied with was taken in black-and-white.’

High reading: *; Low reading: OK

- b. *[ha-tmuna ha-yexida šel Bar Refaeli_j]_i še-hi_j ey-pa’am xašva*
the-picture the-only of Bar Refaeli_j that-she_j ever thought
še-ha-soxen šela_j haya meruce mimena_i culma be-šaxor lavan.
that-the-agent of-her_j was satisfied from-it was.taken in-black white
‘The only picture of Bar Refaeli_j that she_j ever thought that her_j agent was satisfied with was taken in black-and-white.’
High reading: OK; Low reading: *

The grammaticality of (71a) and the fact that there is no contrast between (71a) and (71b) suggest that the reconstruction for low readings of *only* with PP pronouns is not a case of syntactic reconstruction. The same is true if *only* is replaced by the superlative *first*. Note also that (71a) is not more degraded than (72), in which the pronouns in the relative clause are replaced by non-coindexed R-expressions.

- (72) *[ha-tmuna ha-yexida šel Bar Refaeli_j]_i še-cipi xašva še-rafi*
the-picture the-only of Bar Refaeli that-Zipi thought that-Rafi
ey-pa’am haya meruce mimena_i culma be-šaxor lavan.
ever was satisfied from-it was.taken in-black white
‘The only picture of Bar Refaeli that Zipi thought that Rafi was ever satisfied with was taken in black-and-white.’
High reading: *; Low reading: OK

There seems to be no interaction between low readings of superlatives and *only* and Condition C, which suggests that low readings of superlatives and *only* at least *can* be explained without syntactic reconstruction.

To conclude, reconstruction effects observed with PP pronouns, in particular, variable binding, *de dicto* readings, anaphoric binding, and low readings of *only* and superlatives do not seem to be cases of syntactic reconstruction, according to the Condition C diagnostic.

Revisiting the competition issue

The above suggests that reconstruction effects observed with PP pronouns in Hebrew are not cases of syntactic reconstruction. At this point, a question arises with regard to the same reconstruction effects observed with traces. Recall that Heycock (2012) argues that some reconstruction effects *with traces* do not interact with Condition C. If there is no interaction between Condition C and reconstruction effects observed with traces, this suggests that reconstruction in these cases is not syntactic reconstruction either. If reconstruction effects observed with traces are not cases of syntactic reconstruction, there is an apparent problem with the current competition account. I explain why below.

If reconstruction effects observed with traces are not cases of syntactic reconstruction, it seems, *prima facie*, that it can no longer be argued that the competition is between syntactic reconstruction and semantic reconstruction; that is, if gap relatives in Hebrew also do not show interaction of reconstruction effects and Condition C, we might no longer be able to account for the contrast between optional and obligatory pronouns by assuming that syntactic reconstruction is preferred over semantic reconstruction.

Indeed, gap relatives in Hebrew show no interaction of reconstruction effects and Condition C, just like PP pronouns, as demonstrated in (73)-(76) below.

- (73) No interaction of Condition C and low reading of *only*:

- a. *[ha-tmuna ha-yexida šel Bar Refaelij]_i še-hij xašva še-ha-soxen*
the-picture the-only of Bar Refaelij that-she_j thought that-the-agent
šela ey-pa'am ahav t_i culma be-šaxor lavan.
of-her_j ever liked t_i was.taken in-black white
‘The only picture of Bar Refaelij that she_j thought that her_j agent ever
liked was taken in black-and-white.’
High reading: *; Low reading: OK
- b. *[ha-tmuna ha-yexida šel Bar Refaelij]_i še-hij ey-pa'am xašva*
the-picture the-only of Bar Refaelij that-she_j ever thought
še-ha-soxen šela ahav t_i culma be-šaxor lavan.
that-the-agent of-her_j liked t_i was.taken in-black white
‘The only picture of Bar Refaelij that she ever thought that her_j agent
liked was taken in black-and-white.’
High reading: OK; Low reading: *

- (74) No interaction of Condition C and variable binding:

[ha-šmu'a alav_k ve-al rina_j]_i še-hij xašva še-kol
the-rumor about-him_k and-about Rina_j that-she_j thought that-every
politikai_k yakriš t_i be'ecem lo hifxida oto_k bixlal.
politician_k will.deny t_i in-fact not frightened him_k at-all
‘The rumor about him_k and Rina_j that she_j thought that every politician_k
would deny in fact did not frightened him_k at all.’

- (75) No interaction of Condition C and *de dicto*:

[ha-nefeš ha-te'oma šel dani_j]_i še-huj mexapes t_i kvar esrim šana
the-soul the-twin of Dani_j that-he_j seeks t_i already twenty years
doma la-baxura še-hu pagaš be-hodu.
is.similar to-the-girl that-he_j met in-India when-he.was young
‘The soul mate of Dani_j that he_j seeks for twenty years looks like the girl that
he_j met in India when he was young.’

- (76) No interaction of Condition C and anaphoric binding:

[*ha-šmu'a al acmo_k ve-al rina_j]_i še-hi_j xašva še-dani_k*
 the-rumor about himself_k and-about Rina_j that-she_j thought that-Dani_k
yakxiš t_i be'ecem lo hifrida oto_k bixlal.
 will.deny t_i in-fact not frightened him_k at-all

‘The rumor about himself_k and about Rina_j that she_j thought that Dani_k would deny of in fact did not frightened him_k at all.’

The facts in (73)-(76) seem to contradict Sichel’s (to appear) facts with regard to the contrast between optional and obligatory pronouns with respect to reconstruction. If reconstruction effects with traces are not cases of syntactic reconstruction, as suggested by their lack of interaction with Condition C, why do we find a contrast between optional and obligatory pronouns? With respect to Sichel’s (to appear) account, if reconstruction with traces and PP pronouns is not a case of syntactic reconstruction, the Economy principle according to which obligatory pronouns can inhabit the Raising relative clause structure is no longer relevant. With respect to my account, which states that there is competition between syntactic reconstruction and semantic reconstruction, if reconstruction with traces is not syntactic, the preference of syntactic reconstruction over semantic reconstruction can no longer account for the contrast between optional and obligatory pronouns, since in any case, syntactic reconstruction is not what derives the reconstructed interpretations.

This apparent contradiction can be resolved by arguing that the reconstruction effects under discussion can in principle be obtained both by syntactic reconstruction and by semantic reconstruction, but syntactic reconstruction is preferred over semantic reconstruction, when available. However, when there is a problem with syntactic reconstruction (e.g., it induces a Condition C violation) semantic reconstruction is possible. This assumption is formulated in (77).

- (77)
- Semantic reconstruction availability:**

Syntactic reconstruction is preferred over semantic reconstruction only when it does not clash with other syntactic requirements.

If (77) is assumed, the facts in (73)-(76) actually support my suggestion that the competition is between syntactic reconstruction and semantic reconstruction.

Let us see how this might work. Assume that syntactic reconstruction is preferred over semantic reconstruction. If this is the case, then when some interpretation can be obtained with syntactic reconstruction, it cannot be obtained with semantic reconstruction. This is the reason for the unavailability of reconstruction effects with optional resumptive pronouns. However, when some interpretation cannot be obtained with syntactic reconstruction, it can be obtained with semantic reconstruction. This is the case of obligatory pronouns, which in the absence of a grammatical gap-LF, are able to allow semantic reconstruction. Now, what happens when the relative clause head involves an R-expression which is coindexed with a pronoun that occurs in the relative clause CP? In this case, syntactic reconstruction would result in a Condition C violation. Namely, the intended interpretation would not be possible.

I argue that this can be viewed as a case in which there is no LF with the intended interpretation which is derived by syntactic reconstruction. The difference between the case of obligatory pronouns and the case of an R-expression located in the relative clause head is that in the former there is no competing gap-LF because there is no preposition stranding in Hebrew, while in the latter there is no competing gap-LF because such an LF would result in a Condition C violation. Semantic reconstruction is predicted to be possible in both cases. By using semantic reconstruction, the intended interpretation, i.e., a low interpretation of the relative clause head, can be obtained without causing a Condition C violation. Importantly, this does not predict that we should never find Condition C effects in reconstruction, because it is not enough that semantic reconstruction could apply, it should also be able to derive the intended meaning. Namely, if the intended meaning cannot be obtained with semantic tools, we expect to see Condition C effects. Thus, whether or not we find Condition C effects with a certain reconstruction phenomenon can be used as a diagnostic of whether this phenomenon is compatible with semantic reconstruction. If we find Condition C effects with a certain reconstruction phenomenon, this indicates that the only way to obtain this reconstructed interpretation is syntactic. If, however, we do not find Condition C effects with a certain reconstructed phenomenon, this indicates that the reconstructed interpretation can be obtained semantically.

Note that this account has a prediction with regard to optional pronouns. It predicts that optional pronouns would allow reconstruction in cases in which syntactic reconstruction results in a violation (e.g., a Condition C violation). The logic behind this prediction is as follows. If the competition is not between gaps and pronouns but rather between syntactic reconstruction and semantic reconstruction, the contrast between optional and obligatory pronouns would disappear when syntactic reconstruction is not an available option due to independent reasons. Namely, if the alternative gap-relative with the intended reconstructed meaning results in a syntactic violation, it cannot compete with the resumed-relative. Thus, the resumed relative can yield the intended meaning using semantic reconstruction, which can apply in the absence of a syntactic-reconstruction LF with the intended meaning.

This prediction seems to be borne out. When the relative clause head involves an R-expression coindexed with a pronoun located inside the relative clause, optional pronouns allow reconstructed interpretations of the relative clause head. This is demonstrated in (78)-(81) below.

(78) No interaction of Condition C and low reading of *only*:

- a. *[ha-tmuna ha-yexida šel Bar Refaeli]_i še-hi_j xašva še-ha-soxen*
 the-picture the-only of Bar Refaeli_j that-she_j thought that-the-agent
šela_j ey-pa'am ahav ota_i culma be-šaxor lavan.
 of-her_j ever liked it_i was.taken in-black white
 ‘The only picture of Bar Refaeli_j that she_j thought that her_j agent ever
 liked was taken in black-and-white.’

- b. *[ha-tmuna ha-yexida šel Bar Refaelij]_i še-hij ey-pa'am xašva*
the-picture the-only of Bar Refaelij that-she_j ever thought
še-ha-soxen šela_j ahav ota_i culma be-šaxor lavan.
that-the-agent of-her_j liked it_i was.taken in-black white
‘The only picture of Bar Refaelij that she_j ever thought that her_j agent
liked was taken in black-and-white.’

(79) No interaction of Condition C and variable binding:

- [ha-šmu'a alav_k ve-al rina_j]_i še-hij xašva še-kol*
the-picture about-him_k and-about Rina_j that-she_j thought that-every
politikai_k yakxiš ota_i be'ecem lo hifxida oto_k bixlal.
politician_k will.deny it_i in-fact not frightened him_k at-all
‘The rumor about him_k and rina_j that she_j thought that every politician_k
would deny in fact did not frightened him_k at all.’

(80) No interaction of Condition C and *de dicto*:

- [ha-nefeš ha-te'oma šel dani_j]_i še-huj mexapes ota_i kvar esrim šana*
the-soul the-twin of Dani_j that-he_j seeks her already twenty years
doma la-baxura še-huj pagaš be-hodu.
is.similar to-the-girl that-he_j met in-India when-he.was young
‘The soul mate of Dani_j that he_j seeks for twenty years looks like the girl that
he_j met in India when he was young.’

(81) No interaction of Condition C and anaphoric binding:

- [ha-šmu'a al acmo_k ve-al rina_j]_i še-hij xašva še-dani_k*
the-rumor about himself_k and-about Rina_j that-she_j thought that-Dani_k
yakxiš ota_i be'ecem lo hifxida oto_k bixlal.
will.deny ota_i in-fact not frightened him_k at-all
‘The rumor about himself_k and about Rina_j that she_j thought that Dani_k
would deny of in fact did not frightened him_k at all.’

If (78)-(81) are indeed grammatical, this strongly suggests that the competition is between syntactic reconstruction and semantic reconstruction, as I proposed here; when syntactic reconstruction results in a Condition C violation, semantic reconstruction is free to apply. Notably, the judgments of these examples are subtle and require further empirical investigation.

4.4.2 Anaphor binding from a higher position

Anaphor binding from a higher position can also serve as a diagnostic for syntactic reconstruction (Heycock 2012). To the extent that anaphor binding is syntactic in nature, i.e., requires the antecedent of the anaphor to c-command it (within a minimal domain), if an anaphor located in the relative clause head cannot be coindexed with a higher expression when the interpretation of the relative clause head is “low” (i.e., ‘reconstructed’), this indicates that the low, reconstructed, interpretation arise from

syntactic reconstruction. If, on the other hand, there is no problem with this configuration (demonstrated in (82) below), this indicates that the low, reconstructed, interpretation is not due to syntactic reconstruction.

- (82) antecedent_j [NP ... anaphor_j ...]_i ... t_i

Heycock (2012) argues that some reconstruction effects observed in relative clauses are compatible with an anaphor located in the relative clause head and bound from a higher position. In particular, she argues that low readings of adjectives, *only*, and superlatives do not result in a Condition A violation when the relative clause head includes an anaphor bound from a higher position. According to Heycock (2012), (84b) is not worse than (83b) despite the fact that the position of *ever* in (84b) forces a low reading of *only/best*.

- (83) a. I finally saw the only/best picture of me that John has ever painted.
 b. I finally saw the only/best picture of myself that John has ever painted.
 (84) a. I finally saw the only/best picture of me that my mother thinks that John has ever painted.
 b. I finally saw the only/best picture of myself that my mother thinks that John has ever painted.
 (ex. (22)-(23) from Heycock 2012)

With regard to resumptive pronouns, the prediction is as follows. If reconstruction effects observed with them are syntactic, these effects should interact with anaphor binding from a higher position. Namely, low interpretation of the relative clause head combined with an anaphor located in the relative clause head and bound from a higher position should result in ungrammaticality. If, on the other hand, these reconstruction effects are not cases of syntactic reconstruction, the prediction is that they would not interact with anaphor binding from a higher position. Namely, low interpretation of the relative clause head combined with an anaphor located in the relative clause head and bound from a higher position would not result in ungrammaticality. I argue, based on (85) below, that low reading of *only* and superlatives observed with PP pronouns in Hebrew do not interact with anaphor binding from a higher position.

No interaction of anaphor binding from a higher position and low readings of *only* and superlatives

(85) shows that an anaphor located in the relative clause head can be bound from a higher position when *only* has to be interpreted low, to license the NPI *ever*.

- (85) *dina_j baxara et [ha-tmuna ha-yexida/ha-rišona šel-acma_j]_i še-ruti*
 Dina_j chose ACC the-picture the-only/the-first of-herself_j that-Ruti
xašva še-dani ey-pa'am haya meruce mimena_i.
 thought that-dani ever was satisfied from-it
 ‘Dina_j chose the only/first picture of herself_j that Ruti thought that Dani was ever satisfied with.’

This suggests that reconstruction for low reading of *only* and superlatives is not syntactic.²¹

The same question that arose with respect to the interaction with Condition C arises here too. If reconstruction effects observed with traces also do not interact with anaphor binding from a higher position, as Heycock (2012) argues, it suggests that these are also not cases of syntactic reconstruction. In that case, in order to account for the contrast between optional and obligatory pronouns we would have to say, as I already suggested above for Condition C, that when syntactic reconstruction results in a Condition A violation, semantic reconstruction is free to apply.

Indeed, gap relatives also show no interaction of anaphor binding from a higher position and a low reading of *only* as demonstrated in (86).

- (86) *dina_j baxara et [ha-tmuna ha-yexida/ha-rišona šel-acma_j]_i še-ruti*
 Dina_j chose ACC the-picture the-only/the-first of-herself_j that-Ruti
xašva še-dani ey-pa'am avav t_i.
 thought that-Dani ever liked t_i
 'Dina_j chose the only/first picture of herself_j that Ruti thought that Dani ever liked.'

As I explained for the interaction with Condition C, the prediction with regard to optional pronouns is that they would allow reconstruction in cases in which syntactic reconstruction results in a Condition A violation. Since syntactic reconstruction is not possible in this case, semantic reconstruction can apply. This prediction seems to be borne out, as demonstrated in (87) below. The judgment is indeed difficult and requires further empirical investigation.

- (87) *dina_j baxara et [ha-tmuna ha-yexida/ha-rišona šel-acma_j]_i še-ruti*
 Dina_j chose ACC the-picture the-only/the-first of-herself_j that-Ruti
xašva še-dani ey-pa'am avav ota_i.
 thought that-Dani ever liked it_i
 'Dina_j chose the only/first picture of herself_j that Ruti thought that Dani ever liked.'

In sum, evidence from Condition C and anaphor binding from a higher position suggests that (at least some) reconstruction effects observed with pronouns in Hebrew can be accounted for semantically, i.e., without syntactic reconstruction. I now turn to another phenomenon that was observed to interact with syntactic reconstruction: Extraposition.

4.4.3 Extraposition

Another phenomenon that interacts with syntactic reconstruction is Extraposition (Hulsey & Sauerland 2006). Hulsey and Sauerland (2006) observe that a relative

²¹I was not able to come up with examples that test the other reconstruction effects.

clause whose head has to be interpreted low cannot be extraposed. This observation is exemplified in (88)-(89) for idioms. See Hulsey and Sauerland (2006) for parallel examples involving anaphoric binding and low readings of superlatives.

- (88) a. Mary praised the headway that John made.
b. Mary praised the potroast that John made.
 - (89) a. * Mary praised the headway yesterday that John made.
b. Mary praised the potroast yesterday that John made.
- (ex. (45)-(46) from Heycock 2012, cited from Hulsey & Sauerland 2006)

Heycock (2012) argues that extraposition does not interact with idiomatic interpretation, but does seem to interact with reconstruction for anaphoric binding. (90) shows that an anaphor interpreted as bound by a relative clause internal expression cannot occur in the head of an extraposed relative clause. (91) shows that an idiomatic interpretation is possible when the relative clause is extraposed. See Heycock (2012) for more examples and for minimally different examples in which there is no low interpretation or no extraposition.²²

- (90) * I had to laugh when I read the anecdote about himself this morning that he put in his column.
 - (91) Describe all the habits to me that you want to kick.
- (ex. (58a) and (62a) from Heycock 2012)

In (61) above we saw that reconstruction for anaphoric binding does not seem to interact with Condition C. Assuming that the Condition C diagnostic and Extraposition should yield the same result, the ungrammaticality of (90) is surprising. I now turn to examining the interaction between extraposition and reconstruction effects in Hebrew.

When testing the interaction of extraposition with reconstruction effects in Hebrew one should be careful not to use examples in which extraposition is bad regardless of reconstruction. While English seems to allow extraposition quite freely, Hebrew seems to allow it in more restricted contexts. For example, while (92b) is perfectly grammatical in English, its Hebrew equivalent in (93b) is quite degraded.

- (92) a. I saw the guy that I met in India yesterday.
b. I saw the guy yesterday that I met in India.

²²The judgments here are based on Heycock's (2012) results from an acceptability judgment questionnaire that suggest that extraposed relatives with an anaphor in the relative clause head are worse than extraposed relatives with a pronoun instead of an anaphor in the relative clause head. The results of the same questionnaire suggest that there is no difference between cases in which the relative clause head is part of an idiom and the relative clause is extraposed, and cases in which the relative clause head is not a part of an idiom and the relative clause is extraposed. Note that the results are only based on a quantitative trend because no statistical analysis was conducted due to the low number of subjects.

- (93) a. *ra'iti et ha-baxur še-pagašti be-hodu etmol.*
 I.saw ACC the-guy that-I.met in-India yesterday
 'I saw the guy that I had met in India yesterday.'
 b. ?? *ra'iti et ha-baxur etmol še-pagašti be-hodu.*
 I.saw ACC the-guy yesterday that-I.met in-India
 'I saw the guy yesterday that I had met in India.'

When the relative clause head is indefinite, the extraposed version becomes better, as demonstrated by the contrast between (94a) and (94b) on the one hand, and (93b) on the other hand.

- (94) a. *ra'iti baxur etmol še-pagašti be-hodu.*
 I.saw guy yesterday that-I.met in-India
 'I saw a guy yesterday that I met in India.'
 b. *ra'iti kama baxurim etmol še-pagašti be-hodu.*
 I.saw some guys yesterday that-I.met in-India
 'I saw some guys yesterday that I met in India.'

Thus, to test the interaction between reconstruction effects and extraposition in Hebrew I use only indefinite relative clause heads. I do not have an account for the relative ungrammaticality of extraposed relative clauses with a definite relative clause head. I tested the interaction between extraposition and variable binding, anaphoric binding, and idioms. I could not test the interaction between extraposition and low readings of superlative or *only* and between extraposition and *de dicto* readings, because these cases are ungrammatical with indefinite relative clause heads. A superlative or *only* cannot modify an indefinite, since the semantics of superlatives and *only* requires the uniqueness of the element being modified. A *de dicto* interpretation of a relative clause in which the head is indefinite seems to be degraded, as demonstrated in (95). I do not have an account for this fact.

- (95) a. *pagašti et ha-iša še-dani mexapes.*
 I.met ACC the-woman that-Dani seeks
 'I met the woman that Dani seeks.'
 (*de re*: OK; *de dicto*: OK)
 b. *pagašti iša še-dani mexapes.*
 I.met woman that-Dani seeks
 'I met a woman that Dani seeks.'
 (*de re*: OK; *de dicto*: *)

No interaction of extraposition and variable binding

Extraposition of the relative clause in examples that involve a pronoun in the relative clause head which is interpreted as bound by a quantifier located inside the relative clause yields a grammatical result. To my judgment, the b-examples in (96) and (97)

are grammatical, and are not worse than the a-examples, in which the relative clause is not extraposed. This is true both for gap-relatives and for PP pronouns relatives.

- (96) a. *hefacti etmol [šmu'a al ištoj]_i še-kol politikai_j*
 I.spread yesterday rumor about wife-his_j that-every politician_j
betax yakxiš t_i.
 definitely will.deny t_i
 'I spread yesterday a rumor about his_j wife that every politician_j would probably deny.'
- b. *hefacti [šmu'a al ištoj]_i etmol še-kol politikai_j*
 I.spread rumor about wife-his_j yesterday that-every politician_j
betax yakxiš t_i.
 definitely will.deny t_i
 'I spread a rumor about his_j wife yesterday that every politician_j would probably deny.'
- (97) a. *hefacti etmol [šmu'a al ištoj]_i še-kol politikai_j*
 I.spread yesterday rumor about wife-his_j that-every politician_j
betax xošeš mimenai_i.
 definitely fears of-it
 'I spread yesterday a rumor about his_j wife that every politician_j probably fears.'
- b. *hefacti [šmu'a al ištoj]_i etmol še-kol politikai_j*
 I.spread rumor about wife-his_j yesterday that-every politician_j
betax xošeš mimenai_i.
 definitely fears of-it
 'I spread a rumor about his_j wife yesterday that every politician_j probably fears.'

The grammaticality of (96b) and (97b) suggests, as also suggested by the Condition C and anaphor binding diagnostics, that reconstruction for variable binding does not have to be syntactic. This is consistent with my claim that PP pronouns are not compatible with movement.

The grammaticality of (96b) shows that even with traces, which are compatible with movement and syntactic reconstruction, reconstruction for variable binding does not have to be syntactic. As I discussed above with regard to the Condition C and the anaphor binding from a higher position diagnostics, the prediction with regard to optional (direct object) pronouns is that they would allow reconstruction for variable binding when syntactic reconstruction is incompatible with the rest of the structure. Thus, optionally resumed extraposed relatives are predicted to allow variable binding, while non-extraposed optionally resumed relatives are predicted not to allow variable binding. This prediction seems to be borne out as the contrast between (98a) and (98b) shows. I admit that the judgments are difficult and that more thorough investigation is needed to verify them.

- (98) a. ?? *hefacti etmol [šmu'a al ištoj]_i še-kol politikai_j*
 I.spread yesterday rumor about wife-his_j that-every politician_j
betax yakxiš ota_i.
 definitely will.deny it
 'I spread yesterday a rumor about his_j wife that every politician_j would probably deny.'
- b. *hefacti [šmu'a al ištoj]_i etmol še-kol politikai_j*
 I.spread rumor about wife-his_j yesterday that-every politician_j
betax yakxiš ota_i.
 definitely will.deny it
 'I spread a rumor about his_j wife yesterday that every politician_j would probably deny.'

No interaction of extraposition and anaphoric binding

As we saw for variable binding, extraposition of the relative clause in examples of reconstruction for anaphoric binding seems to yield a grammatical result. This is attested both for gap-relatives and PP-resumed relatives.

- (99) a. *hefacti etmol [šmu'a al acmoj]_i še-dani_j betax yakxiš*
 I.spread yesterday rumor about himself_j that-Dani_j definitely will.deny
t_i.
t_i
 'I spread yesterday a rumor about himself_j that Dani_j would probably deny.'
- b. *hefacti [šmu'a al acmoj]_i etmol še-dani_j betax yakxiš*
 I.spread rumor about himself_j yesterday that-Dani_j definitely will.deny
t_i.
t_i
 'I spread a rumor about himself_j yesterday that Dani_j would probably deny.'
- (100) a. *hefacti etmol [šmu'a al acmoj]_i še-dani_j betax xošeš*
 I.spread yesterday rumor about himself_j that-Dani_j definitely fears
mimena_i.
 of-it
 'I spread yesterday a rumor about himself_j that Dani_j probably fears.'
- b. *hefacti [šmu'a al acmoj]_i etmol še-dani_j betax xošeš*
 I.spread rumor about himself_j yesterday that-Dani_j definitely fears
mimena_i.
 of-it
 'I spread a rumor about himself_j yesterday that Dani_j probably fears.'

As I noted for variable binding, the prediction with regard to optional pronouns is that they will allow anaphoric binding in extraposed relatives. This prediction seems to be borne out. (101b), in which the relative is extraposed, seems to be better than (101a), in which the relative is not extraposed. Here too, the judgments are difficult and require further investigation.

- (101) a. ?? *hefacti etmol [šmu'a al acmoj]_i še-dani_j betax*
 I.spread yesterday rumor about himself_j that-Dani_j definitely
yakxiš ota_i.
 will.deny it
 'I spread yesterday a rumor about himself_j that Dani_j would probably deny.'
- b. *hefacti [šmu'a al acmoj]_i etmol še-dani_j betax*
 I.spread rumor about himself_j yesterday that-Dani_j definitely
yakxiš ota_i.
 will.deny it
 'I spread a rumor about himself_j yesterday that Dani_j would probably deny.'

No interaction of extraposition and idiomatic interpretation

Finally, there seems to be no interaction between idiomatic interpretation of the relative clause head and extraposition. This is true both for gap-relatives and PP-resumed relatives. The b-examples, in which the relative clause is extraposed, are not worse than the a-examples, in which the relative clause is not extraposed.

- (102) a. *šama'ti etmol al kama tikim dey recini'm še-tixnenu*
 I.heard yesterday about some cases quite serious that-they-planned
litfor t_i la-sar.
 to-sew t_i to-the-minister
 'I heard yesterday of some quite serious cases that they planned to pin on the minister.'
- b. *šama'ti al kama tikim dey recini'm etmol še-tixnenu*
 I.heard about some quite serious cases yesterday that-they-planned
litfor t_i la-sar.
 to-sew t_i to-the-minister
 'I heard of some quite serious cases yesterday that they planned to pin on the minister.'
- (103) a. *samti lev etmol le-kama ecim še-hu tipes alehem_i im*
 I.put heart yesterday to-some trees that-he climbed on-them with
ha-drišot šelo.
 the-demands of-his
 'I have noticed yesterday some high positions that he took with his demands.'

- b. *samti lev le-kama ecim etmol še-hu tipes alehem_i im*
 I.put heart to-some trees yesterday that-he climbed on-them with
ha-drišot šelo.
 the-demands of-his
 ‘I have noticed some high positions yesterday that he took with his demands.’

Here too, the prediction with regard to optional pronouns is that they would allow an idiomatic interpretation of the relative clause head in extraposed relatives, while they would not allow such an interpretation in non-extraposed relatives. Again, this prediction seems to be borne out, though I admit that the judgments are difficult and certainly require further empirical investigation.

- (104) a. ?? *šama’ti etmol al kama tikim dey recini’m*
 I.heard yesterday about some cases quite serious
še-tixnenu litfor otam_i la-sar.
 that-they-planned to-sew them to-the-minister
 ‘I heard yesterday of some quite serious cases that they planned to pin on the minister.’
 b. *šama’ti al kama tikim dey recini’m etmol*
 I.heard about some quite serious cases yesterday
še-tixnenu litfor otam_i la-sar.
 that-they-planned to-sew them to-the-minister
 ‘I heard of some cases quite serious yesterday that they planned to pin on the minister.’

To conclude, reconstruction effects observed with obligatory pronouns in Hebrew do not pass diagnostics of syntactic reconstruction. Namely, there is no interaction between these reconstruction effects and Condition C, anaphor binding from a higher position, and extraposition. This seems to be true at least for low readings of *only* and superlatives, variable binding, anaphoric binding, *de dicto* readings and idiomatic interpretations. The observation that reconstruction effects with traces also do not pass these diagnostics suggests that when syntactic reconstruction results in a syntactic violation (e.g., Condition C violation, Condition A violation, or a violation related to extraposition) semantic reconstruction becomes available (as long as it can derive the intended interpretation in the first place).²³ This predicts that semantic reconstruction would also be available in the equivalent optional-pronoun relatives. If this is indeed the case, this supports the claim that the competition is between syntactic reconstruction and semantic reconstruction.

²³Since scope reconstruction does interact with Condition C (Heycock 1995, Fox 1999) it should be the case that semantic reconstruction cannot derive the intended meaning in this case.

5 Semantic accounts for reconstruction

In section 4.4, I argued that reconstruction effects observed with PP pronouns in Hebrew are not cases of syntactic reconstruction, based on their lack of interaction with Condition C, anaphor binding from a higher position, and extraposition. However, I did not discuss *how* the intended interpretations are obtained without syntactic reconstruction. In this chapter I discuss each of the reconstruction phenomena observed with pronouns and the semantic account(s) suggested for them. However, I do not provide a full semantic composition mechanism that derives the relevant interpretations. The reader is referred to relevant works that include a detailed description of such mechanisms when available. Note that each phenomenon is provided with a non-syntactic mechanism that can possibly account for it, but those mechanisms are different from each other and some might be more convincing than others. I use the term ‘semantic reconstruction’ very broadly, and not in the sense in which it is used for example in Cresti (1995) or Lechner (1998). For me, a ‘semantic reconstruction’ mechanism is simply a non-syntactic mechanism that is able to derive ‘reconstructed’ interpretations, namely, interpretations in which the relative clause head is interpreted as if it is located in a lower position. Note that I do not argue that these semantic mechanisms are the only way to derive the reconstructed meanings. Rather, I argue that both syntactic reconstruction and semantic reconstruction are in principle able to derive them, but semantic reconstruction is free to apply only when syntactic reconstruction is unavailable.

In the following sections I review and discuss possible semantic accounts for variable binding, anaphoric binding, idiomatic interpretation, *de dicto* readings, and low readings of *only* and superlatives.

For variable binding, I discuss non-syntactic accounts for functional readings of relative clauses (Engdahl 1986, Jacobson 1994; 2002, Sharvit 1999*a*; 1999*b*, Cecchetto 2005) and argue that an account of this kind can probably explain the ‘reconstructed’ interpretation of the relative clause head without assuming an internal copy of that head. I also thoroughly discuss the contrast between identity and non-identity sentences with regard to functional readings of relative clauses (Geach 1964) and argue that functional readings of gap- and obligatorily resumed relative clauses can be obtained in non-identity sentences, and can yield a natural function reading in this context, contra Sharvit’s (1999*a*; 1999*b*) claim that pronouns can only allow functional readings in identity sentences. Contra Sharvit, I argue that the interpretation of resumptive pronouns in relative clauses is not governed by an inherent property of pronouns, but rather governed by competition between syntactic and semantic

reconstruction.

For anaphoric binding, I discuss Cecchetto's (2005) observation that the examples used in the literature to argue for anaphoric binding reconstruction include 'transitive NPs', which, as he claims, shouldn't be used to argue in this direction due to the possibility that they involve a subject PRO which binds the anaphor. Following Cecchetto, I show for Hebrew that an anaphor located within a transitive relative clause NP-head can be bound by a relative-clause-internal NP even when the relativized position does not fall in the c-command domain of this NP, which suggests that the bound reading of the anaphor in cases in which the relativized position is c-commanded by the relative-clause-internal NP cannot be taken as evidence for syntactic reconstruction. I also show that the asymmetry between transitive and non-transitive NPs with regard to anaphoric binding remains in non-relative clause structures, in which the NP that contains the anaphor is c-commanded in the surface structure by a coindexed NP. Though I do not suggest a semantic account of reconstruction for anaphoric binding, I argue that the fact that obligatory pronouns allow binding of an anaphor located in the relative clause head cannot be taken as evidence for syntactic reconstruction.

For idiomatic interpretation, I discuss Nunberg, Sag and Wasow's (1994) proposal that many phrasal idioms are decomposable, i.e., the conventions that stand behind their idiomatic meaning can be attached to their parts rather than to the collocation as a whole. I argue that the Hebrew idioms that are used by Sichel (to appear) to argue for syntactic reconstruction in cases where the relative clause head is the NP-part of an idiom are decomposable. Thus, I argue, their meaning can be obtained in a semantic way, without assuming that the NP-part has to occur at LF inside the VP. I show that in idioms which are not decomposable, there is an asymmetry between gaps and obligatory PP pronouns: while gaps allow the idiomatic interpretation, PP pronouns do not. This suggests that what stands behind the ability of PP pronouns to allow reconstruction is a semantic mechanism, since if it was syntactic reconstruction that allows the idiomatic meaning we would not expect to find a contrast between decomposable and non-decomposable idioms.

For *de dicto* readings I discuss a semantic analysis due to Fred Landman (p.c) which shows how the *de dicto* reading of a relative clause head can be derived by assigning the trace or the pronoun a higher semantic type ($\langle s, \langle e, t \rangle \rangle$), and without assuming an internal copy of the relative clause head. I also discuss an alternative proposal for the absence of *de dicto* readings with direct object pronouns suggested by Sharvit (1999b), according to which the unavailability of *de dicto* readings is related to an inherent property of pronouns. I show that the contrast between direct object pronouns and PP pronouns with regard to *de dicto* readings only exists in A'-dependencies contexts, which strongly implies that the scope of the competition is limited to A'-dependencies, i.e., to contexts in which pronouns can in principle alternate with gaps and function as bound variables.

Finally, for low readings of superlatives and *only*, I discuss Heycock's (2005) proposal that these low readings can be analyzed as cases of Neg-Raising, in which negation is given a lower scope in the entailment generated by superlatives and *only*.

Heycock shows that the same environments that block Neg-Raising in non-relative clause constructions, block low interpretations of *only* and superlatives in relative clauses. I argue that if low readings of *only* and superlatives can be given a semantic account of the kind suggested by Heycock, the ability of obligatory pronouns to allow reconstruction could be reconciled with their inability to license parasitic gaps, which implies that they are not compatible with movement.

In section 5.6 I discuss amount readings, a reconstruction phenomenon that seems to be more difficult to account for using a semantic mechanism, and two other phenomena that show an asymmetry between gaps and obligatory pronouns on the one hand, and optional pronouns on the other hand, that remain unresolved here. The first is the ability to occur in Free Relatives. It has been observed that gaps and obligatory pronouns, but not optional ones, can occur in free relatives (Borer 1984). Since free relatives are assumed to require a structure with a low copy of the relative clause head in the relativized position (e.g., Grosu & Landman 1998), Sichel (to appear) argues that this asymmetry is another indication for the compatibility of obligatory pronouns with a movement structure. To account for this asymmetry without assuming that obligatory and optional pronouns differ with regard to movement, it would have to be shown that free relatives do not force a movement structure.

The second asymmetry which remains unresolved is extraction of another constituent from a relative clause, which is possible in gap- and obligatorily-resumed relatives and impossible in optionally-resumed relatives (Doron 1982, Sichel to appear). Sichel (to appear) further shows that the possibility to extract out of a relative clause is independent of resumption and seems to be governed by whether or not the relative clause possesses a Raising structure. She takes this to be a strong evidence for a Raising structure as a common source for reconstruction and extraction, and thus as another indication for obligatory pronouns' compatibility with movement. To maintain the claim that obligatory pronouns are incompatible with movement while accounting for this asymmetry, it would have to be shown that the possibility to extract is unrelated to the movement (Raising) structure of the relative clause.

Section 5.7 concludes the chapter. I now turn to a discussion of each of the reconstruction phenomena and the possible semantic accounts for it.

5.1 Variable binding

In this section I discuss non-syntactic accounts for variable binding. I review semantic accounts for functional readings of relative clauses (Engdahl 1986, Jacobson 1994; 2002, Sharvit 1999*a*; 1999*b*, Cecchetto 2005), which are based on assigning the trace (or the pronoun) a higher semantic type, and argue that an account of this kind can probably explain the 'low' interpretation of the relative clause head without assuming an internal copy of that head. I then thoroughly discuss the contrast between identity and non-identity sentences with regard to functional readings of relative clauses (Geach 1964) and argue that functional readings of gap- and obligatorily resumed relative clauses can be obtained in non-identity sentences, and can yield a natural

function reading in this context, contra Sharvit's (1999*a*; 1999*b*) claim that pronouns can only allow functional readings in identity sentences. Contra Sharvit, I argue that the interpretation of resumptive pronouns in relative clauses is not governed by an inherent property of pronouns, but rather governed by competition between syntactic and semantic reconstruction.

The assumption that lies at the basis of the use of variable binding as an argument for syntactic reconstruction is that in order to get a functional reading in which the referent of the relative clause head varies with the restriction of the quantifier, the relative clause head has to be located in the scope of the quantifier. For example, in (105) the intended interpretation is one in which the rumors vary with politicians; for each politician, there is a (different) rumor about his wife that he denied/feared and that rumor was spread by the chair. In other words, the relative clause denotes a set of functions that give for each politician a rumor about that politician's wife that he denied/feared. Combined with the definite determiner, we get a unique function which maps every politician to the rumor about his wife that he denied/feared.¹

- (105) a. *[ha-šmu'a al ištoj]_i še-kol politikai_j hikriš t_i (*ota_i)*
 the-rumor about wife-his_j that-every politician_j denied t_i (*it_i)
hufca al-yedey ha-yošev roš
 was-spread by the-chair
 'The rumor about his_j wife that every politician_j denied was spread by the chair.'
- b. *[ha-šmu'a al ištoj]_i še-kol politikai_j xašaš mimena_i*
 the-rumor about wife-his_j that-every politician_j feared from-it
hufca al-yedey ha-yošev roš
 was-spread by the-chair
 'The rumor about his_j wife that every politician_j feared was spread by the chair.'

According to the syntactic account for reconstruction, the functional reading in cases like (105) is due to the presence of a copy of the relative clause head in the relativized position, which allows the pronoun located inside it to be in the scope of 'every politician', as demonstrated by the structures in (106).

- (106) a. *[ha-šmu'a al ištoj] še-kol politikai_j hikriš <šmu'a al*
 the-rumor about wife-his_j that-every politician_j denied <rumor about
ištoj> hufca al-yedey ha-yošev roš
 wife-his> was-spread by the-chair
 'The rumor about his_j wife that every politician_j denied was spread by the chair.'

¹Sichel's (to appear) examples involve an anaphor rather than a pronoun in the relative clause head (see (10a) above). Here I chose to use a pronoun to avoid Condition A issues.

- b. *[ha-šmu'a al ištoj] še-kol politikai_j xašaš mi- <šmu'a*
 the-rumor about wife-his_j that-every politician_j feared from- <rumor
al ištoj> hufca al-yedey ha-yošev roš
 about wife-his_j was-spread by the-chair
 'The rumor about his_j wife that every politician_j feared was spread by the chair.'

However, alternative accounts have been suggested which explain the functional reading of relative clauses without syntactic reconstruction, i.e., without assuming that there is a copy of the relative clause head in the relativized position. These accounts are in principle compatible with a no-movement derivation of relative clauses, as they rely on assigning the trace a higher semantic type, which can, in principle, be assigned to any variable, including pronouns. I discuss these accounts and evaluate them with regard to the Hebrew facts below.

Sharvit (1999*a*, 1999*b*) suggests a semantic account for functional readings of relative clauses. She suggests an 'index percolation' mechanism, which allows a quantifier embedded inside the relative clause to bind a pronoun that is located outside of the relative clause, in the matrix clause. For example, in (107) the trace is a functional trace and is doubly-indexed. It is bound both by the quantified expression (indexed *a*) and by the relative operator (indexed *f*). The two indices of the trace percolate to the DP that contains the relative clause (*the woman that every man invited*) which allows the percolated index of *every man* to bind the pronoun in the matrix clause.

- (107) a. *[ha-iša še-kol gever_j hizmin t_i] hodeta lo_j*
 the-woman that-every man invited t_i thanked to-him
 'The woman that every man invited thanked him.'
 b. [_{DP} The woman [_{Op_f} [every man_a [t_a invited t_f^a]]]]_f^a thanked him_a
 (ex. (27) from Sharvit 1999*b*)

Roughly, the interpretation of (107) is as follows (cited from Sharvit 1999*b*:600): "There is a function *f*, which is the unique function which maps every man to the woman he invited, and for every man_x, *f*(x) thanked *x*".

The relative clauses in (105) differ from the functional relative clauses discussed in Sharvit (1999*a*; 1999*b*) in that the pronoun which is interpreted as a variable bound by the quantified expression is not located in the matrix clause, but rather located inside the relative clause head. Therefore, it is not obvious that the mechanism suggested by Sharvit (1999*a*; 1999*b*) can account for the bound variable reading of examples like (105). In Sharvit's mechanism, the binding of the pronoun located in the matrix clause by the quantified expression is obtained by the percolation of the quantified expression's index into the DP that contains the relative clause. This DP c-commands the pronoun located in the matrix clause, so the mechanism ultimately uses c-command to account for binding. If the relative clauses in (105) were given the same analysis, the DP that bears the percolated index would still not c-command a pronoun located in the relative clause head. Hence, Sharvit's index percolation

mechanism does not straightforwardly account for the bound variable readings in cases like (105).

Note, however, that the interpretation of cases like (105) seems to be very similar to the interpretation of Sharvit's example. The interpretation of (105) is roughly as follows. There is a function f which is the unique function that maps every politician to the rumor about his wife that he denied/feared, and for every politician _{x} , $f(x)$ was spread by the chair". Semantically speaking, there does not seem to be a fundamental difference between the function f in (107), which maps every man to the woman he invited, and the function f in (105) which maps every politician to a rumor about his wife that he denied/feared. Both are functions from individuals to individuals, so it is not unreasonable to expect a similar analysis of the two examples.

In fact, Jacobson's (1994) analysis of functional relative clauses like *the woman that every man hugs* involves treating the relative head (*woman*) as a set of functions from individuals to individuals (type $\langle\langle e, e \rangle, t \rangle$) which intersects with another set of functions from individuals to individuals (*every man hugs*) to yield a complex set of functions from individuals to individuals. In principle, there seems to be no reason why the same semantic composition should not apply in cases like (105); *rumor about his wife* can be treated as a set of functions from individuals to individuals (type $\langle\langle e, e \rangle, t \rangle$) which intersects with the set of functions from individuals to individuals denoted by *every politician denied/feared* to yield a complex set of functions that map every politician x to a rumor about this politician's wife that he denied/feared. This is the kind of solution suggested in Engdahl (1986).

Jacobson (2002) acknowledges the fact that a bound-variable interpretation is also possible when the pronoun is not located in the matrix clause but rather located in the relative clause head, and also acknowledges the fact that her 1994 analysis, embedded in the variable-free framework, does not account for cases in which the bound pronoun is located inside the relative clause head. She suggests an analysis involving a new type-shifting rule, which does account for such cases. In her analysis of the relative clause *the relative of his that every man loves*, *relative of his* is of type $\langle e, \langle e, t \rangle \rangle$ while *every man loves* is of type $\langle\langle e, e \rangle, t \rangle$. To enable the intersection of the relative clause head with the relative clause, she adds a type-shifting rule that shifts *relative of his* into the type $\langle\langle e, e \rangle, t \rangle$. Jacobson (2002) has to assume this rule since in variable-free semantics, *relative of his* with a non-functional interpretation is of type $\langle e, \langle e, t \rangle \rangle$, rather than of type $\langle e, t \rangle$, as assumed in Heim and Kratzer's (1998) non-variable-free framework. This is due to the fact that the variable-free framework takes VPs that contain a pronoun to be functions from individuals to sets of individuals, rather than sets of individuals relative to an assignment function, as assumed in the non-variable-free framework (Heim & Kratzer 1998). Thus, Jacobson's (1994) rule that shifts type $\langle e, t \rangle$ into type $\langle\langle e, e \rangle, t \rangle$, which applies to *woman* in cases like *the woman that every man invited* cannot apply to *relative of his*. Assuming that *rumor about his wife* is parallel in its type to *relative of his*, Jacobson's (2002) analysis, which involves the new type-shifting rule, should work for the relative clauses in (105) as well.

Notice that under the non-variable-free framework, *woman* and *relative of his/rumor*

about his wife both denote a set of individuals in their non-functional meaning, namely, they are both of type $\langle e, t \rangle$. Thus, if *woman* is treated as type $\langle \langle e, e \rangle, t \rangle$ to get the functional reading, then *relative of his/rumor about his wife* could be treated as type $\langle \langle e, e \rangle, t \rangle$ as well. Hence the difference between the variable-free solution (Jacobson 2002) and the non-variable-free solution (Engdahl 1986).² With regard to the current discussion, the important thing is that a non-syntactic account for functional readings of relative clauses that involve a pronoun located inside the relative clause head seems to be available, and also seems to be similar to the non-syntactic account of functional readings in cases in which the pronoun is located in the matrix clause.³

Cecchetto (2005) arrives at a similar conclusion with regard to relative clauses which involve a pronoun located inside the relative clause head and interpreted as bound by a quantified expression located inside the relative clause. Consider (108).

- (108) The one accident of his_i that everyone $_i$ remembers is the one that affected him $_i$ first.
(ex. (29a) from Cecchetto 2005)

Though he does not provide a full semantic composition for the functional reading of the relative clause in (108), Cecchetto argues that it can be obtained without syntactic reconstruction of the relative clause head into the trace position. In particular, he proposes that the bound variable reading of (108) is obtained by an indirect binding mechanism as suggested in Jacobson (1994) and Sharvit (1999a). If the functional interpretation in (108) can be obtained without assuming a low copy of the relative clause head, as suggested by Engdahl (1986), Jacobson (1994, 2002), Sharvit (1999a; 1999b) and Cecchetto (2005), this suggests that the variable binding reading of the Hebrew examples with obligatory pronouns can be obtained without this assumption as well. This supports my claim that obligatory pronouns in Hebrew are incompatible with a movement derivation and that they allow reconstructed interpretations by means of semantic reconstruction, which is possible in the absence of a gap-LF alternative. Note that I do not argue here, or with regard to any other reconstruction phenomena that I discuss, that semantic reconstruction is the only way to obtain these interpretations. Rather, I argue that the reconstructed interpretations *can* be obtained by means of semantic reconstruction, but only when they cannot be obtained by means of syntactic reconstruction (i.e., by interpreting a low copy of the relative clause head).⁴

At this point an important issue that I have ignored until now calls for discussion, which is the *identity/non-identity* distinction. In Cecchetto's (2005) variable bind-

²See Jacobson (2002) for a comparison of the two proposals.

³Jacobson's (1994, 2002) analysis only accounts for functional relative clauses embedded in identity/specificational sentences, while in the Hebrew examples in Sichel (to appear) the functional relative clause is embedded in a predicative sentence. I refer to this issue below.

⁴Jacobson (2002) also argues that the syntactic account for reconstruction actually yields the wrong semantics for cases like (108). Here I assume that both a syntactic account and a semantic account in the spirit of Jacobson (2002) are available.

ing examples, the functional relative clause is embedded within an *identity* sentence, while in (105), the example from Hebrew, the relative clause with the functional interpretation is embedded within a canonical subject-predicate (*non-identity*) sentence. The distinction between identity and non-identity sentences is relevant for the availability of the functional reading of the relative clause. Geach (1964) observes that at least in English, a quantified expression can bind a pronoun outside its syntactic scope in identity sentences but not in non-identity sentences. This contrast is exemplified in (109)-(110) below.

- (109) The woman [every man]_i loves is his_i mother.
 (110) ?? The woman [every man]_i invited to the party came without him_i.
 (ex. (40)-(41) from Cecchetto 2005, attributed to Geach 1964)

In what follows I show that functional readings of gap- and obligatorily-resumed relative clauses in which the relative clause head involves a pronoun which is interpreted as bound by a relative-clause-internal quantified expression are available both in identity- and in non-identity sentences, while optional pronouns do not allow these readings in non-identity or in identity sentences. This suggests that the semantic mechanism that derives functional readings should be broadened to include non-identity sentences. I discuss Sharvit's (1999*a*; 1999*b*) proposal with regard to resumptive pronouns' interpretation in functional relative clauses, according to which resumptive pronouns are predicted to only allow functional readings in identity sentences due to two independent observations: (a) non-identity sentences only allow pair-list readings of relative clause; and (b) pair-lists are not possible referents of pronouns. Contra Sharvit's prediction, I show that (a) PP pronouns, like gaps, allow functional readings of relative clauses in non-identity as well as identity sentences both when the bound pronoun is located in the relative clause head and when it is located in the matrix clause; (b) when the bound pronoun is embedded in the relative clause head, optional pronouns do not allow functional readings in identity or in non-identity sentences, while they do allow a functional reading in identity sentences when the bound pronoun occurs in the matrix clause (c) the functional reading which PP pronouns and gaps allow in non-identity sentences when the bound pronoun is located in the relative clause head is not a pair-list reading; and (d) the functional reading which PP pronouns and gaps allow in non-identity sentences when the bound pronoun is located in the matrix clause is a pair-list reading. I argue that the fact that there is an asymmetry between optional and obligatory resumptives both in identity and in non-identity sentences suggests that the interpretation of resumptive pronouns is not governed by some inherent property of pronouns, as Sharvit (1999*a*; 1999*b*) assumes, but rather by competition with gap-relatives, which I argue to be competition between syntactic and semantic reconstruction. I further argue that the fact that the functional reading is allowed in non-identity sentences and the fact that this reading is not a pair-list reading suggests that the semantic reconstruction mechanisms suggested by Jacobson (1994; 2002) or Sharvit (1999*a*; 1999*b*) should be modified to explain the pattern of interpretations observed with resumptive pronouns

in relative clauses. The pattern of interpretations is complex, and some issues remain unsolved and require further investigation. I now turn to presenting and discussing the facts.

First, note that there is an analogous contrast to the one observed in (109)-(110) between relative clauses with a pronoun in the relative clause head which are embedded in identity sentences and their equivalents which are embedded in non-identity sentences. Thus, (112), is ungrammatical, in contrast to (111) (Cecchetto 2005).

(111) The one accident of his_i that everyone remembers is the one that affected him_i first.

(112) * The one accident of his_i that everyone remembers affected him_i first.
(ex. (29a)-(29b) from Cecchetto 2005)

So English, and also Italian (Cecchetto 2005) do not allow a functional reading of the relative clause when it is embedded in a non-identity sentence, whether the bound pronoun is located in the matrix clause or is located in the relative clause head. Notably, Jacobson's (1994) analysis (and also Sharvit's 1999*a*; 1999*b* analysis) for functional relative clauses explicitly refers to this distinction. Jacobson's (1994) analysis only explains functional readings of relative clauses which are embedded in identity sentences. In fact, according to her, it is the semantics of identity that allows for the pronoun located in the matrix clause to be interpreted as bound by a quantified expression that does not c-command it. In particular, in Jacobson's (1994) analysis, the bound variable interpretation of the pronoun in the matrix clause is enabled by the presence of the copula that equates the pre-copular expression (the noun modified by the relative clause) with the post-copular expression, as both denote a function (see Sharvit 1999*a* for a full semantic derivation of a functional relative clause according to Jacobson's 1994 analysis).

Importantly, Hebrew, unlike English or Italian, does allow a functional reading of the relative clause in non-identity sentences, as in (107).⁵ Sharvit (1999*a*; 1999*b*) argues that the functional reading in this case is different from the functional reading in identity sentences. According to Sharvit, while functional relative clauses embedded in identity sentences can denote either a function or a list of arbitrary pairs (pair-list reading), functional relative clauses embedded in non-identity sentences can only denote a list of arbitrary pairs. She makes this claim based on a parallelism she observes between functional relative clauses embedded in non-identity sentences and pair-list answers to *wh*-questions. I now briefly explain her argument.

The *wh*-question in (113) below has three readings: (1) an individual reading, according to which a suitable answer is an individual woman that all men love; (2) a natural functional reading, according to which a suitable answer is a function (e.g., *his mother*) and a pair-list reading, according to which a suitable answer is a list of (possibly arbitrary) pairs.

⁵This reading is allowed only with the quantifier *every*. See Sharvit (1999*a*) for discussion.

- (113) Which woman did every man invite?
 a. individual answer: Mary.
 b. functional answer: his mother.
 c. pair list answer: John, Mary; Bill, Sally; Tom, Kate
 (ex. (15) from Sharvit 1999b)

Sharvit (1999a) observes that a relative clause embedded in a non-identity sentence like (107), repeated here as (114a), behaves with regard to several tests like pair-list readings of questions and unlike functional readings of questions. In contrast, a relative clause embedded in an identity sentence, such as (114b), behaves like functional readings of questions with respect to these tests. Here I demonstrate this parallelism for the *uniqueness* test, see Sharvit (1999a) for other tests.

- (114) a. *ha-iša_i še-kol gever_j hizmin t_i hodeta lo_j*
 the-woman that-every man invited t_i thanked to-him
 ‘The woman that every man invited thanked him.’
 b. *ha-iša_i še-kol gever_j hizmin t_i hayta išto_j*
 the-woman that-every man invited t_i was his-wife
 ‘The woman that every man invited was his wife.’

The functional reading of the *wh*-question does not presuppose uniqueness. That is, (113b) is a felicitous answer to (113) even if some men invited other women in addition to their mothers. The only requirement of the definite determiner *the* is that there would be exactly one contextually relevant *relation* which holds between every man and some woman he invited. In contrast, the pair-list reading does presuppose uniqueness. Namely, (113c) is not a felicitous answer to (113) if some men invited more than one woman.

Sharvit observes that the non-identity sentence in (114a) behaves like the pair-list answer in (113c) in that it presupposes that each man invited exactly one woman. In contrast, the identity sentence in (114b) behaves like the functional answer in (113b) in that it does not presuppose that each man invited exactly one woman. In other words, (114b), but not (114a) can be uttered in a situation in which some men invited more than one woman. Thus, Sharvit (1999a) concludes that non-identity sentences can only host pair-list relative clauses.

Sharvit (1999a; 1999b) further argues that identity sentences easily host functional relative clauses because both the pre-copular and the post-copular expressions are functions from individuals to individuals and because the copula, i.e., the *be-of-identity*, can equate two expressions of any semantic type. Contrastingly, in a subject-predicate sentence the I’ constituent which has to compose with the subject denotes a relation between individuals that cannot compose with the function from individuals to individuals denoted by the subject (the NP modified by the relative clause). Thus, obtaining a functional reading of the relative clause in non-identity sentences requires a special kind of relative operator that turns the relative clause into a set of relations

that can then compose with the I', which denotes a relation. Sharvit argues that this operator only occurs in pair-list relative clauses.

If Sharvit (1999a) is right, the functional readings present in (105), repeated here as (115), should be pair-list readings, as the sentence is not an identity sentence.

- (115) a. *[ha-šmu'a al ištoj]_i še-kol politikai_j hikxiš t_i (*ota_i)*
 the-rumor about wife-his that-every politician denied t_i (*it_i)
hufca al-yedey ha-yošev roš
 was-spread by the-chair
 'The rumor about his wife that every politician denied was spread by the chair.'
- b. *[ha-šmu'a al ištoj]_i še-kol politikai_j xašaš mimena_i*
 the-rumor about wife-his that-every politician feared from-it
hufca al-yedey ha-yošev roš
 was-spread by the-chair
 'The rumor about his wife that every politician feared was spread by the chair.'

However, this prediction is not compatible with another claim made in Sharvit (1999b), according to which pronouns, including resumptive pronouns, cannot refer to pair-lists, but can refer to functions of the type observed in identity sentences, which she refers to as 'natural functions'. She observes that direct object resumptive pronouns can occur in functional relative clauses in identity sentences but not in non-identity sentences, as demonstrated in (116) below.

- (116) a. * *ha-iša_i še-kol geve_{rj} hizmin ota_i hodeta lo_j*
 the-woman that-every man invited her thanked to-him
 'The woman that every man invited thanked him.'
- b. *ha-iša_i še-kol geve_{rj} hizmin ota_i hayta išto_j*
 the-woman that-every man invited her was wife-his
 'The woman that every man invited was his wife.'

Sharvit (1999b) attributes the contrast in (116) to a property of pronouns in general. She argues that pronouns can refer to a natural function, but not to a list of pairs. She makes this claim based on two observations. First, as demonstrated in (117), when a resumptive pronoun occurs in a *which*-question it does not allow the pair-list answer, but rather only allows the natural function answer (unlike traces, which allow both kinds of answer). Second, as demonstrated in (118) a free pronoun cannot anaphorically refer to a pair-list answer, while it can refer to a natural function answer; (118) can be the continuation of (117a) or (117b) but not of (117c).

- (117) *eyzo iša kol geve_{rj} hizmin ota?*
 which woman every man invited her
 'Which woman did every man invite?'

- a. *et Gila*
ACC Gila
'Gila'
- b. *et im-o*
ACC wife-his
'His wife.'
- c. * *Yosi et Gila; Rami et Rina*
Yosi ACC Gila; Rami ACC Rina;
'Yosi invited Gila; Rami invited Rina'
- (118) *hi gam ha-iša še-kol gever baxar.*
she also the-woman that-every man chose
'She is also the woman that every an chose.'

An intriguing question arises at this point. If the functional reading of the relative clause in (115b) is a pair-list reading, due to the fact that the sentence is a non-identity sentence, how could it be that the PP pronoun allows such a reading? Namely, if it is a general property of pronouns (including resumptive pronouns) that they cannot refer to pair-lists, how could it be that they can occur in a relative clause that has a bound-variable interpretation and which is not embedded in an identity sentence?

Note that obligatory direct object pronouns (discussed in sections 1.1 and 3.4 above) also allow functional readings in both identity and non-identity sentences, as demonstrated in (119) below. A trace is ungrammatical as a complement of *only*, which makes the direct object pronoun obligatory. This pronoun allows a functional reading of the relative clause in both non-identity (119a) and identity (119b) sentences. The relative clause head, combined with the relative clause denotes a unique function which maps every politician to a rumor about that politician's wife. This strongly suggests that the interpretation of resumptive pronouns is not governed by an inherent property pronouns, as we see that when direct object pronouns are obligatory, they behave like PP pronouns. Since the *uniqueness* test cannot be used on examples that involve *only* (because *only* itself implies uniqueness) and for reasons of space, I continue to only use PP pronouns in the following discussion.

- (119) a. *[ha-šmu'a al ištoj]_i še-kol politikai_j hikriš rak ota_i (*t_i)*
the-rumor about wife-his that-every politician denied only it_i (*t_i)
hufca al-yedey ha-yošev roš
was-spread by the-chair
'The rumor about his wife that every politician denied only it was spread by the chair.'
- b. *[ha-šmu'a al ištoj]_i še-kol politikai_j hikriš rak ota_i (*t_i) hi*
the-rumor about wife-his that-every politician denied only it_i (*t_i) is
zo še-hufca al-yedey ha-yošev roš
this that-was-spread by the-chair

‘The rumor about his wife that every politician denied only it is the one that was spread by the chair.’

As a first step in answering the question with regard to the possible interpretations of PP pronouns, note that PP pronouns also allow the bound variable reading in examples which are exactly parallel to Geach’s (1964) identity/non-identity examples, regardless of whether the sentence is an identity or a non-identity sentence:

- (120) a. *ha-iša še-kol geve_{rj} hitkašer eleha hodeta lo_j.*
 the-woman that-every man_j called to-her thanked to-him_j
 ‘The woman that every man called thanked him.’
 b. *ha-iša še-kol geve_{rj} hitkašer eleha hayta išto_j.*
 the-woman that-every man_j called to-her was wife-his_j
 ‘The woman that every man called was his wife.’

(120) shows that the contrast between identity and non-identity sentences with regard to bound variable reading of a pronoun located in the matrix clause disappears when the pronoun is obligatory (a PP pronoun). This contradicts Sharvit’s (1999*b*) claim that pronouns in general cannot refer to lists of pairs, assuming that the functional reading in (120a) is indeed a pair-list reading. The functional reading of (120a) does seem to be a pair-list reading, as this sentence cannot be uttered in a situation in which some men called more than one woman. This suggests that the pair-list reading is allowed in (120a), but not in (116a), with the direct object pronoun, due to the fact that in (116a) there is a gap alternative. If allowing the pair-list reading was a property of the pronoun itself, the contrast between optional and obligatory pronouns should not be observed.

What about examples of variable binding in which the pronoun is located in the relative clause head, such as (115)? Do they have a pair-list reading or a natural function reading? On the one hand, they are not identity sentences, so according to Sharvit (1999*a*; 1999*b*) they should be cases of a pair-list reading. However, they do not seem to require uniqueness, which suggests that they are not cases of a pair-list reading after all. The examples in (115) can be uttered in the following situation. There are many rumors about each politician’s wife, and some politicians denied/feared more than one of these rumors. But the only rumor about each politician’s wife that all politicians without exception denied/feared, is the rumor that was spread by the chair (which is known for spreading especially evil rumors). This is further supported by the felicity of the following discourse. The relative clause in (121b) is felicitous as a continuation of (121a).

- (121) a. *kol political_{ij} xošeš me-harbe šmu’ot al išto_j.*
 every politician fears from-many rumors about wife-his
 ‘Every politician fears many rumors about his wife.’

- b. *aval ha-šmua'a (ha-yexida) al ištoj še-kol politicalai xošeš*
 but the-rumor (the-only) about wife-his that-every politician fears
mimena hufca al-yedey ha-yošev roš.
 from-it was-spread by the-chair
 'But the (only) rumor about his_j wife that every politician_j fears was spread by the chair.'

Similarly, the Hebrew version of Cecchetto's (2005) example presented in (112) above, can be uttered in a situation in which there are many accidents of his that each person remembers, but the only accident of his that everyone without exception remembers is the one accident that happened to him because he was not focused on his driving.

- (122) *[ha-te'una šeloj]_i še-kol exad_j zoxer t_i karta lo_j biglal*
 the-accident of-his that-every one remembers t_i happened to-him because
xoser rikuz.
 lack concentration
 'The accident of his_j that everyone_j remembers happened to him_j because he wasn't focused.'
- (123) *[ha-te'una šeloj]_i še-kol exad_j mityaser biglala_i karta lo_j*
 the-accident of-his that-every one suffers because.of-it happened to-him
biglal xoser rikuz.
 because lack concentration
 'The accident of his_j that everyone_j suffers because of happened to him_j because he wasn't focused.'

Importantly, the PP pronoun version in (123) can also be uttered in such contexts, as is supported by the discourse in (124).

- (124) a. *anašim mityasrim biglal kol miney te'unot še-karu la-hem.*
 people suffer because all kinds accidents that-happened to-them
 'People suffer because of all kinds of accidents that happened to them.'
- b. *aval ha-te'una šelo še-kol exad mityaser biglala*
 but the-accident of-his that-every one suffers because.of-it
karta lo biglal xoser rikuz.
 happened to-him because lack concentration
 'But the accident of his that everyone suffers because of it happened to him because he wasn't focused.'

Let me summarize the discussion of the identity/non-identity distinction with respect to Hebrew and Hebrew resumptive pronouns. Unlike English, Hebrew allows functional relative clauses in non-identity sentences. Sharvit (1999*a*; 1999*b*) suggests that non-identity sentences can only host a pair-list relative clause, and not a natural function relative clause, based on the behavior of the two types of sentences

with respect to tests such as *uniqueness*. She further argues that resumptive pronouns cannot occur in functional relative clauses embedded in non-identity sentences because pronouns in general cannot refer to pair-lists.

However, I have shown that (a) obligatory pronouns (PP pronouns) can occur in functional relative clauses embedded in non-identity sentences in which there is a pronoun in the matrix clause which is interpreted as a bound variable (e.g., (120a)); (b) obligatory pronouns (PP pronouns) can occur in functional relative clauses embedded in non-identity sentences in which there is a pronoun inside the relative clause head which is interpreted as a bound variable (e.g., (123)); (c) some functional readings observed with PP pronouns in non-identity sentences in which the pronoun is embedded in the relative clause head seem not to be pair-list readings, as they do not require uniqueness. This is true both for examples like (115b) and for examples like (123). Both are cases of *non-identity* sentences.

I conclude that PP pronouns allow functional readings in which the bound pronoun is located inside the relative clause head. I further conclude that the semantic mechanism that yields this interpretation is unlikely to be a pair-list mechanism as suggested in Sharvit (1999*b*), but rather a natural function mechanism, since the relevant examples do not seem to require uniqueness.

The fact that variable binding readings can be obtained with PP pronouns (and other obligatory pronouns) in relative clauses embedded in non-identity sentences suggests that the lack of variable binding reconstruction with optional pronouns is not due to some inherent property of pronouns that does not allow them to refer to pair lists (as suggested in Sharvit 1999*b*), but rather due to competition, as I argue for here. Under the current competition account, the fact that obligatory pronouns allow functional readings derives from the assumption that these readings can be obtained without syntactic reconstruction and from the fact that these pronouns do not alternate with gaps. I have suggested that there is a condition according to which semantic reconstruction can apply only when syntactic reconstruction cannot apply. This competition account reconciles the ability of obligatory pronouns to allow reconstruction with their incompatibility with movement (indicated by their inability to license parasitic gaps).

An additional piece of evidence that supports the claim that the interpretation of resumed relative clauses is governed by competition with gap-relative clauses, is that optional pronouns (direct object pronouns) do not allow a bound-variable reading of a pronoun located inside the relative clause head even when the relative clause is embedded in an identity sentence. Both (126a) and (126b) are ungrammatical in the intended bound-variable reading with a direct object pronoun, while the parallel examples with a PP pronoun, (127a)-(127b), or a trace, (125a)-(125b), are grammatical. If it was the case that pronouns in general cannot refer to pair-lists but can refer to natural functions as Sharvit (1999*b*) argues, we would expect (126b) to be grammatical, as identity sentences, according to Sharvit (1999*a*; 1999*b*), can host relative clauses that denote natural functions. Furthermore, we would expect (127a) to be ungrammatical, as non-identity sentences, according to Sharvit (1999*a*; 1999*b*) can only host pair-list readings, which are not possible referents of pronouns in gen-

eral. Additionally, the fact that (125a) and (127a) do not require uniqueness, as I discussed above, suggests that the pair-list/natural function distinction is irrelevant for these cases.

- (125) a. *[ha-te'una šelo_j]_i še-kol exad_j zoxer t_i karta lo_j*
 the-accident of-his that-every one remembers t_i happened to-him
biglal xoser rikuz.
 because lack concentration
 'The accident of his_j that everyone_j remembers happened to him_j because he wasn't focused.'
- b. *[ha-te'una šelo_j]_i še-kol exad_j zoxer t_i hi zo*
 the-accident of-his that-every one remembers t_i is this
še-karta lo_j biglal xoser rikuz.
 that-happened to-him because lack concentration
 'The accident of his_j that everyone_j remembers is the one that happened to him_j because he wasn't focused.'
- (126) a. * *[ha-te'una šelo_j]_i še-kol exad_j zoxer ota_i karta*
 the-accident of-his that-every one remembers it_i happened
lo_j biglal xoser rikuz.
 to-him because lack concentration
 'The accident of his_j that everyone_j remembers happened to him_j because he wasn't focused.'
- b. * *[ha-te'una šelo_j]_i še-kol exad_j zoxer ota_i hi zo*
 the-accident of-his that-every one remembers it_i is this
še-karta lo_j biglal xoser rikuz.
 that-happened to-him because lack concentration
 'The accident of his_j that everyone_j remembers is the one that happened to him_j because he wasn't focused.'
- (127) a. *[ha-te'una šelo_j]_i še-kol exad_j mityaser biglala_i karta*
 the-accident of-his that-every one suffers because.of-it happened
lo biglal xoser rikuz.
 to-him because lack concentration
 'The accident of his that everyone suffers because of it happened to him because he wasn't focused.'
- b. *[ha-te'una šelo_j]_i še-kol exad_j mityaser biglala_i hi zo*
 the-accident of-his that-every one suffers because.of-it is this
še-karta lo biglal xoser rikuz.
 that-happened to-him because lack concentration
 'The accident of his that everyone suffers because of it is the one that happened to him because he wasn't focused.'

Thus, it seems that the availability of variable binding reconstruction is governed by competition; PP pronouns (and obligatory direct object pronouns) allow the variable

binding reading of a pronoun located in the relative clause head both in identity and in non-identity sentences, while direct object pronouns, which are optional, do not allow this variable binding reading in identity sentences or in non-identity sentences.

Sichel's (to appear) competition account, which I discussed in section 4.3.1, certainly accounts for the pattern in (125)-(127). However, her account assumes that PP pronouns are compatible with movement, which seems surprising given their inability to license parasitic gaps, argued for in section 3.3 of the current study. I argue that this pattern can be accounted for by a competition account in which the competition is between syntactic reconstruction and semantic reconstruction. In this account, variable binding reconstruction can be the result of syntactic reconstruction of the relative clause head into the trace position, which allows the quantified expression to c-command the pronoun and bind it, and in addition, variable binding reconstruction can be the result of a semantic mechanism, which yields a functional interpretation of the relative clause. The competition mechanism prevents the semantic mechanism from applying to cases in which syntactic reconstruction is available.

At this point, several questions arise with regard to the availability of variable binding in sentences in which the pronoun that is bound by a non-c-commanding quantified expression occurs in the matrix clause as in (128)-(130) below (examples like Sharvit's 1999*a*; 1999*b*, which were first discussed in Geach 1964).

- (128) a. *ha-iša_i še-kol geve_{rj} hizmin t_i hodeta lo_j.*
 the-woman that-every man_j invited t_i thanked to-him_j
 'The woman that every man invited thanked him.'
- b. *ha-iša_i še-kol geve_{rj} hizmin t_i hayta išto_j.*
 the-woman that-every man_j invited t_i was wife-his_j
 'The woman that every man invited was his wife.'
- (129) a. **ha-iša_i še-kol geve_{rj} hizmin ota_i hodeta lo_j.*
 the-woman that-every man_j invited her thanked to-him_j
 'The woman that every man invited thanked him.'
- b. *ha-iša_i še-kol geve_{rj} hizmin ota_i hayta išto_j.*
 the-woman that-every man_j invited her was wife-his_j
 'The woman that every man invited was his wife.'
- (130) a. *ha-iša_i še-kol geve_{rj} hitkašer eleha_i hodeta lo_j.*
 the-woman that-every man_j called to-her thanked to-him_j
 'The woman that every man called thanked him.'
- b. *ha-iša_i še-kol geve_{rj} hitkašer eleha_i hayta išto_j.*
 the-woman that-every man_j called to-her was wife-his_j
 'The woman that every man called was his wife.'

Assuming the competition mechanism between syntactic reconstruction and semantic reconstruction that I am assuming here, one question is why the optional pronoun in (129b) allows variable binding of the pronoun located in the matrix clause, as

there is an equivalent gap-LF (i.e., (128b)). A possible answer is that the variable binding reading in examples where the pronoun is located in the matrix clause cannot be obtained through syntactic reconstruction, a fact which makes the semantic mechanism available. Note that the pronoun that is interpreted as bound by the quantified expression is not located inside the relative clause head in these cases, so syntactic reconstruction of the relative clause head would not make the quantified expression c-command it. Thus, since syntactic reconstruction would not result in the intended interpretation, a semantic mechanism can apply in this case and the intended bound-variable interpretation can be obtained either with a gap or with a direct object pronoun.

Note, however, that this kind of account also predicts that (129a) would be grammatical, as syntactic reconstruction of the relative clause head into the scope of the quantified expression does not cause the quantified expression to c-command the pronoun in the matrix clause in this case either. Possibly, it could be the case that the semantic mechanism that applies in (129b) requires an identity structure for the pronoun in the matrix clause to be interpreted as a bound variable. For example, as Jacobson (1994) suggests, it could be the case that what forces the bound interpretation of the pronoun in the matrix clause is the identity between the pre-copular and the post-copular expressions. The two functions can be identical only if the pronoun in the post-copular expression is interpreted as bound by the quantified expression that occurs in the pre-copular expression. Since (129a) does not possess an identity structure, nothing forces the bound interpretation of the pronoun in the matrix clause and the semantic mechanism, though available as there is no competition with syntactic reconstruction, cannot yield the intended interpretation. However, this actually predicts that (130a) would be ungrammatical, as it does not possess an identity structure either. Further investigation of the pattern in (128)-(130) is needed, which I leave for future research.^{6 7}

Note also that the examples in (125)-(127) involve a pronoun in the matrix clause, in addition to the pronoun located in the relative clause head. In these cases too, the bound interpretation of the matrix pronoun cannot be the result of syntactic

⁶It has been argued in Sharvit (1999a) (among others) that the bound variable interpretation in (128)-(130) can not be attributed to covert movement of the quantified expression to a position from which it binds the pronoun in the matrix clause (QR). First, QR is assumed to be a local operation, namely, the quantified expression cannot move out of the relative clause (but see Hulse & Sauerland 2006 for the claim that quantified expressions can move out of relative clauses). Second, if QR can apply in the b-sentences in (128)-(130) and in (125)-(127), it is not clear why it cannot apply in the a-sentences in (128)-(130) and in (125)-(127). See Sharvit (1999a) for arguments against the QR analysis of cases like (128)-(130).

⁷Sichel (to appear) remains neutral with regard to the exact account of cases of variable binding like (105). She argues that these cases can be accounted for either by reconstruction of the relative clause head into the scope of the quantifier, by QR, or by both. Importantly, she argues that both reconstruction and QR are possible only in Raising relative clauses and thus argues that the availability of the variable binding interpretations in cases like (105) with obligatory resumptive pronouns implies that they are compatible with movement. This, however, is inconsistent with my observation that PP pronouns do not license parasitic gaps.

reconstruction of the relative clause head into the scope of the quantified expression. So it seems that there must be an additional mechanism that allows the bound interpretation of the pronoun in the matrix clause in these cases. This mechanism cannot be related to the semantics of identity, as the bound variable interpretation is observed both in identity and in non-identity sentences. I do not have any explicit account for the puzzling difference between (126) and (129). Since the semantic mechanism that derives the variable binding reconstruction in (125)-(127) is not yet completely understood, it is premature to try to account for the difference between (125)-(127) and (128)-(130) with respect to the bound reading of the pronoun in the matrix clause.

To conclude, the fact that PP pronouns allow bound readings of pronouns located in relative clause heads in non-identity sentences and the fact that optional pronouns do not allow these readings in non-identity sentences or in identity sentences indicates that the functional interpretation is not governed by an inherent property of the pronoun (as argued by Sharvit 1999*a*; 1999*b*), but rather governed by competition. I argue that this competition is between semantic reconstruction and syntactic reconstruction; the semantic mechanism can apply when there is no syntactic reconstruction alternative. Although I do not offer here a full semantic composition for the functional reading of relative clauses whose head includes a pronoun, I do believe that a semantic mechanism in the spirit of the mechanisms suggested in Jacobson's (2002), Engdahl's (1986) or Sharvit's (1999*a*; 1999*b*), which are at this point limited to identity sentences, could account for the functional readings observed with PP pronouns in non-identity sentences with some modifications. If such a semantic mechanism can indeed account for the functional readings in these cases, we would not have to assume that PP pronouns are compatible with syntactic reconstruction (and with movement). This would be consistent with my observation that PP pronouns do not license parasitic gaps. Clearly, more work is needed to arrive at such a semantic mechanism, which is beyond the scope of the current study.⁸ Moreover, there is evidence that suggests that such a mechanism is available in the grammar, i.e., the fact that variable binding does not seem to pass diagnostics of syntactic reconstruction, as I showed in section 4.4. I now turn to another reconstruction phenomenon, reconstruction for anaphoric binding.

5.2 Anaphoric binding

In this section I discuss the argument for syntactic reconstruction from anaphoric binding in light of Cecchetto's (2005) observation that the examples used in the literature to argue for anaphoric binding reconstruction include 'transitive NPs', which, as he claims, shouldn't be used to argue in this direction due to the possibility that they involve a subject PRO which binds the anaphor. I show that an anaphor located within a transitive relative clause NP-head can be bound by a relative-clause-internal

⁸See Sternefeld (2000) for a possible mechanism of semantic reconstruction which is argued to account for variable binding.

NP even when the relativized position is not c-commanded by this NP, which suggests that the bound reading of the anaphor in cases in which the relativized position is c-commanded by the relative-clause-internal NP cannot be taken as evidence for syntactic reconstruction. I also show that the asymmetry between transitive and non-transitive NPs with regard to anaphoric binding remains in non-relative clause structures, in which the NP that contains the anaphor is c-commanded in the surface structure by a coindexed NP. Though I do not suggest a semantic account of reconstruction for anaphoric binding, I argue that the fact that obligatory pronouns allow binding of an anaphor located in the relative clause head cannot be taken as evidence for syntactic reconstruction.

Sichel (to appear) observes that PP pronouns allow reconstruction for anaphor binding. An anaphor located inside the relative clause head can be coindexed with an expression located inside the relative clause. This is demonstrated in (131).

- (131) *[ha-šmu'a al acmoj]_i še-dani_j xašaš mimena_i hufca al-yedey*
 the-rumor about himself_j that-Dani_j feared from-it was-spread by
rani
 Rani
 'The rumor about himself_j that Dani_j feared was spread by Rani.'
 (ex. (9) from Sichel to appear)

Cecchetto (2005) argues that many cases of reconstruction for anaphor binding that are taken in the literature as evidence for syntactic reconstruction involve a 'transitive NP' as the relative clause head. 'Transitive NPs' are NPs that can have an implicit subject PRO. The most obvious example is the NP 'picture'. If NPs like 'picture' involve a subject PRO, the binding of the anaphor located in the relative clause head can be explained without assuming syntactic reconstruction of the relative clause head, as demonstrated in (132) below. In (132), the subject PRO is controlled by *John* (assuming that this control configuration does not require c-command) and functions as the antecedent of the anaphor *himself*.

- (132) [_{DP} The [_{NP} PRO_j picture of himself_j]_i [that John_j likes t_i the most]] (was never on display)
 (ex. (21) from Cecchetto 2005)

Cecchetto (2005) argues that only unaccusative NPs, which cannot have a subject PRO, can be used to argue that binding of an anaphor located in the relative clause head by an antecedent located inside the relative clause is a case of syntactic reconstruction. He argues that when only unaccusative NPs are used, variable binding in English and Italian can only be obtained in identity sentences and there are no Condition C effects when the relative clause head involves an R-expression coindexed with an expression located in the relative clause CP.

Cecchetto (2005) further shows that 'transitive'/'picture' NPs allow for a bound interpretation of the anaphor located in the relative clause head even when the relativized position is a subject position, which does not fall in the c-command domain of the expression that is coindexed with the pronoun, as in (133) from Italian:

- (133) [La descrizione di se stesso]_i [che t_i aiuterebbe Gianni a passare l'esame] (non è stata presa considerazione dalla commissione)
 'The description of himself that would help Gianni to pass the exam (was not considered by the committee)'
 (ex. (22) from Cecchetto 2005)

Importantly, the same is true for Hebrew. In (134), the relativized position is a subject position, which is not c-commanded by the R-expression *Dani*. Nevertheless, (134) is grammatical.

- (134) [ha-šmu'a al acmo_j]_i še-t_i garma le-dani_j livkot hufca al-yedey
 the-rumor about himself_j that-t_i caused to-Dani_j to-cry was-spread by
rani
 Rani
 'The rumor about himself_j that made Dani_j cry was spread by Rani.'

It seems then, that binding of an anaphor located in the relative clause head by an expression embedded in the relative clause CP cannot serve as evidence for syntactic reconstruction when the NP head of the relative clause is a 'transitive NP'. Note that the exact definition of 'transitive NPs' is not important. As long as the relativized position can be a position which is not c-commanded by the coindexed expression, as in (134), the cases in which the relativized position is in the c-command domain of the coindexed expression cannot be taken as evidence for syntactic reconstruction.

If (131) is not a case of syntactic reconstruction then it does not contradict the inability of PP pronouns to license parasitic gaps. However, the contrast between optional and obligatory pronouns still needs to be accounted for. Sichel (to appear) shows that optional pronouns do not allow binding of an anaphor located in the relative clause head by an expression located in the relative clause CP.

- (135) * [ha-šmu'a al acmo_j]_i še-dani hikriš ota_i hufca al-yedey rani
 the-rumor about himself that-Dani denied it was-spread by Rani
 'The rumor about himself that Dani denied was spread by Rani.'
 (ex. (4) from Sichel to appear)

Now, I have argued that a competition mechanism between syntactic and semantic reconstruction governs the contrast between optional and obligatory pronouns. To account for the contrast between optional and obligatory pronouns with respect to anaphoric binding, we would have to assume that the binding of the anaphor in the gap-relative clause *is* obtained by syntactic reconstruction. Since it can be obtained this way, semantic reconstruction cannot apply and thus (135) is ungrammatical. Since syntactic reconstruction is not an available option in the case of obligatory pronouns, semantic reconstruction can apply to yield the intended meaning. So, I would like to argue that reconstruction for anaphor binding *can* be obtained syntactically, but can also be obtained semantically, when syntactic reconstruction is not an option.

Note, however, that in order to complete this competition account it should be also argued that the intended interpretation is a case of semantic reconstruction. At this

point one could ask whether the subject PRO account suggested in Cecchetto (2005) could be considered as a case of semantic reconstruction. It seems that the answer is negative. The suggested account seems to be completely syntactic in nature; it refers to the existence of a null category (PRO) as the subject of the NP, and does not seem involve a semantic mechanism that derives the reconstructed meaning. Thus, if the non-syntactic reconstruction account for anaphoric binding is based on the subject PRO account, the competition mechanism could not refer to competition between syntactic reconstruction and semantic reconstruction, but would have to be more general, and to state that the subject PRO syntactic structure is for some reason less economic or more complex than the syntactic reconstruction structure, in which the relative clause head is interpreted in the relativized position. To make such a claim we would have to assume that the subject PRO is optional in the structure, and that the mechanism which enables the backward control between this PRO and the expression located in the relative clause is in some relevant sense more complex than syntactic reconstruction. Such an assumption seems *ad hoc*.

In order to claim that anaphoric binding provides an argument for competition between syntactic reconstruction and semantic reconstruction, we need to examine cases in which the relative clause head arguably does not have a subject PRO. Namely, we need to use non-transitive nouns as relative clause heads, and to show that the contrast between optional pronouns and obligatory ones remains. Therefore, I follow Cecchetto (2005) in an attempt to avoid the possibility that the relative clause head involves a subject PRO that binds the anaphor, and use unaccusative nouns, which arguably do not have a subject slot that could potentially bind the anaphor.

Unaccusative nouns are deverbal nouns derived from unaccusative verbs. Assuming that unaccusative nouns inherit the unaccusative verb's thematic grid, they should only have one argument. Thus, the subject PRO account is not a valid option to account for the grammaticality of an anaphor located in the relative clause head which is coindexed with a relative clause internal expression. If the same contrast between optional and obligatory pronouns is observed with unaccusative nouns, it would support the claim that there is competition between syntactic and semantic reconstruction, since the non-syntactic reconstruction mechanism that accounts for anaphoric binding could not be a syntactic mechanism like the subject PRO mechanism.

It seems, however, that no such support for a competition mechanism can be obtained from unaccusative nouns. Hebrew relative clauses with an anaphor as a complement of an unaccusative noun like *nefila* ('fall' from the unaccusative verb *nafal*) are severely degraded, regardless of whether the relativized position is realized with a trace, an optional resumptive pronoun, or an obligatory one, as demonstrated in (136) below.

- (136) a. ?? [*ha-nefila šel acmoj*]_i *še-dani_j* *lo šoxe'ax t_i karta* *lo*
 the-fall of himself_j that-Dani_j not forget t_i happened to-him
 be-gil šeš
 in-age six

- ‘The fall of himself_j that Dani_j does not forget happened to him at age six.’
- b. ?? *[ha-nefila šel acmoj]_i še-dani_j lo šoxe’ax ota_i karta lo*
 the-fall of himself_j that-Dani_j not forget it happened to-him
be-gil šeš
 in-age six
 ‘The fall of himself_j that Dani_j does not forget happened to him at age six.’
- c. ?? *[ha-nefila šel acmoj]_i še-dani_j lo hit’ošēš mimena_i karta*
 the-fall of himself_j that-Dani_j not recovered from-it happened
lo be-gil šeš
 to-him in-age six
 ‘The fall of himself_j that Dani_j has not recovered from happened to him at age six.’

In fact, an anaphor as a complement of the unaccusative noun *fall* is severely degraded even when there is no relative clause involved, and replacing the anaphor with a pronoun renders the sentence better. This is demonstrated in (137).

- (137) a. ?? *dani_j lo šoxe’ax et [ha-nefila šel acmoj] be-migraš ha-kaduregel*
 Dani_j not forget ACC the-fall of himself_j in-field the-football
be-gil šeš
 in-age six
 ‘Dani_j does not forget his_j fall on the football field at age six.’
- b. *dani_j lo šoxe’ax et [ha-nefila šel-oj] be-migraš ha-kaduregel*
 Dani_j not forget ACC the-fall of-him_j in-field the-football
be-gil šeš
 in-age six
 ‘Dani_j does not forget his_j fall on the football field at age six.’

Furthermore, there is a contrast between ‘transitive NPs’ or ‘picture NPs’ and other NPs with regard to the distribution of anaphors and pronouns in general, as demonstrated by the contrast between (138) and (139). While an anaphor cannot occur in an NP headed by a noun like ‘dog’, it can occur in an NP headed by a noun like ‘picture’.

- (138) a. * *dani_j ohev et [ha-kelev šel acmoj]*
 Dani_j loves ACC the-dog of himself_j
 ‘Dani_j loves his_j dog.’
- b. *dani_j ohev et [ha-kelev šel-oj]*
 Dani_j loves ACC the-dog of-him_j
 ‘Dani_j loves his_j dog.’

- (139) a. *dani_j ohev et [ha-tmuna šel acmo_j]*
 Dani_j loves ACC the-picture of himself_j
 ‘Dani_j loves the picture of himself_j.’
 b. *dani_j ohev et [ha-tmuna šel-o_j]*
 Dani_j loves ACC the-picture of-him_j
 ‘Dani_j loves the picture of him_j.’

Regardless of the binding theory one chooses to adopt to account for this pattern of facts, the facts themselves, namely, that anaphors inside NPs which are coindexed with an expression outside this NP are acceptable only when this NP is a ‘picture NP’, suggest that arguments for syntactic reconstruction or for its unavailability based on ‘picture NPs’ are invalid. Namely, it cannot be taken as a given that the acceptability of an anaphor in the relative clause head indicates that the relative clause head syntactically reconstructs into the relativized position.

This leaves us with the observed contrast between optional and obligatory pronouns with respect to anaphoric binding. As I explained above, if it can be argued that the binding of the anaphor can be obtained either through syntactic reconstruction or by binding by PRO, it could in principle be argued that the syntactic reconstruction way is for some reason more economic, or less complex. However, if syntactic reconstruction is not even an option for obtaining anaphoric binding, as suggested by the observation that an anaphor cannot occur in a non-transitive NP even when the coindexed expression does c-command it, as demonstrated in (138a), it is less clear how the contrast between optional and obligatory pronouns could be explained. In other words, if the only way to get the anaphoric binding is binding by a subject PRO, there is no obvious reason why resumptive pronouns should not allow anaphoric binding. Under the subject PRO account, there is actually no relation between the binding of the anaphor and the fact that it is located inside a relative clause head. Note that even if we would like to argue that the intended interpretation requires the PRO to be c-commanded by the expression coindexed with it, this would not work as it would still not account for the grammaticality of (134), where the position into which the relative clause head might reconstruct is not in the c-command domain of the coindexed expression.

A different account for the occurrence of anaphors in NPs which are not c-commanded by an antecedent is suggested in Reinhart and Reuland’s (1993) Reflexivity theory of binding. According to Reinhart and Reuland (1993), anaphors can occur in ‘picture NPs’ simply because nothing prevents them from it. In Reinhart and Reuland’s theory, the traditional binding conditions A and B are replaced by ‘Condition A and Condition B of Reflexivity’, which are cited in (140)-(141) below.

(140) Definitions:

- a. The *syntactic predicate* formed of (a head) P is P, all its syntactic arguments, and an external argument of P (a subject).
 The *syntactic arguments* of P are projections assigned theta-role or Case by P.

- b. The *semantic predicate* formed of P is P and all its arguments at the relevant semantic level.
 - c. A predicate is *reflexive* iff two of its arguments are coindexed.
 - d. A predicate (formed of P) is *reflexive-marked* iff either P is lexically reflexive or one of P's arguments is a SELF anaphor.
- (141) Conditions:
- a. A: A reflexive-marked syntactic predicate is reflexive.
 - b. B: A reflexive semantic predicate is reflexive-marked.

According to these conditions and definitions, nothing prevents anaphors from occurring in picture NPs, because neither Condition A of Reflexivity nor Condition B of Reflexivity rules them out. Consider again (132), repeated as (142).

- (142) [DP The [NP picture of himself]_i]_j [that John_i likes t_j the most]] (was never on display)
 (ex. (21) from Cecchetto 2005)

Himself is an argument of the N *picture*, not of any verb in (142), (importantly, it is not an argument of the verb *like*). Condition A does not apply to *picture* because it is not a *syntactic predicate* as it does not have a subject. Condition B does not apply to *picture* because it is not a *reflexive semantic predicate* as it does not have two coindexed arguments. By redefining the binding conditions as conditions on *predicates* instead of conditions on anaphors and pronouns, Reinhart and Reuland can account for the occurrence of anaphors in positions in which they are not c-commanded by an antecedent. Interestingly, Reinhart and Reuland (1993) base their account for the grammaticality of cases like (142) on the *lack* of a subject in picture NPs while Cecchetto (2005) bases his account on the *existence* of a subject in picture NPs. Note, however, that if there is indeed a subject PRO coindexed with the anaphor in picture NPs, then these NPs are actually syntactic predicates, as they have a subject, so Condition A of Reflexivity applies to them. However, since the subject PRO is coindexed with the anaphor, the reflexive-marked syntactic predicate is in fact reflexive, in accordance with Condition A of Reflexivity. Condition B of reflexivity is also satisfied, as the semantic predicate *picture* is reflexively-marked by the anaphor.

To conclude, though it is not clear how exactly the anaphoric binding interpretation is obtained in relative clauses and though it is not clear how the difference between optional and obligatory pronouns can be explained regardless of whether or not syntactic reconstruction is a valid option in these cases, evidence from anaphoric binding does not imply that obligatory resumptive pronouns are compatible with syntactic reconstruction and hence with a movement derivation. This is consistent with my observation that obligatory pronouns, like optional ones, do not license parasitic gaps, an observation that suggests that they are not compatible with movement.

5.3 Idiomatic interpretation

In this section I discuss Nunberg, Sag and Wasow's (1994) proposal that many phrasal idioms are decomposable, i.e., the conventions that stand behind their idiomatic meaning can be attached to their parts rather than to the collocation as a whole. To account for the contrast between optional and obligatory pronouns with respect to their ability to allow an idiomatic reading of the relative clause head, one could either argue that the idioms that do not show idiomatic interpretations with an optional pronoun are not decomposable, and as such their idiomatic meaning can only be obtained by syntactic reconstruction of the NP-part into the VP, or argue that the idioms that do not show idiomatic interpretations with an optional pronoun *are* decomposable, and that they do not allow the idiomatic reading due to competition; because this reading is available with a gap. I argue that the Hebrew idioms that are used by Sichel (to appear) to argue for syntactic reconstruction in cases where the relative clause head is the NP-part of an idiom are decomposable. Thus, I argue, their meaning can be obtained in a semantic way, without assuming that the NP-part has to occur at LF inside the VP. I show that in idioms which are not decomposable, there is an asymmetry between gaps and obligatory PP pronouns even when the gap and the PP pronoun occur in a single idiom; when an idiom has both a direct NP part and a PP part, relativization of the NP-part with a gap allows the idiomatic interpretation while relativization of the PP part with a PP pronoun does not. This suggests that what stands behind the ability of PP pronouns to allow reconstruction is a semantic mechanism, since if it was syntactic reconstruction that allows the idiomatic meaning we would not expect to find a contrast between decomposable and non-decomposable idioms.

The assumption that lies at the basis of the use of phrasal idioms as an argument for syntactic reconstruction is that phrasal idioms are non-compositional. Namely, their meaning is not decomposable into their parts. The logic of the argument is as follows. If the meaning of phrasal idioms is not decomposable, we do not expect to get an idiomatic meaning when the parts of the idiom occur separately. Thus, the fact that we do sometimes get an idiomatic meaning when the parts of the idiom are separated from each other, indicates that at some level of representation, the parts do occur together, i.e., the idiom occurs as one chunk.

For relative clauses, the fact that a part of an idiom can serve as the relative clause head, occurring externally to the relative clause CP that involves the verb, and can still be interpreted idiomatically with that verb, implies that at some level of representation (D-structure or LF) it is located inside the relative clause, as one chunk with the verb. For example, the fact that *headway* receives an idiomatic interpretation in (143c), although it does not receive such an interpretation in (143b), is argued to be evidence for a low representation of the relative clause head inside the relative clause.

- (143) a. We made headway.
 b. * (The) headway was satisfactory.

- c. The headway that we made was satisfactory.
 (ex. (4) from Bhatt 2002, attributed to Brame 1968)

However, Nunberg et al. (1994) argue that the majority of phrasal idioms are in fact semantically compositional. In their terminology, most phrasal idioms are “idiomatically combining expressions” or “idiomatic combinations”. They argue that in idiomatic combinations, the conventions that stand behind the idiomatic meaning can be attached to the idiom parts, rather than to the collocation as a whole. They suggest an analysis of idiomatic combinations that allows for the parts of the idiom to be separated syntactically, so long as their interpretations are composed in the permitted manner.

According to Nunberg et al. (1994), in phrasal idioms which are idiomatic combinations, both the NP-part and the V-part of the idiom are idiomatic, and they have to co-occur to receive the meaning of the full idiom. For example, the idiom *pull strings* is decomposable, as both parts of the idiom have an idiomatic meaning; by convention, *strings* can be used metaphorically to refer to personal connections when it is the object of *pull*, and *pull* can be used metaphorically to refer to exploitation when its object is *strings*. Namely, the parts of the idiom *pull strings* carry identifiable parts of its idiomatic meaning. In their analysis, the availability of the metaphorical meaning for each part of the idiomatic combination is dependent on the presence of the other part, but does not require that the meaning of the idiom would be attached to the entire VP. Note that Nunberg et al. (1994) do not argue that speakers can predict the meaning of idiomatic combinations without exposure to the idiom as a whole, but rather argue that after the speaker is already familiar with the idiomatic meaning of the collocation, he/she can identify the mapping between the idiomatic meaning and the idiom’s parts.

Nunberg et al. (1994) semantic analysis of idiomatic combinations allows for the idiomatic meaning of phrasal idioms to be available as long as the idiom parts co-occur, even if they do not co-occur syntactically as a VP. Thus, it predicts that an idiomatic meaning would be available when the NP-part of the idiom serves as a relative clause head, separated syntactically from the V-part of the idiom, as long as the idiom is semantically decomposable. This analysis correctly predicts the contrast between (143b) and (143c); in (143b) the NP-part of the idiom *make headway* occurs alone, resulting in the unavailability of the idiomatic meaning, while in (143c) the two parts of the idiom co-occur, resulting in an idiomatic meaning.

With regard to the observation that PP pronouns allow idiomatic meanings, which is shown by Sichel (to appear) for (144), if the idiom *tipes al ec* is decomposable, namely, *tipes* (‘climbed’) metaphorically refers to ‘getting into somewhere metaphorically high’ when it co-occurs with *ec* (‘tree’), which metaphorically refers to a high position, then the idiomatic meaning is predicted to be available without assuming that the relative clause head syntactically reconstructs into the VP.⁹ Therefore,

⁹Some speakers take the idiom to be *tipes al ec gavoha* (‘climbed on a high tree’). In fact, this variability supports the claim that *ec* (‘tree’) has a metaphorical meaning of its own; for some speakers *ec* (‘tree’) is enough to metaphorically refer to a high position, while for others, *ec*

the availability of the idiomatic reading of (144), with the PP pronoun *alav*, can be accounted for without assuming that this pronoun is compatible with movement.

- (144) *ha-eci še-hu tipes alav*
the-tree that-he climbed on-it
‘the high position he took’
(ex. (10a) from Sichel to appear)

If fact, there is evidence for the decomposable nature of the idiom *tipes al ec/tipes al ec gavoha*. Nunberg et al. (1994) argue that decomposable idioms show some properties that suggest that their meaning is decomposable. First, parts of idioms can be modified by adjectives or relative clauses as in (145).

- (145) a. *leave no legal stone unturned*
b. *Pat got the job by pulling strings that weren’t available to anyone else*
(ex. (2a) and (3a) from Nunberg et al. 1994)

As predicted, the NP of the Hebrew idiom *tipes al ec/tipes al ec gavoha* can be modified:

- (146) *tipes al ec gavoha miday*
climbed on tree tall too much
‘took a too high position’

Second, Nunberg et al. (1994) show that decomposable idioms allow their parts to be quantified, as in (147).

- (147) a. *touch a couple of nerves*
b. *That’s the third gift horse she had looked in the mouth this year*
(ex. (5a) and (5b) from Nunberg et al. 1994)

As predicted, the NP in the idiom *tipes al ec/tipes al ec gavoha* can be quantified:

- (148) *irgun ha-ovdim tipes al kama ecim ve-axšav kaše lo*
organization the-workers climbed on some trees and-now it.is hard for-it
learedet me-hem
to-get down of-them
‘The trade union took some high positions that are now difficult to back down from.’

Interestingly, (148) also shows evidence for two other properties of decomposable idioms that Nunberg et al. (1994) discuss. First, Nunberg et al. (1994) show that parts of decomposable idioms can be antecedents of anaphora, as in (149). In (148) there is a pronoun (*hem* inside *me-hem*) that refers back to *kama ecim* (‘some trees’).

gavoha (‘high tree’) is needed to get this meaning. If the idiom was not decomposable, such variation would not be expected.

- (149) We thought tabs were being kept on us, but they weren't.
(ex. (10a) from Nunberg et al. 1994)

Second, we see that there is another idiom in (148): *laredet me-ha-ec* ('to get down from the tree'), meaning 'to back down from the high position'. Nunberg et al. (1994) argue that their semantic analysis predicts that there would exist families of idioms, that have different, but semantically related, meanings (e.g., *bring/come forth*). The fact that we find the Hebrew idiom *yarad me-ha-ec* along with *tipes al ec* suggests that both idioms are decomposable.

To conclude, the Hebrew idiom *tipes al ec* ('took a high position') seems to be decomposable. Thus, if Nunberg et al. (1994) are right, the availability of the idiomatic reading when *ec* is the relative clause head is predicted even if PP pronouns are not compatible with movement.

An important issue is yet to be discussed. To account for the contrast between optional and obligatory pronouns with respect to their ability to allow an idiomatic reading of the relative clause head, one could in principle argue that the idioms that do not show idiomatic interpretations with an optional pronoun are not decomposable, and as such they require the two parts of the idiom to co-occur in the VP, i.e., they require syntactic reconstruction. Alternatively, one could argue that the idioms that do not show idiomatic interpretations with an optional pronoun *are* decomposable, and that they do not allow the idiomatic reading because this reading is available with a gap. To argue in the former direction, one would have to show that the relevant idioms are not decomposable. To argue in the latter direction, one would have to show that they are decomposable, and to further argue that despite their compositionality, they do not allow the idiomatic interpretation because the competition mechanism prevents them from it.

Empirically, the idioms used in Sichel (to appear) to argue for the inability of optional pronouns to allow an idiomatic reading seem to be decomposable. The idioms are *tafar lo tik* ('pinned a case on him', 'incriminated him'), *xilek et ha-uga* ('divided the cake'), and *hoci et ha-xatul me-hasak* ('pulled the cat out of the bag'), and the contrast between traces and optional pronouns is demonstrated in (150). The idiomatic readings are available with traces, but not with direct object pronouns.

- (150) a. *ha-tik_i še-tafru t_i/#oto_i la-sar haya kašur*
the-case that-they.sewed t/it for-the-minister was related
le-nadlan.
to-real.estate
'The case that they pinned on the minister was related to real estate.'
- b. *tahalix ka-ze rak yagdil et ha-uga_i še-yexalku*
process like-that only enlarge ACC the-cake that-they.will.divide
t_i/#ota_i ben ha-sarim ba-kneset.
t/it among the-ministers in-the-parliament
'That sort of process will only enlarge the cake they divide among the ministers in the parliament.'

- c. *biglal ha-xatul_i še-hoci'u t_i/#oto_i me-ha-sak holxim*
 because the-cat that-they.took t/it from-the-bag going
legalot od harbe.
 to-discover much more
 'Because of the cat that was pulled out of the bag they are going to
 discover much more.'
 (ex. (5a-c) from Sichel to appear)

The three idioms in (150) seem to be decomposable. First, their parts can be modified:

- (151) a. *tafru lo tik me'od recini.*
 they.sewed to-him case very serious
 'They pinned a very serious case on him.'
 b. *tahalix ka-ze rak yagdil et ha-uga_i ha-lo hegyonit*
 process like-that only enlarge ACC the-cake the-non reasonable
še-yexalku t_i/#ota_i ben ha-sarim ba-kneset.
 that-they.will.divide t/it among the-ministers in-the-parliament
 'That sort of process will only enlarge the unreasonable cake they will
 divide among the ministers in the parliament.'

Second, their parts can be quantified:

- (152) a. *nisu litfor lo kama tikim kedey še-yitpater.*
 they.tried to-sew to-him some cases in.order that-he.will.resign
 'They tried to pin on him some cases for him to resign.'
 b. *ad še-lo yoci'u kama xatulim me-hasak, ha-inyan lo*
 until that-not they.will.take some cats from-the-bag the-issue not
yipater.
 be.resolved
 'Until they will pull some cats out of the bag the issue will not be resolved.'

Third, their parts can be antecedents of anaphora:

- (153) a. *tafru lo tik ve-hu putar biglalo.*
 they.sewed to-him case and he was.fired because.of-it
 'They pinned a case on him and he was fired because of it.'
 b. *xilku et ha-uga ben ha-sarim ve-hi xulka*
 they.divided ACC the-cake among the-ministers and-it was.divided
be-ofen lo codek.
 in-manner not fair
 'They divided the cake among the ministers and it was divided in an
 unfair manner.'

- c. *hoci’u et ha-xatul me-ha-sak ve-hu haya yoter nora mi-ma*
 they.took ACC the-cat from-the-bag and-it was more bad than-what
še-cipu.
 they.expected
 ‘They pulled the cat out of the bag and it was worse than expected.’

Finally, some of the idioms that were demonstrated to show the contrast between traces and optional pronouns are part of an idiom family. *tafar lo tik* also has a *hidbik lo tik* (‘attached him a case’) variant and a *hilbiš lo tik* (‘dressed him with a case’) variant. There is also the idiom *hipil alav tik* (‘dropped a case on him’) which means ‘gave him a task that is difficult for him’. Moreover, *tik* (‘case’) has a metaphoric meaning even without the V-part of the idioms. *tik* can refer to a criminal case by itself.

The facts in (151)-(153) suggest that the idioms observed not to allow their idiomatic meaning with optional pronouns are decomposable. Thus, the fact that we do not get their idiomatic meaning with optional pronouns cannot be merely due to the fact that resumptive pronouns are not compatible with movement; if these idioms are decomposable, then according to Nunberg et al. (1994) their idiomatic meaning should be available even when the parts of the idiom are syntactically separated. Why then, is the idiomatic reading unavailable with optional pronouns while it is available with obligatory pronouns and traces?

I argue that the competition mechanism that I described in section 4.3 might account for the contrast between optional and obligatory pronouns with respect to idiomatic interpretation of the relative clause head. In section 4.3 I suggested a condition according to which semantic reconstruction can apply only when syntactic reconstruction is not available. Usually, semantic reconstruction is considered to derive from assigning a variable a higher semantic type, which results in a different semantic composition. For idiomatic interpretation, there is no type-shifting account, as far as I know. However, if we adopt Nunberg et al.’s (1994) analysis of decomposable idioms, however it might be formally implemented, we can assume that there is a semantic, non-syntactic, way to derive the idiomatic meaning; in principle, if the conventional meaning of the idiom is attached to its parts rather to the collocation as a whole, as long as the parts of the idiom occur in the utterance, the idiomatic meaning can be composed from them (this, of course, requires a more explicit implementation). Now, if we assume that this semantic way is more complex or more ‘expensive’ than getting the idiomatic interpretation in the syntactic way, namely by syntactic reconstruction of the relative clause head into the VP, we can account for the contrast between optional and obligatory pronouns with respect to the availability of idiomatic interpretations. In that case, the term ‘semantic reconstruction’ in the competition account would have to be taken in a broader sense, and refer to different semantic mechanisms.

I do not have an explicit account for the ‘expensiveness’ of the semantic composition of idioms, but I stipulate that the idiomatic meaning is more transparent when the parts of the idiom occur next to each other, as a VP. The idiomatic meaning can be

also obtained semantically, by semantic composition of the idiom parts, but it is not the straightforward way to obtain it.

To conclude, I suggest that there are two ways to get the idiomatic interpretation when the two parts of a phrasal idiom are syntactically separated. The first way is by syntactic reconstruction, which results in the parts of the idiom co-occurring as a single idiom chunk. The other is semantic composition, which involves composing the idiom from its parts semantically. If we assume that the semantic composition is more complex/expensive, we can account for the contrast between optional and obligatory pronouns; for optional pronouns, there exists a gap-LF in which the idiomatic interpretation can be obtained via syntactic reconstruction. Thus, obtaining the idiomatic interpretation via semantic composition is not possible. For obligatory pronouns, on the other hand, there is no equivalent gap-LF, so the only way to obtain the idiomatic interpretation is via semantic composition. Thus, the idiomatic meaning is available with obligatory pronouns.

This account has a prediction with regard to idioms which are not decomposable. It predicts that the idiomatic reading would not be available when their NP part functions as a relative clause head, and the relativized position is realized with a PP pronoun. This prediction is borne out. The idioms in (154)-(155) are not decomposable (Fadlon, Horvath, Siloni & Wexler 2013), and they do not allow their NP-part to function as the head of a relative clause in which the relativized position is realized with a PP pronoun.

- (154) a. *hoci oto me-ha-kelim*
 he.took out him from-the-dishes
 ‘drove him crazy’
 b. **ha-kelim še-hoci’u oto me-hem*
 the-dishes that-they.took out him from-them
 ‘the dishes that they took him out from’
- (155) a. *taka maklot ba-galgalim*
 he.stuck sticks in-the-wheels
 ‘put a spoke in someone’s wheel’
 b. **ha-galgalim še-tak’u lo ba-hem maklot*
 the-wheels that-they.stuck to-him in-them sticks
 ‘the wheels they stuck him sticks into’

Interestingly, the idiom *taka maklot ba-galgalim* (‘put a spoke in someone’s wheel’), in which there are two NPs, a direct object and an indirect object, can occur in a relative clause when the relative clause head is the direct object of the idiom, and the relativized position is realized with a trace, but not when it is realized with a direct object pronoun, as demonstrated in (156). This suggests that syntactic reconstruction is available for this idiom while semantic composition is not, and further supports the claim that PP pronouns are not compatible with movement, since if they were, they would allow syntactic reconstruction, like traces.

- (156) a. *ha-maklot_i še-tak'u lo t_i ba-galgalim*
 the-sticks that-they.stuck to-him t_i in-the-wheels
 'the sticks that they stuck in his wheels'
- b. **ha-maklot_i še-tak'u lo otam_i ba-galgalim*
 the-sticks that-they.stuck to-him them_i in-the-wheels
 'the sticks that they stuck in his wheels'
 No idiomatic interpretation

It is important to note that there are idioms that can be considered decomposable but nevertheless do not allow an idiomatic meaning when the NP-part of the idiom occurs as a relative clause head and the relativized position is realized with a PP pronoun. This is demonstrated in (157)-(158) below.

- (157) a. *zara melax al ha-pca'im*
 sprinkled salt on the-wounds
 'added insult to injury.'
- b. **ha-pca'im še-zaru alehem melax*
 the-wounds that-they.sprinkled on-them salt
 'the wounds that they sprinkled salt on'
- (158) a. *hosif šemen la-medura*
 added oil to-the-fire
 'added fuel to the fire'
- b. **ha-medura še-hosifu la šemen*
 the-fire that-they.added to-it oil
 'the fire that they added fuel to'

If the idioms in (157)-(158) are indeed decomposable, the fact that they do not allow an idiomatic reading of the relative clause head must be accounted for. Note, however, that decomposability is a matter of degree, and it could be the case that the idioms in (157)-(158) are less decomposable than the idiom *tipes al ec* ('climbed on a tree', 'took a high position') and thus the semantic composition of the non-adjacent idiom parts is more difficult.

In any case, the fact that there are idioms for which the idiomatic meaning is unavailable when the NP-part of the idiom occurs as a relative clause head and the relativized position is realized with an obligatory pronoun, supports the claim that obligatory pronouns are not compatible with movement, since if they were, they would allow the idiomatic meaning even in non-decomposable idioms, because they would allow syntactic reconstruction that would result in the occurrence of the NP-part of the idiom inside the VP.

Interestingly, if the direct object part of the idiom in (158a) (i.e., *fuel*) is relativized instead of its indirect object part (i.e., *medura*), and realized with a trace (but not with a pronoun), the idiomatic interpretation is available, as demonstrated in (159). The fact that the idiomatic interpretation is possible with a trace but not with a PP

pronoun suggests that it cannot be obtained semantically. Moreover, it supports the claim that PP pronouns are not compatible with a movement derivation, because if they were, we would expect them to behave like traces in allowing the idiomatic interpretation. In other words, if it was the case that the idiomatic interpretation that is observed with PP pronouns in other cases is due to syntactic reconstruction, we would expect it to be available in (158b) too.¹⁰

- (159) *ha-šemen_i še-hosifu t_i/#oto la-medura*
 the-oil that-they.added t_i/#it to-the-fire
 ‘the fuel that they added to the fire’

One final note should be made. Heycock (2012) argues that idiomatic interpretation is not a case of syntactic reconstruction based on its lack of interaction with Condition C, anaphor binding from a higher position, and Extraposition. If (161) is grammatical, as judged by Heycock (2012), then it cannot be the case that the relative clause head syntactically reconstructs into the relative clause, since that would result in a Condition C violation, as *Lucy* would be c-commanded by *she*.¹¹ If *take a picture* is considered an idiom, (160) shows that there is no interaction of idiomatic interpretation and anaphor binding from a higher position. (162) shows that *make a headway* does not interact with extraposition.^{12 13}

- (160) Lucy_j admired the [picture of herself_j on the beach]_i that Bill had taken t_i with his ancient polaroid camera.
 (161) This represents the [only headway on Lucy_j’s problem]_i that she_j thinks they have made t_i so far.
 (162) Describe the headway to me that you think you have made this year.
 (ex. (39)-(40) and (62) from Heycock (2012))

¹⁰An alternative explanation for the contrast between (156a) and (155b) with regard to the availability of the idiomatic interpretation is that *wheels* as part of the idiom is presupposed to be unique; a person only has one set of ‘wheels’. Thus, it could be that a restrictive relative clause with the head *wheels* is infelicitous, because picking out *the unique wheels* makes no sense. Contrastingly, the *sticks* part of the idiom is not presupposed to be unique, as there are different kinds of *sticks* (i.e., obstacles) that one could stick in someone’s wheels. Thus, it makes perfect sense to pick out the unique sticks that were stuck in someone’s wheels. Importantly, the same explanation does not seem to hold for the contrast between (159) and (158b). In this case, it seems that there could be different *fires* as there could be different *fuels* that one can add to the fire.

¹¹Heycock (2012) suggests that object nominals that denote something that is inalienably connected to its subject like *headway*, include a PRO possessor that is obligatorily bound by the subject. Thus if the binding of this PRO does not require syntactic reconstruction, the grammaticality of (161) is accounted for, as PRO is bound by *they*, not by *she*. See Heycock (2012) and references therein for further discussion of the interaction of idioms with Condition C.

¹²Heycock (2012) suggests that the ungrammaticality of extraposed relative clauses with an intended idiomatic interpretation argued for in Hulsey and Sauerland (2006) can be the result of garden path effects. See Heycock (2012) for more details.

¹³The interaction between Extraposition and Hebrew idioms was tested in section 4.4.3.

Note that Heycock (2012) argues that idiomatic interpretation does not require syntactic reconstruction based on gap-relative clauses. As I already discussed for other types of reconstruction in section 4.4, in order to account for the contrast between optional and obligatory pronouns, we have to assume that idiomatic interpretation can be obtained by syntactic reconstruction or by semantic composition. When syntactic reconstruction is unavailable due to violations it causes, the idiomatic interpretation can be obtained via semantic composition. I argue that this is what happens in Heycock's examples, which show no interaction of idiomatic interpretation and Condition C, anaphor binding from a higher position or extraposition; since syntactic reconstruction would result in syntactic violations in these cases, semantic composition is available. Certainly, an explicit mechanism that would explain how the semantic composition of the idiomatic meaning is carried out must be provided. I leave this issue to future research.

5.4 De dicto readings

In this section I discuss a semantic analysis due to Fred Landman (p.c) which shows how the *de dicto* reading of the relative clause head can be derived by assigning the trace or the pronoun a higher semantic type ($\langle s, \langle e, t \rangle \rangle$), and without assuming an internal copy of the relative clause head. Assuming the availability of this semantic account, the fact that obligatory pronouns allow reconstruction can be reconciled with their inability to license parasitic gaps, which indicates that they are not compatible with movement. The asymmetry between optional and obligatory pronouns can be then explained by competition between semantic and syntactic reconstruction, according to which, semantic reconstruction can apply only when syntactic reconstruction is unavailable. I then discuss an alternative proposal for the absence of *de dicto* readings with direct object pronouns suggested by Sharvit (1999b), according to which the unavailability of *de dicto* readings is related to an inherent property of pronouns. I show that the contrast between direct object pronouns and PP pronouns only exists in A'-dependencies contexts, which strongly implies that the scope of the competition is limited to A'-dependencies, i.e., to contexts in which pronouns can in principle alternate with gaps and function as bound variables.

Doron (1982) observes that direct object resumptive pronouns, unlike traces, do not allow the *de dicto* reading of (8), repeated here as (163).

- (163) *dani yimca et ha-iša_i še-hu mexapes t_i/#ota_i*
 Dani will.find ACC the-woman that-he seeks t_i/her_i
 'Dani will find the woman he seeks.'
 (ex. (49) and (50) from Doron 1982)

When the relativized position is realized with a trace, (163) has both a *de re* reading, in which Dani is seeking an actual individual woman, and a *de dicto* reading, in which, roughly, Dani is seeking something that has the property *woman* and some other properties that are important to him. However, when the relativized position is

realized with a direct object pronoun, only the *de re* reading is available. I state the exact meanings of the *de re* reading and the *de dicto* reading below. PP pronouns, which are obligatory in Hebrew, do allow the *de dicto* reading, like traces and unlike optional pronouns, as demonstrated in (9b), repeated here as (164) from Sichel (to appear).

- (164) *dani yimca et ha-iša_i še-hu xolem aleha_i*
 Dani will.find ACC the-woman that-he dreams of-her
 ‘Dani will find the woman he is dreaming of.’
 (ex. (8a) from Sichel to appear)

Sichel (to appear) takes the *de dicto* reading of (163) and (164) to be a case of syntactic reconstruction; she assumes that the reading according to which the woman that Dani seeks/is dreaming of might not exist, is derived via syntactic reconstruction of the relative clause head into the relativized position, where it is interpreted in the scope of the intensional predicate *seek/dream of*. She argues that the fact that the *de dicto* reading is available with a PP pronoun in (164) indicates that the PP pronoun is compatible with syntactic reconstruction and a movement derivation.

To my best knowledge, there is no example available in the literature which includes a full semantic composition for the syntactic reconstruction account of *de dicto* readings like (163), and I do not provide such an example here. However, I state the guidelines of how such semantic composition should look like.

Assuming the Copy Theory of traces (Chomsky 1993), and a relative clause structure in which the relative clause head originates inside the relative clause (e.g., Bhatt 2002), (163) involves a copy of *woman* in the relativized position. Following Zimmermann (1993), I assume that *seek* is of type $\langle\langle s, \langle e, t \rangle \rangle, \langle e, t \rangle \rangle$, and hence its object is of type $\langle s, \langle e, t \rangle \rangle$, i.e., a property. Thus, in order for *woman* to serve as the argument of *seek* it must bear the intensional type $\langle s, \langle e, t \rangle \rangle$. Without going into the possible semantic composition of relative clauses under the Copy Theory of movement and the assumption that what moves is the relative clause head, what we would like to get as the meaning of the relative clause CP with a *de dicto* reading, is, roughly, a set of intensional properties which are restricted by the intensional property *woman* (i.e., the intension of *woman*).

To see whether and how the desired *de dicto* interpretation can be obtained without assuming that *woman* syntactically reconstructs into the relative clause, I show a full semantic derivation of the *de dicto* reading, developed by Fred Landman (p.c). I show that there is actually a natural way to get the *de dicto* meaning without assuming syntactic reconstruction. In fact, the semantic composition that I describe here is compatible with various syntactic structures. I also show how the *de re* reading is derived and emphasize that this reading, unlike the *de dicto* reading, does not require an internal interpretation of the relative clause head. I argue that this is the reason for the lack of competition between gaps and pronouns with regard to this reading.

The derivation of the *de dicto* reading is due to Fred Landman (p.c). To explain the details of the semantic derivation of the *de dicto* and the *de re* readings of relative

clauses, like *the woman that Dani seeks*, I start by explicitly stating the meaning of *seek* and of the proposition *Dani seeks a woman*. In what follows I use systematically a language in which the abstraction over worlds is explicit; w, v are variables over worlds.

Consider the proposition in (165a). Landman assumes, with Zimmermann (1993), that *seek* denotes in w a relation between individuals and properties (of type $\langle\langle s, \langle e, t \rangle \rangle, \langle e, t \rangle \rangle$), as stated in (165b).

- (165) a. Dani seeks a woman.
b. $seek_w(d, \lambda v \lambda x. woman_v(x))$

Landman specifies the following constraint on the lexical meaning of *seek*. If you seek something in world w this entails a search-event e of you in w . This search event comes with a set of success-worlds, the worlds in which that particular search in w is successful. The constraint on the meaning of *seek* is stated in (166):

- (166) If $seek_w(x, P)$ then
 $\exists e[search_w(x, e) \wedge SUCCESS_w(e) \subseteq \lambda v \exists y[P_v(y) \wedge find_v(x, y)]]$

(166) states that the worlds in which the search of x for P is successful are worlds in which x finds a P .

Turning to constructions that involve abstraction, the argument of *seek* has to be a variable P of type $\langle s, \langle e, t \rangle \rangle$. For the illustration of the mechanism of abstraction over the higher-type variable, consider the topicalization structure in (167).

- (167) A woman, Dani seeks.

(167) has both a *de dicto* and a *de re* readings, and in both the semantics is independent of the syntax. For the *de re* reading, we abstract over a variable of type e , while for the *de dicto* reading we abstract over a variable of type $\langle s, \langle e, t \rangle \rangle$.

To derive the *de re* reading, we lift the variable x with INTENSIONoIDENT to the identity intensional property $\lambda v \lambda y. y=x$:

- (168) Type-shifting Rule:
LIFT: $e \rightarrow \langle s, \langle e, t \rangle \rangle$
LIFT[α] = $\lambda v \lambda y. y=x$

Consequently, we get the following meaning for (167). *a woman* is interpreted as type $\langle\langle e, t \rangle, t \rangle$, which takes as an argument the CP predicate of type $\langle e, t \rangle$.

- (169) $\lambda x. seek_w(d, \lambda v \lambda y. y=x) + woman_w$
Analyze *woman* as extensional:
 $\lambda x. seek_w(d, \lambda v \lambda y. y=x) + \lambda P. \exists x[woman_w(x) \wedge P(x)]$
 $\exists x(woman_w(x) \wedge seek_w(d, \lambda v \lambda y. y=x))$

The *de dicto* reading is derived in a similar way, except that the abstraction is over an $\langle s, \langle e, t \rangle \rangle$ type variable, and *woman* is interpreted intensionally, as type $\langle s, \langle e, t \rangle \rangle$, which serves as the argument of the $\langle\langle s, \langle e, t \rangle \rangle, t \rangle$ CP.

- (170) $\lambda P.seek_w(d, P) + woman_w$
 Analyze woman as an intensional argument:
 $\lambda P.seek_w(d, P) + \lambda v \lambda x.woman_v(x)$
 $seek_w(d, \lambda v \lambda x.woman_v(x))$

The derivation of the topicalization in (167) involves Function Application (either of $\langle e, t \rangle$ with $\langle \langle e, t \rangle, t \rangle$ in the *de re* reading or of $\langle s, \langle e, t \rangle \rangle$ with $\langle \langle s, \langle e, t \rangle \rangle, t \rangle$ in the *de dicto* reading). Obviously, Function Application that results in a proposition (of type t) is not what we want when attempting to derive the meaning of a relative clause, since we would like to get a predicate or a property in that case. Consider the relative clause in (171):

- (171) the woman Dani seeks __

We assume that we have the same two options for the choice of the variable that we had in the topicalization; i.e., for the *de re* interpretation we choose a variable of type e and for the *de dicto* interpretation we choose a variable of type $\langle s, \langle e, t \rangle \rangle$:

- (172) a. *de re*:
 $\lambda x.seek_w(d, \lambda v \lambda y.y=x) + woman_w$
 Analyze the relative as an extensional adjunct:
 $\lambda x.seek_w(d, \lambda v \lambda y.y=x) + woman_w \rightarrow \lambda x.woman_w(x) \wedge seek_w(d, \lambda v \lambda y.y=x)$
 $\langle e, t \rangle + \langle e, t \rangle \rightarrow \langle e, t \rangle$
 b. *de dicto*:
 $\lambda P.seek_w(d, P) + woman_w$
 Analyze the relative as an intensional adjunct:
 $\lambda P.seek_w(d, P) + \lambda v \lambda x.woman_v(x) \rightarrow ?$
 $\langle \langle s, \langle e, t \rangle \rangle, t \rangle + \langle s, \langle e, t \rangle \rangle \rightarrow \langle \langle s, \langle e, t \rangle \rangle, t \rangle$

As shown in (172b), the relative clause CP is of type $\langle \langle s, \langle e, t \rangle \rangle, t \rangle$, while the external head is of type $\langle s, \langle e, t \rangle \rangle$. Since we cannot use Function Application (as we do not want to get a proposition), we need an intersection or adjunction rule. Fred Landman (p.c) proposes the following rule:

- (173) Intensional Adjunction Rule:
 $REL \langle \langle s, \langle e, t \rangle \rangle, t \rangle + HEAD \langle s, \langle e, t \rangle \rangle = \lambda P.REL(HEAD \sqcap P)$
 where \sqcap is conjunction at the type $\langle s, \langle e, t \rangle \rangle$, i.e.,
 $\alpha \sqcap \beta = \lambda v \lambda x.\alpha_v(x) \wedge \beta_v(x)$

Using this rule, we derive:

- (174) $\lambda P.seek_w(d, P) + woman_w$
 Analyze the relative as an intensional adjunct:
 $\lambda P.seek_w(d, P) + \lambda v \lambda x.woman_v(x) \rightarrow \lambda P.seek_w(d, \lambda v \lambda x.woman_v(x) \wedge P_v(x))$
 $\langle \langle s, \langle e, t \rangle \rangle, t \rangle + \langle s, \langle e, t \rangle \rangle \rightarrow \langle \langle s, \langle e, t \rangle \rangle, t \rangle$

What the intensional adjunction rule does is to convert the head and P to extensions, intersect them, and then convert the intersection into its intension.

Fred Landman further argues that it is at this point useful to think of P as ranging not simply over properties, but over pluralities of properties, sums of properties. This is so because without the plurality of P the DP *the woman that Dani seeks* would denote the unique contextually salient property such that Dani seeks a woman with that property. But this is extremely unlikely that only one such property would be contextually salient. It is not unlikely, however, that one maximal *sum of properties* is contextually salient.

Since the external head is interpreted as a property and not as a set, the number of the head plays no semantic role on P, and we can assume that P is unspecified for number, meaning plural. This means that when the definite article comes along it will specify:

- (175) $\sigma(\lambda P.\text{seek}_w(d, \lambda v\lambda x.\text{woman}_v(x) \wedge P_v(x)))$
 The maximal sum of properties such that Dani seeks a woman with those properties.

When we check the meaning constraint we put on *seek* in (166), we see that we get the correct semantics in that:

$\text{seek}_w(d, \lambda v\lambda x.\text{woman}_v(x) \wedge P_v(x))$ means:

there is in w a search event of Dani, and in the worlds where that search event is successful, Dani finds a woman with the sum of properties P.

Fred Landman suggests one last modification to make the meaning of *the woman Dani seeks* more precise, in the form of a contextual restriction over P. Using intensional adjunction, we derived for the NP modified by the relative clause the following meaning:

- (176) $\lambda P.\text{REL}(\text{HEAD} \sqcap P)$ of type $\langle\langle s, \langle e, t \rangle, t \rangle$

This predicate forms input for the external DP structure. Fred Landman argues that abstraction over sums of properties is too unwieldy and unconstrained. Thus, he assumes that at this point a crucial contextual restriction takes place:

- (177) $\text{CP} \rightarrow \text{CP}_{\text{restr}}$
 $\text{CP} \rightarrow \lambda P \in \mathbf{C}:\text{CP}(P)$
 $\lambda P.\text{REL}(\text{HEAD} \sqcap P) \rightarrow \lambda P \in \mathbf{C}:\text{REL}(\text{HEAD} \sqcap P)$

Fred Landman further imposes an important connection between sums of properties in this set and individual concepts. He proposes to require that the sums of properties in \mathbf{C} be sums of properties that determine a contextually salient individual concept on a contextually salient set of worlds, as stated in (178):

- (178) Individual concept constraint:
 If $P \in \mathbf{C}$ then P determines a contextually salient individual concept
 $f_P:W \rightarrow D$ such that for contextually salient set of worlds $V \subseteq W$
 for every $v \in V$: $P_v(f_P(v))$

Assuming this constraint, we get the following *de dicto* meaning for *the woman Dani seeks*:

- (179) The woman that Dani seeks
 $\sigma(\lambda P \in \mathbf{C}: seek_w(d, \lambda v \lambda x. woman_v(x) \wedge P_v(x)))$
 The maximal sum of properties in \mathbf{C} such that Dani seeks a woman with those properties.

Fred Landman further explains that this maximal sum of properties, when defined, is required to be itself in \mathbf{C} . The relevant set of worlds may in our case be the set of belief, desire or hope worlds of Dani. In that case, the DP determines a contextually salient individual concept $f_{\text{the woman that Dani seeks}}$ which in Dani's belief, desire or hope worlds is instantiated as a woman who has that sum of properties. Assuming that the sum of properties determines a contextually salient individual concept is very useful, because it allows us to shift from the sum of properties to the corresponding individual concept, as stated in (180), and to use the individual concept to analyze *de dicto* readings of sentences like (181).

- (180) The woman that Dani seeks
 $\sigma(\lambda P \in \mathbf{C}: seek_w(d, \lambda v \lambda x. woman_v(x) \wedge P_v(x)))$
 $f_{\sigma(\lambda P \in \mathbf{C}: seek_w(d, \lambda v \lambda x. woman_v(x) \wedge P_v(x)))}$
- (181) Dani thinks that the woman that he seeks is going to answer the ad he put in the paper.

This proposal is a very natural one, as it does not use *ad hoc* tools. First, as I showed above, the use of a higher-type variable is also implemented elsewhere; for example, in topicalizations of intensional propositions. The difference between the intensional relative clause and the intensional topicalization is that for the relative clause we need an intersection/adjunction rule, since we cannot use Function Application that would result in type t .

Note that a similar intensional intersection/adjunction rule is probably needed for the syntactic reconstruction structure, in which *woman* is reconstructed into the relativized position, because the meaning that we want to get is one in which *woman* somehow restricts the range of the variable. But if *woman* is interpreted intensionally, it seems that the variable should also be intensional. I do not provide a full semantic composition that assumes that there is a copy of *woman* inside the relative clause, because, to my knowledge, no full semantic composition has been proposed even for non-*de dicto* interpretations of relative clauses for which it is assumed that there is an internal copy of the relative clause head. Namely, it is not clear how the relative clause head restricts the range of the variable even in contexts which are not intensional (but see Fox 2002 for the Trace Conversion proposal).

Importantly, Fred Landman's proposal shows that syntactic reconstruction is not needed to obtain the *de dicto* reading of *the woman that Dani seeks*. Therefore, the fact that obligatory resumptive pronouns allow *de dicto* readings can be reconciled with their incompatibility with movement, suggested by their inability to license

parasitic gaps. Assuming that resumptive pronouns are variables, just like gaps, they should be able to bear the type $\langle s, \langle e, t \rangle \rangle$, which would allow the *de dicto* derivation proposed by Fred Landman. Although the predicate in the PP pronoun example in (164) is not *seek*, it is an intensional predicate (*dream*), and I believe that Fred Landman's proposal easily captures the *de dicto* reading of (164) as well.

However, in order to account for the contrast between optional and obligatory pronouns with regard to allowing *de dicto* readings (Sichel to appear), it needs to be assumed that the *de dicto* interpretation can be obtained both by a semantic mechanism of the type that I have just described, and by a syntactic mechanism in which there is syntactic reconstruction of the relative clause head into the scope of the intensional predicate, and that the syntactic mechanism is preferred over the semantic mechanism. Since it is not clear to me at this point how the syntactic mechanism works, I leave this issue for future research.

Note also that the *de re* reading of *the woman that Dani seeks* does not require an internal interpretation of the relative clause head. In other words, it does not require 'reconstruction'. This is consistent with the observation (Doron 1982, Sichel to appear) that there is no contrast between optional and obligatory pronouns when it comes to *de re* readings. Since the *de re* reading is not a reading that requires an internal interpretation, it is not subject to competition between syntactic and semantic reconstruction.

To conclude, I argue that the *de dicto* reading of (163) and (164) requires an internal interpretation of the relative clause head, that can be obtained both with syntactic reconstruction and without syntactic reconstruction. Contrastingly, the *de re* reading can be obtained without an internal interpretation of the relative clause head. This is compatible with the observation that optional pronouns only allow the *de re* reading while obligatory pronouns allow both the *de re* reading and the *de dicto* reading; since the *de dicto* reading requires an internal interpretation of the relative clause head that can presumably be obtained with syntactic reconstruction, semantic reconstruction cannot apply with optional pronouns, but can apply with obligatory ones. As for the *de re* reading, since there is no need for any kind of reconstruction, both optional pronouns and obligatory ones allow this reading.

An alternative proposal for the unavailability of the *de dicto* reading with direct object resumptive pronouns has been suggested by Sharvit (1999b). Sharvit argues that the absence of the *de dicto* reading with (direct object) resumptive pronouns in Hebrew follows from the fact that 'sets of intensional things' are not appropriate referents of pronouns in general, including resumptive pronouns. She illustrates this claim by showing that free pronouns cannot refer to the intensional reading of *woman*. Although the first sentence in (182) is ambiguous between a *de re* reading and a *de dicto* reading, the second part only allows the *de re* reading.

- (182) *dan mexapes iša. gam ram mexapes ota.*
 Dan seeks woman. also Ram seeks her.
 'Dan is looking for a woman. Ram, too, is looking for her.'
 (ex. (14) from Sharvit 1999b)

However, as Sichel (to appear) observes, obligatory resumptive pronouns (PP pronouns) do allow the *de dicto* reading, as demonstrated in (9b), repeated here as (183).

- (183) *dani yimca et ha-iša_i še-hu xolem aleha_i*
 Dani will.find ACC the-woman that-he dreams of-her
 ‘Dani will find the woman he is dreaming of.’

Sharvit’s (1999b) account for the unavailability of *de dicto* readings with direct object pronouns does not explain its availability with PP pronouns. If what stands behind the unavailability of the *de dicto* reading with direct object pronouns is a semantic property of pronouns in general, as Sharvit suggests, why is this reading allowed with PP pronouns? To account for this contrast under Sharvit’s proposal we would have to say that PP pronouns differ from direct object pronouns in their semantic properties, a claim that seems undesirable. Moreover, such a claim does not even seem to be empirically correct; free PP pronouns, just like free direct object pronouns, cannot refer to intensional properties, as demonstrated in (184) below.

- (184) *dan xolem al iša. gam ram xolem aleha.*
 Dan dreams about woman. also Ram dreams about-her
 ‘Dan is dreaming about a woman. Ram, too, is dreaming about her.’

(184) only has a *de re* reading, in which Dan and Ram are dreaming about an actual woman. So, PP pronouns behave just like direct object pronouns when they are free, but behave differently when they realize a relativized position. Importantly, this further supports the claim that the range of interpretations allowed by pronouns is governed by competition with gap structures. Since PP pronouns are not compatible with movement, as they do not license parasitic gaps, the competition cannot be on the realization of a movement structure as Sichel (to appear) suggests, but rather seems to be between syntactic reconstruction and semantic reconstruction. When the intended interpretation is a reconstructed one, syntactic reconstruction, when available, is preferred over semantic reconstruction. When syntactic reconstruction is not an option, semantic reconstruction can apply.

A final note has to be made with regard to the unavailability of the *de dicto* reading in cases like (184). In principle, one might expect that the *de dicto* reading would be available in (184), and also in (182) as there is no gap alternative when the pronoun is a free pronoun, and syntactic reconstruction is not a possible option, as these examples do not involve any A’-dependency. I take the fact that the *de dicto* reading is unavailable for free pronouns as evidence for the limited domain of competition. (184) and (182) show that the fact that there is no gap alternative is irrelevant for cases in which pronouns are free. Namely, the competition mechanism applies only to cases in which pronouns can in principle alternate with gaps. Another way to look at these facts is to say that pronouns that function as variables, but not free pronouns, can bear a semantic type different from type *e*.

In sum, there is a non-syntactic account for *de dicto* readings of relative clauses. This reconciles the ability of obligatory pronouns to allow reconstruction with their

inability to license parasitic gaps, and supports the claim that Hebrew resumptive pronouns, including obligatory ones, are not compatible with movement.

5.5 Low readings of superlatives and *only*

In this section I discuss Heycock’s (2005) proposal that the low readings of *only* and superlatives can be analyzed as cases of Neg-Raising, in which negation is given a lower scope in the entailment generated by superlatives and *only*. Heycock shows that the same environments that block Neg-Raising in non-relative clause constructions, block low interpretations of *only* and superlatives in relative clauses. I argue that if low readings of *only* and superlatives can be given a semantic account of the kind suggested by Heycock, the ability of obligatory pronouns to allow reconstruction can be reconciled with their inability to license parasitic gaps, which implies that they are not compatible with movement.

Bhatt (2002) argues that “low” readings of *only* and superlatives in relative clauses are due to syntactic reconstruction of the relative clause head noun with its modifiers into the relativized position.¹⁴ As I discussed in section 4.4, in Arad (2010) I showed that direct object pronouns in Hebrew do not allow low readings of *only* and superlatives. In section 4.4 of the current study I showed that PP pronouns allow these readings, as was demonstrated in (70a), repeated here as (185). In (185), the superlative ‘first’ is interpreted low, namely, it refers to the *talking* by Tolstoy rather than to the *saying* by Dani.

- (185) *ha-sefer ha-rišon_i še-dani amar še-tolstoy ey-pa’am diber alav_i*
 the-book the-first that-dani said that-Tolstoy ever talked about-it
 ‘The first book that Dani said that Tolstoy ever talked about’
 High reading: *; Low reading: OK

If the only way to obtain low readings of *only* and superlatives is through syntactic reconstruction, the fact that PP pronouns allow these readings contradicts the observation that they do not license parasitic gaps. If, on the other hand, it could be argued that the low readings of superlatives and *only* can be obtained without syntactic reconstruction, the inability of PP pronouns (and obligatory resumptive pronouns in general) to license parasitic gaps would be reconciled with their ability to allow these ‘reconstructed’ interpretations.

Heycock (2005) argues against the syntactic reconstruction account for low readings of *only* and superlatives. She observes that low readings are blocked in a range of environments, which she identifies as the same environments that block “Neg-Raising” (NR). Thus, she argues that the low readings of *only* and superlatives can be the result of interpreting the negation in the entailment generated by *only* and superlatives with

¹⁴Hulsey and Sauerland (2006) argue for a different account for the low readings based on binding of world variables. This account too, assumes that there is syntactic reconstruction into the relative clause.

a low scope, rather than the result of syntactic reconstruction of the relative clause head and its modifier. I briefly review important parts of Heycock’s (2005) argument below.

Giannakidou (1997), following Linebarger (1980, 1987), argues that (186) can be decomposed as (187a)-(187b), and has the negative entailment in (187c). The entailment is generated by modifiers like superlatives or *only*.

(186) *Anna Karenina* is the longest book that Tolstoy wrote.

(187) a. *Anna Karenina* is g long.

b. All books x other than *Anna Karenina* that Tolstoy wrote are such that there is a degree k such that the degree of x’s length does not exceed k. (k and g are degrees and $g > k$)

c. \neg [Tolstoy wrote a book other than *Anna Karenina* g long]

(ex. (29)-(30) from Heycock 2005, cited from Giannakidou 1997:126)

Heycock (2005) argues that the low readings of *only* or superlatives in relative clauses are due to the interpretation of the negation in the entailment with a lower scope, as demonstrated in (188b), a phenomenon known as “Neg-Raising”.¹⁵

(188) *Anna Karenina* is the longest book that Jennifer thinks Tolstoy wrote.

Anna Karenina is g long.

a. \neg [Jennifer thinks Tolstoy wrote a book other than *Anna Karenina* g long]

b. Jennifer thinks \neg [Tolstoy wrote a book other than *Anna Karenina* g long]

(ex. (31) from Heycock 2005, cited from Giannakidou 1997:126)

To support the Neg-Raising analysis of the low readings of superlatives and *only*, Heycock (2005) shows that the same environments that block Neg-Raising in non-relative clause contexts, block low readings of *only* and superlatives in relative clauses. In particular, Neg-Raising (namely, low scope for negation) is blocked by Factives (e.g., *know*), Implicatives (e.g., *manage to*) weak epistemic operators (*be possible*) and strong epistemic operators (*be certain*), weak deontic operators (e.g., *can/could*), strong deontic operators (e.g., *need*), and VP-adverbs (e.g., *mistakenly*). I demonstrate the parallelism between Neg-Raising and low readings of *only* and superlatives in relative clauses for Factives and VP-adverbs in (189) and (190) below. See Heycock (2005) for the rest of the parallel environments.¹⁶

¹⁵Heycock (2005) notes that she adopts the account of Neg-Raising in Horn (1989), but does not go into the details of that analysis. I do not go into the details of that analysis either. What is important for the current discussion is that there seems to be a semantic analysis for the low readings of *only* and superlatives, based on *Neg-Raising*, namely, on lower scope for the negation in the entailment that *only* and superlatives generate.

¹⁶Bhatt’s (2002) examples use the verb *say* which only marginally allows Neg-Raising. Heycock (2005) refers to this point, and argues that *say* allows low readings only when it is interpreted as an *evidential*. She further shows that evidential *say* also allows low scope for negation outside the context of relative clauses.

(189) Factives:

- a. They didn't know that he had arrived.
has no interpretation as:
 They knew that he hadn't arrived.
 (ex. (32) from Heycock 2005)
- b. the only book that I know she likes
has no interpretation as:
 the book that I know is the only one that she likes
 (ex. (33) from Heycock 2005)

(190) VP-adverbs:

- a. #I'm so relieved! For a moment I didn't mistakenly think that you loved me.
has no interpretation as:
 I mistakenly thought that you don't love me.
 (ex. (43b) from Heycock 2005)
- b. This is the only book that I mistakenly thought that he had written. \neq
 This is the x s.t. I mistakenly thought that x was the only book that he had written.
 (ex. (25b) from Heycock 2005)

Heycock (2005) further argues that the blocking effect *ever* has on the low reading of superlatives and *only* (which I have discussed in section 4.4 above) can also be analyzed as a case of a VP-adverb blocking Neg-Raising. Moreover, Heycock (2005) argues against Bhatt's (2002) account for the behavior of *ever*, which relies on the requirement that it will be licensed by a clause-mate. She argues that *ever* is a *weak* NPI, which can be licensed by a long-distanced licenser, and shows that *ever* is licensed by licensors that are assumed not to reconstruct (*every*) and is also licensed in the complement clause of nouns modified by *only* or superlatives. She argues that since no reconstruction is assumed to be available in these cases, they provide evidence for the fact that the licensing of *ever* (and hence the low readings of superlatives and *only*) do not require syntactic reconstruction. These two environments, namely, a relative clause with *every* and a complement clause, are demonstrated in (191) and (192) respectively. See Heycock (2005) for more examples.

(191) Every book that he ever wrote began with the same sentence.

(192) This is the only indication that she would ever succeed.
 (ex. (58) and (59a) from Heycock 2005)

Finally, as I already discussed in section 4.4, Heycock (2012) observes that low readings of superlatives and *only* do not seem to interact with Condition C and anaphor binding from a higher position, which are assumed to be diagnostics of syntactic reconstruction. She takes this to be another evidence against the syntactic reconstruction analysis of these low readings. As I showed in section 4.4, the parallel examples in Hebrew show the same pattern; namely, that there is no interaction between low readings of superlatives and *only* and Condition C or anaphoric binding. In

particular, low interpretations of superlatives or *only* which modify a relative clause head which includes an R-expression coindexed with a lower expression is possible, and it is also possible to interpret the modifier low while the relative clause head includes an anaphor coindexed with a higher expression. This is demonstrated in (71a) and (85) above.

The lack of interaction between low readings of *only* and superlatives and Condition C or anaphor binding is observed both when the relativized position is realized with a trace and when it is realized with a PP pronoun (an obligatory pronoun). However, as I showed in section 4.4, there is still a contrast between optional pronouns (direct object pronouns) and obligatory pronouns in allowing the low readings of these modifiers. Therefore, I have argued in section 4.4 that the low readings of *only* and superlatives *can be* obtained by syntactic reconstruction, but they can also be obtained without syntactic reconstruction, i.e., by a semantic mechanism (e.g., Heycock's 2005 Neg-Raising mechanism). The contrast between optional and obligatory pronouns is due to competition between the syntactic reconstruction mechanism (which is presumably more economic) and the semantic mechanism (which is presumably less economic). Since the syntactic solution is available with gaps and is preferred over the semantic mechanism, optional pronouns do not show low readings of *only* and superlatives. Since PP pronouns are obligatory, the semantic mechanism is available, as the syntactic mechanism is not. The fact that there is no interaction between low readings of *only* and superlatives and the Binding Conditions in gap-relatives is due to the fact that in these cases too, the semantic mechanism can apply, because the application of syntactic reconstruction would result in a syntactic violation. This account actually predicts, as I noted in section 4.4, that optional pronouns would allow low readings when the relative clause head involves an expression whose syntactic reconstruction into the relative clause would result in a violation of Condition C or Condition A. As I noted in section 4.4, this prediction seems to be borne out, but the judgments are quite difficult.

To conclude, if Heycock (2005; 2012) is right in her claim that low readings of *only* and superlatives can be accounted for without syntactic reconstruction, then the low readings of *only* and superlatives observed with PP pronouns could be obtained without syntactic reconstruction of the relative clause head, but rather with a semantic mechanism of Neg-Raising, as Heycock suggests. The contrast between optional and obligatory pronouns can be then explained if we assume that the relevant readings can in principle be obtained either with syntactic reconstruction of the relative clause head or with this semantic mechanism. If it is assumed that the syntactic mechanism is less complex or less expensive, the lack of the low readings with optional pronouns would be explained by a competition mechanism.

As I discussed for the case of idiomatic readings, the semantic derivation that competes with syntactic reconstruction should be more general than semantic reconstruction in the sense of higher-type variables. If the non-syntactic accounts for the 'reconstructed' readings involve a wide range of 'semantic methods' we would have to say that the competition is actually between syntactic reconstruction and 'semantic mechanisms'. Such a competition account raises interesting questions with regard to

the role held by the syntax in the general architecture of grammar, as it suggests that the syntax is the default or most straightforward way to obtain the intended meaning. Thus, if a syntactic solution (like syntactic reconstruction) is available, other solutions are not. However, when a syntactic solution is not available, other solutions can apply. I leave the implementation of the competition between syntactic mechanisms and semantic mechanisms for future research.

5.6 More issues

5.6.1 Amount readings

Sichel (to appear) observes that obligatory pronouns can occur in amount relatives, while optional pronouns cannot (see also Bianchi 2004). Following Carlson (1977), Heim (1987), and Grosu and Landman (1998), among others, she assumes that amount relatives involve obligatory reconstruction of the relative clause head into the relative clause. The contrast between obligatory pronouns and gaps on the one hand and optional pronouns on the other hand is demonstrated in (193) below for Hebrew (see Bianchi 2004 and Sichel to appear for the same contrast in other languages).

- (193) a. *hu rac axšav et ha-merxak_i še-ani racti t_i lifney šana.*
 he runs now ACC the-distance that-I ran t_i before year
 ‘He now runs the distance that I ran a year ago’.
- b. **hu rac axšav et ha-merxak_i še-ani racti oto_i lifney šana.*
 he runs now ACC the-distance that-I ran it_i before year
 ‘He now runs the distance that I ran a year ago’.
- c. *hu rac axšav et ha-merxak_i še-higati elav_i lifney šana.*
 he runs now ACC the-distance that-reached.I to-it_i before year
 ‘He now runs the distance that I reached a year ago’.
- (ex. (13a) and (14a) from Sichel to appear)

Assuming that obligatory pronouns, like optional pronouns, are incompatible with movement, as suggested by their inability to license parasitic gaps, the fact that they do allow amount readings of relative clauses should be accounted for without syntactic reconstruction. Moreover, in order to account for the contrast between optional and obligatory resumptive pronouns under the current competition account, it has to be shown that the reconstructed interpretation can be obtained either via syntactic reconstruction or via semantic reconstruction, and argued that syntactic reconstruction is preferred over semantic reconstruction.

Grosu and Landman (to appear) suggest an analysis of amount relatives that does not assume that the relative clause head is syntactically internal. Rather, their analysis is compatible both with a relative clause structure in which the relative clause head originates inside the relative clause, and with a relative clause structure in which no such internal origin of the relative clause head is assumed.

Grosu and Landman (to appear) argue that the interpretation of the gap in an amount relative clause involves a degree variable (of type d) and also must involve the interpretation of the relative clause external head (of type $\langle e, t \rangle$). For example, for the gap in the amount relative *that they spilled* _ in (194), they assume the meaning in (195).¹⁷

(194) We will need the rest of our lives to drink the wine that the spilled _ last night.

(ex. (55a) from Grosu & Landman to appear)

(195) $\lambda z. \text{wine}(z) \wedge \text{rel}(\text{amount}_w(z), \delta)$

where $\text{rel} \in \geq, =$ (of type $\langle e, t \rangle$)

Grosu and Landman (to appear) are neutral with regard to the syntactic structure corresponding to the semantic derivation of amount relatives; they simply argue that the relative clause head in examples like (194) is part of the interpretation of the gap. If their proposal can be implemented with a syntactic structure in which the relative clause head is not syntactically present in the relativized position, then the ability of resumptive pronouns to allow amount readings can be reconciled with their inability to license parasitic gaps. I leave this implementation for future research.

5.6.2 Free relatives

In addition to the reconstruction phenomena discussed in Sichel (to appear), she also discusses Free Relatives (Bresnan & Grimshaw 1978, Groos & van Riemsdijk 1981, Jacobson 1988; 1995, Grosu & Landman 1998, among others). Borer (1984) observes that obligatory resumptive pronouns, but not optional ones, can occupy the relativized position in free relatives, as demonstrated in (196) below.

- (196) a. *mi še-at pogešet t_i be-hodu nišar xaver le-kol ha-xayim.*
 who that-you meet t_i in-India remains friend to-all the-life
 ‘People you meet in India remain your friend for the rest of your life.’
- b. ?? *mi še-at pogešet oto_i be-hodu nišar xaver le-kol ha-xayim.*
 who that-you meet him_i in-India remains friend to-all the-life
 ‘People you meet in India remain your friend for the rest of your life.’
- c. *mi še-at ozeret lo_i be-hodu nišar xaver le-kol ha-xayim.*
 who that-you help to-him_i in-India remains friend to-all the-life
 ‘People you help in India remain your friend for the rest of your life.’
- (ex. (28) from Sichel to appear)

Sichel (to appear) argues that this is another indication for the compatibility of obligatory resumptives with movement and for the incompatibility of optional pronouns with movement; since free relatives have been argued to require a structure with a low copy of the relative clause head in the relativized position (Grosu & Landman 1998,

¹⁷‘rel’ is a relation between amounts.

Bianchi 2004), the fact that these relatives are grammatical with gaps and obligatory pronouns but not with optional pronouns suggests that obligatory pronouns, but not optional pronoun, are compatible with movement. I do not have a suggestion that would reconcile the fact that obligatory pronouns, but not optional ones, can occur in free relatives with the fact that both optional pronouns and obligatory ones do not license parasitic gaps. To maintain the assumption that movement is a sufficient condition for parasitic gap licensing, while accounting for the fact that obligatory pronouns can occur in free relatives, it would have to be shown that free relatives do not force a movement structure. I leave this issue for future research.

5.6.3 The correlation between reconstruction and extraction

A final issue that should be discussed is the correlation observed by Sichel (to appear) between the optionality of the pronoun and the possibility to extract another constituent from a relative clause. Consider (197).

- (197) a. *me-ha-sifria ha-zot_j od lo macati [sefer_i še-keday le-haš'il*
 from-the-library this yet not found book that-worth to-borrow
t_i t_j]
t_i t_j
 'From this library, I haven't yet found a single book that's worth borrowing.'
- b. * *me-ha-sifria ha-zot_j od lo macati [sefer_i še-keday le-haš'il*
 from-the-library this yet not found book that-worth to-borrow
oto_i t_j]
it t_j
 'From this library, I haven't yet found a single book that's worth borrowing.'
- c. *im ha-balšan ha-ze_j od lo macati [be'aya_i le-daber aleha_i t_j]*
 with the-linguist this yet not found problem to-talk about-it t_j
 'With this linguist, I haven't yet found a problem to talk about.'
- (ex. (49a), (50a) and (51a) from Sichel to appear)

Doron (1982) observes that relative clauses allow extraction when the relativized position is realized with a trace, but not when the relativized position is realized with a direct object pronoun. Sichel (to appear) observes that obligatory pronouns behave like gaps in allowing extraction of another constituent from the relative clause, as (197c) demonstrates.

Sichel (to appear) argues that the correlation between reconstruction and extraction implies that there is a common source for the two phenomena, which, according to her, is a Raising structure for the relative clause. She argues that the Raising structure allows both extraction and reconstruction. She further shows that the possibility to extract out of a relative clause is independent of the realization of the

relativized position; she shows that relative clauses that force an internal interpretation of the relative clause head, such as free relatives, allow extraction (see also Grosu & Landman 1998), while relative clauses that force an external interpretation of the relative clause head (e.g., in order to avoid a Condition C violation), do not allow extraction.

To maintain the claim that resumptive pronouns are never compatible with movement (based on the assumption that movement is a sufficient condition for parasitic gap licensing and the observation that resumptive pronouns do not license parasitic gaps), it would have to be argued that the possibility to extract out of relative clauses is not related to the movement structure of the relative clause. The asymmetry between optional and obligatory pronouns with regard to extraction would still need to be accounted for. At this point, I do not have a suggestion which explains this asymmetry without assuming that obligatory pronouns inhabit a movement structure. I leave this issue for future research.

5.7 Conclusion

In this chapter I reviewed non-syntactic accounts for reconstruction suggested in the literature. The semantic accounts suggested for the different reconstruction phenomena are diverse, but share in common the property of being semantic in nature: the reconstructed meanings are derived by higher-type variables (variable binding and *de dicto* readings), composition of the idiomatic meaning from idiomatic meanings attached to the idiom's parts, and low scope for negation in the entailment generated by *only* and superlatives. I did not argue that these semantic mechanisms are the only way to derive the reconstructed meanings but rather argued that both syntactic reconstruction and semantic reconstruction are in principle able to derive them, but semantic reconstruction is free to apply only when syntactic reconstruction is unavailable.

Though more work is needed to arrive at explicit semantic accounts for the reconstruction phenomena and also to account for the asymmetries between optional and obligatory pronouns with regard to amount readings, free relatives and relative-clause extraction, I believe that the accounts discussed here are good starting points in the way to the development of full accounts, and that their discussion is an important milestone in the way to get answers to many important questions related to semantic and syntactic reconstruction, the relationship between the syntax and the semantics, and competition in grammar.

6 Conclusion

The data presented in this study provide support for the claim that resumptive pronouns in Hebrew are not compatible with a movement derivation. While it was suggested by previous research on reconstruction that some resumptive pronouns in Hebrew, in particular, obligatory ones, are compatible with a movement derivation, I presented data from parasitic gap licensing that suggest that resumptive pronouns in Hebrew, including obligatory ones, are not compatible with a movement derivation.

I argued that both optional and obligatory resumptive pronouns do not license adjunct parasitic gaps, based on judgment data which compared the acceptability of resumed-relatives to the acceptability of gap-relatives, and to the acceptability of adjunct parasitic gap constructions with no potentially licensing gap or resumptive pronoun. The data showed that resumed relatives which involve an adjunct parasitic gap are less acceptable than the equivalent gap-relatives. Assuming that movement is a sufficient condition for parasitic gap licensing, this suggests that resumptive pronouns are not compatible with a movement derivation.

With regard to subject parasitic gap constructions, I showed that direct object pronouns are relatively acceptable in relative clauses that include a subject parasitic gap. However, based on the relative acceptability of subject parasitic gap constructions which do not involve a licensing position, I argued that this does not constitute evidence for the ability of resumptive pronouns to license subject parasitic gaps, but rather implies that subject parasitic gaps are not truly parasitic in Hebrew; specifically, I argued that extraction out of subjects modified by a relative clause is allowed under certain conditions. The issue of extraction out of subject-modifying relative clauses is further discussed in appendix B.

To reconcile the apparent contradiction between the ability of obligatory pronouns to allow reconstruction (Sichel to appear) and their inability to license parasitic gaps, I argued that the reconstruction phenomena observed with pronouns can be accounted for without assuming movement. I showed that these reconstruction effects (i.e., variable binding, low readings of *only* and superlatives, anaphoric binding, *de dicto* readings, and idiomatic interpretations) do not interact with phenomena that are known to interact with syntactic reconstruction such as Condition C, Condition A and Extraposition. To complete the argument, I argued in chapter 5 that non-syntactic accounts can be provided to explain each of these phenomena. Despite the diversity of the suggested accounts for reconstruction, they all share the property of being semantic in nature, namely, they do not rely on a syntactic mechanism, but rather use semantic tools to derive the intended meanings.

To account for the asymmetry between optional and obligatory pronouns with regard to their ability to allow reconstruction while maintaining the claim that neither

of these pronouns is compatible with movement, I suggested that the grammar involves a condition on semantic reconstruction according to which it can apply only when syntactic reconstruction is unavailable. I suggested that the competition mechanism compares LF-representations which are ‘similar enough’ and that an LF in which syntactic reconstruction is used to derive the intended meaning is preferred over an LF in which semantic mechanisms have to apply. I argued that when syntactic reconstruction is not available, either due to the absence of movement or due to a clash between syntactic reconstruction and other syntactic conditions (e.g., the Binding Conditions), semantic reconstruction becomes available.

The study has several theoretical implications and raises many questions for future research. First, it suggests that A’-dependencies can be constructed by different mechanisms, rather than solely by movement. This raises questions with regard to the commonalities shared by the mechanisms that create A’-dependencies and their differences. Second, my account for the asymmetry between optional and obligatory pronouns, which refers to competition between syntactic reconstruction and semantic reconstruction and assumes that LF-representations are compared, raises important questions with regard to competition in grammar, economy, and the relationship between the different components of the language faculty. It suggests that syntax is the straightforward way to obtain the intended meaning, while mechanisms of (more complex) semantic composition can apply only when the syntactic solution is not available. In other words, the current study suggests that the application of syntactic mechanisms, like syntactic reconstruction, is more economic computationally than the application of semantic mechanisms. Notably, the data discussed in the current study implies that the competition applies only to ‘reconstructed’ interpretations. This suggests that in non-reconstructed interpretations, the surface syntax and the semantics ‘go hand in hand’ and therefore there cannot be any competition between the syntax and the semantics; in reconstructed interpretations, on the other hand, the surface syntax does not derive the intended meaning. This can be dealt with either by interpreting a different syntactic structure (i.e., by syntactic reconstruction) or by relating the surface syntactic structure to a more complex semantic composition. Presumably, the former option is preferred over the latter. Further investigation is needed to determine how this competition mechanism might be implemented within the grammar.

Appendices

A Materials

Experiment 1

Instructions

Instructions in Hebrew

שלום ותודה על הנכונות להשתתף בניסוי!

הניסוי מיועד לדוברי שפת אם עברית בלבד, ללא שפות אם נוספות (לא דו-לשוניים).
אנא קראו את ההוראות בעיון לפני שאתם מתחילים.

בניסוי זה יוצגו לפניכם משפטים בעברית. לגבי כל משפט עליכם לענות על שתי שאלות:

1. **עד כמה המשפט תקין בעברית?** עליכם לקבוע האם המשפט נשמע לכם תקין כדוברי עברית. הכוונה ב"תקין" אינה לתקין מבחינת עברית תקנית או עברית כתובה, אלא להאם המשפט יכול להיאמר בשיחה על-ידי אדם הדובר עברית כשפת אם. על מנת להקל עליכם את הקביעה, דמיינו שמדובר במשפטים שנאמרו על-ידי אנשים שונים וכי על פי הדירוג שלכם ייקבע האם אדם מסוים הוא דובר עברית כשפת אם או לא, והאם יש לשלוח אותו ללמוד עברית.

2. **עד כמה המשפט מסובך/מסורבל?** עליכם לקבוע האם המשפט מסובך/מסורבל. משפט יכול להיות תקין במובן שהוא יכול להיאמר על-ידי דובר עברית, אבל מסובך או קשה להבנה. על מנת להקל עליכם את הקביעה, דמיינו שעל פי הדירוג שלכם אנשים מסוימים המדברים באופן מסורבל מדי יישלחו לקורס ברטוריקה.

שימו לב, משפט יכול להיות תקין ולא מסובך, תקין אך מסובך, לא תקין ומסובך או לא תקין וגם לא מסובך. כלומר, איך בהכרח קשר בין תקינותו של המשפט למידה שבה הוא מסובך להבנה.

לדוגמה:

המשפט **"הקטן הכלב בלילה נבח"** אינו תקין בעברית, אך אינו מסורבל או מסובך להבנה: למרות שסדר המילים אינו אפשרי בעברית, ניתן להבין בדיוק מה האירוע שהמשפט מתאר. לכן, משפט זה יקבל דירוג נמוך בסקאלה המתייחסת לשאלה "עד כמה המשפט תקין בעברית?" ודירוג נמוך יחסית בסקאלה שמתייחסת לשאלה "עד כמה המשפט מסובך/מסורבל?".
לעומת זאת, המשפט: **"הספר שדני הזמין מהספריה במחלקה לתלמידים מחו"ל הושאל לסטודנט מהתכנית ללימודים קוגניטיביים בפקולטה למדעי הרוח אתמול בשלוש אחר הצהריים"** מאוד מסורבל, אבל לא ניתן לומר שמי שאומר משפט כזה אינו דובר עברית כשפת אם. לכן, המשפט הזה יקבל דירוג גבוה יחסית מבחינת התקינות שלו בעברית וגם דירוג גבוה בסקאלה המתייחסת למידת הסרבול של המשפט.

לשאלה עד כמה המשפט תקין בעברית? עליכם לתת דירוג על סקאלה מ-1 עד 7 כאשר 1 = לא תקין בכלל ו-7 = תקין לגמרי.

לשאלה עד כמה המשפט מסובך/מסורבל? עליכם לתת דירוג על סקאלה מ-1 עד 7 כאשר 1 = לא מסובך בכלל ו-7 = מסובך מאוד.

וודאו שאתם עונים לפי הקצוות הנכונים של הסקאלות, המופיעים ליד הנקודות "1" ו-"7".

Translation

Hello and thank you for your willingness to participate in the experiment! The experiment is for monolingual native Hebrew speakers. Please read the instructions with attention before you start.

In this experiment you will be presented with Hebrew sentences. With regard to each sentence, you are requested to answer two questions:

How acceptable is the sentence in Hebrew? You have to determine whether the sentence sounds acceptable to you as Hebrew speakers. When we say “acceptable” we do not mean “correct” in proper Hebrew, but rather ask whether the sentence could be uttered in a conversation by a native Hebrew speaker. To make your judgment easier imagine that the sentences were spoken by different people and that according to your judgment it will be determined whether or not a particular person is a native speaker of Hebrew and whether they should be sent to learn Hebrew.

How complex/cumbersome is the sentence? You have to determine how complex/cumbersome the sentence is. A sentence can be acceptable in the sense that it can be uttered by a native Hebrew speaker but complex and difficult to understand. To make your judgment easier imagine that according to your judgment it will be determined whether or not some people who speak in a cumbersome manner should be sent to a rhetoric course.

Note that a sentence can be acceptable and not complex, acceptable but complex, not acceptable and complex, or not acceptable and not complex. Namely, there is no obligatory relation between the sentence’s acceptability and how complex it is.

For example:

The sentence: “**ha-katan ha-kelev ba-layla navax**” (the small the dog in the night barked) is not acceptable in Hebrew but it is not cumbersome or complex to understand: despite the fact that the word order is not possible in Hebrew, one can understand exactly what the event that the sentence describes is. Thus, this sentence would get a low rating on the scale that refers to the question “How acceptable is the sentence in Hebrew?”, and a low rating on the scale that refers to the question “How complex/cumbersome is the sentence?”

Contrastingly, the sentence “**ha-sefer še-dani hizmin me-ha-sifria ba-maxlaka le-talmidim me-xul huš'al le-student me-ha-toxnit le-limudim kognitivim ba-fakulta le-mada'ey ha-rux etmol be-šaloš axar ha-cahara'im**” (the book that Dani ordered from the library in the department for students from abroad was loaned to a student from the program of cognitive studiesPlain Layout}ives in relative

clauses for Factives and VP-adverbs in (etc cumbersome, but we cannot say that whoever says this sentence is not a native Hebrew speaker. Thus, this sentence would get a relatively high rating with regard to its acceptability in Hebrew, and will also get a high rating on the scale that refers to how cumbersome the sentence is.

To answer the question **How acceptable is the sentence in Hebrew?** you have to provide your rating on a 1-7 scale where “1”= “completely unacceptable” and “7”= “fully acceptable”.

To answer the question **How complex/cumbersome is the sentence?** you have to provide your rating on a 1-7 scale where “1”= “completely not complex” and “7”= “very complex”.

Please verify that you answer according to the correct ends of the scales, which appear next to the points “1” and “7”.

Experimental items

Subject parasitic gap constructions:

- (198) a. Gap licensor:
sima hi ha-iša_i še-[ha-anašim_j še t_j pagšu pg_i] ahavu t_i
 Sima is the-woman_i that-the-people_j that t_j met pg_i loved t_i
me-ha-rega ha-rišon.
 from-the-moment the-first
 ‘Sima is the woman that the people that met loved from the first moment.’
- b. Pronoun licensor:
sima hi ha-iša_i še-[ha-anašim_j še t_j pagšu pg_i] ahavu ota_i
 Sima is the-woman_i that-the-people_j that t_j met pg_i loved her_i
me-ha-rega ha-rišon.
 from-the-moment the-first
 ‘Sima is the woman that the people that met loved from the first moment.’
- c. No licensor:
sima hi ha-iša_i še-[ha-anašim_j še t_j pagšu pg_i] ahavu et
 Sima is the-woman_i that-the-people_j that t_j met pg_i loved ACC
ha-ba’it me-ha-rega ha-rišon.
 the-house from-the-moment the-first
 ‘Sima is the woman that the people that met loved the house from the first moment.’
- (199) a. Gap licensor:
halaxti etmol la-seret_i še-[ha-anašim_j še t_j ra’u pg_i] ahavu
 I.went yesterday to-the-movie_i that-the-people_j that t_j saw pg_i liked
t_i me’od.
 t_i very-much
 ‘I went yesterday to the movie that the people that saw liked very much.’

- b. Pronoun licenser:

halaxti etmol la-sereti še-[ha-anašim_j še t_j ra'u pg_i] ahavu
 I.went yesterday to-the-movie_i that-the-people_j that t_j saw pg_i liked
oto_i me'od.
 it_i very-much

'I went yesterday to the movie that the people that saw liked very much.'

- c. No licenser:

halaxti etmol la-sereti še-[ha-anašim_j še t_j ra'u pg_i] ahavu
 I.went yesterday to-the-movie_i that-the-people_j that t_j saw pg_i liked
et ha-saxkan ha-raši me'od.
 ACC the-actor the-main very-much

'I went yesterday to the movie that the people that saw liked the main actor very much.'

- (200) a. Gap licenser:

kaniti et ha-sefer_i še-[ha-anašim_j še t_j kar'u pg_i] ahavu t_i
 I.bought ACC the-book that-the-people that t_j read pg_i liked t_i
me'od.
 very-much

'I bought the book that the people that read liked very much.'

- b. Pronoun licenser:

kaniti et ha-sefer_i še-[ha-anašim_j še t_j kar'u pg_i] ahavu oto_i
 I.bought ACC the-book that-the-people that t_j read pg_i liked it_i
me'od.
 very-much

'I bought the book that the people that read liked very much.'

- c. No licenser:

kaniti et ha-sefer_i še-[ha-anašim_j še t_j kar'u pg_i] ahavu et
 I.bought ACC the-book that-the-people that t_j read pg_i liked ACC
ha-dmut ha-rašit me'od.
 the-character the-main very-much

'I bought the book that the people that read liked the main character very much.'

- (201) a. Gap licenser:

pagašti et ha-mora_i še-[ha-talmidim_j še t_j makirim pg_i]
 I.met ACC the-teacher that-the-students that t_j know pg_i
te'aru t_i be-katava ba-'iton.
 described t_i in-article in-the-newspaper

'I met the teacher that the students that know described in a newspaper article.'

- b. Pronoun licensor:
pagašti et ha-mora_i še-[ha-talmidim_j še t_j makirim pg_i]
 I.met ACC the-teacher that-the-students that t_j know pg_i
te'aru ota_i be-katava ba-'iton.
 described her_i in-article in-the-newspaper
 'I met the teacher that the students that know described in a newspaper article.'
- c. No licensor:
pagašti et ha-mora_i še-[ha-talmidim_j še t_j makirim pg_i]
 I.met ACC the-teacher that-the-students that t_j know pg_i
te'aru et bet-ha-sefer be-katava ba-'iton.
 described ACC the-school in-article in-the-newspaper
 'I met the teacher that the students that know described the school in a newspaper article.'
- (202) a. Gap licensor:
asiti manuy la-'iton_i še-[ha-anašim_j še t_j kor'im pg_i]
 I.did subscription to-the-newspaper that-the-people that t_j read pg_i
ohavim t_i me'od.
 like t_i very-much
 'I did a subscription to the newspaper that the people that read like very much.'
- b. Pronoun licensor:
asiti manuy la-'iton_i še-[ha-anašim_j še t_j kor'im pg_i]
 I.did subscription to-the-newspaper that-the-people that t_j read pg_i
ohavim oto_i me'od.
 like it_i very-much
 'I did a subscription to the newspaper that the people that read like very much.'
- c. No licensor:
asiti manuy la-'iton_i še-[ha-anašim_j še t_j kor'im pg_i]
 I.did subscription to-the-newspaper that-the-people that t_j read pg_i
ohavim liftor tašbecim.
 like to-solve crossword-puzzles
 'I did a subscription to the newspaper that the people that read like to solve crossword puzzles.'
- (203) a. Gap licensor:
šamati et ha-šir_i še-[ha-lehaka_j še t_j šara pg_i] he'elta t_i
 I.heard ACC the-song that-the-band that t_j sings pg_i uploaded t_i
la-yutyub.
 to-Youtube
 'I heard the song that the band that sings unloaded to Youtube.'

- b. Pronoun licenser:

šamati et ha-šir_i še-[ha-lehaka_j še t_j šara pg_i] he'elta oto_i
 I.heard ACC the-song that-the-band that t_j sings pg_i uploaded it_i
la-yutyub.
 to-Youtube

'I heard the song that the band that sings unloaded to Youtube.'

- c. No licenser:

šamati et ha-šir_i še-[ha-lehaka_j še t_j šara pg_i] he'elta sirton
 I.heard ACC the-song that-the-band that t_j sings pg_i uploaded video
la-yutyub.
 to-Youtube

'I heard the song that the band that sings unloaded a video to Youtube.'

Adjunct parasitic gap constructions:

- (204) a. Gap licenser:

ze ha-baxur_i še-nišakti t_i [bli lehakir pg_i].
 this the-guy that-I.kissed t_i without to-know pg_i
 'These is the guy that I kissed without knowing.'

- b. Pronoun licenser:

ze ha-baxur_i še-nišakti oto_i [bli lehakir pg_i].
 this the-guy that-I.kissed him_i without to-know pg_i
 'These is the guy that I kissed without knowing.'

- c. No licenser:

ze ha-baxur_i še-nišakti et ha-mezuza [bli lehakir pg_i].
 this the-guy that-I.kissed ACC the-mezuzah without to-know pg_i
 'This is the guy that I kissed the mezuzah without knowing.'

- (205) a. Gap licenser:

ele ha-sfarim_i še-hexzarti t_i [bli likro pg_i].
 these the-books that-I.returned t_i without to-read pg_i
 'These are the books that I returned without reading.'

- b. Pronoun licenser:

ele ha-sfarim_i še-hexzarti otam_i [bli likro pg_i].
 these the-books that-I.returned them_i without to-read pg_i
 'These are the books that I returned without reading.'

- c. No licenser:

ele ha-sfarim_i še-hexzarti et ha-manuy [bli likro
 these the-books that-I.returned ACC the-membership without to-read
pg_i].
 pg_i

‘These are the books that I returned the (library) membership without reading.’

- (206) a. Gap licensor:

zot ha-simla_i še-ibadeti t_i [bli lilboš pg_i].

this the-dress that-I.lost t_i without to-wear pg_i

‘This is the dress that I lost without wearing.’

- b. Pronoun licensor:

zot ha-simla_i še-ibadeti ota_i [bli lilboš pg_i].

this the-dress that-I.lost it_i without to-wear pg_i

‘This is the dress that I lost without wearing.’

- c. No licensor:

zot ha-simla_i še-ibadeti et ha-na’ala’im [bli lilboš pg_i].

this the-dress that-I.lost ACC the-shoes without to-wear pg_i

‘This is the dress that I lost the shoes without wearing.’

- (207) a. Gap licensor:

zot ha-avoda_i še-higašti t_i [bli likro pg_i].

this the-paper that-I.submitted t_i without to-read pg_i

‘This is the paper that I submitted without reading.’

- b. Pronoun licensor:

zot ha-avoda_i še-higašti ota_i [bli likro pg_i].

this the-paper that-I.submitted it_i without to-read pg_i

‘This is the paper that I submitted without reading.’

- c. No licensor:

zot ha-avoda_i še-higašti et ha-teza [bli likro pg_i].

this the-paper that-I.submitted ACC the-thesis t_i without to-read pg_i

‘This is the paper that I submitted the thesis without reading.’

- (208) a. Gap licensor:

ze ha-oto_i še-kaniti t_i [bli lir’ot pg_i].

this the-car that-I.bought t_i without to-see pg_i

‘This is the car that I bought without seeing.’

- b. Pronoun licensor:

ze ha-oto_i še-kaniti oto_i [bli lir’ot pg_i].

this the-car that-I.bought it_i without to-see pg_i

‘This is the car that I bought without seeing.’

- c. No licensor:

ze ha-oto_i še-kaniti kisuy hege [bli lir’ot pg_i].

this the-car that-I.bought cover steering-wheel without to-see pg_i

‘This is the car that I bought a steering wheel cover without seeing.’

- (209) a. Gap licensor:
zot ha-mana_i še-hexzarti t_i [bli lit'om pg_i].
 this the-dish that-I.returned t_i without to-taste pg_i
 'This is the dish that I returned without tasting.'
- b. Pronoun licensor:
zot ha-mana_i še-hexzarti ota_i [bli lit'om pg_i].
 this the-dish that-I.returned it_i without to-taste pg_i
 'This is the dish that I returned without tasting.'
- c. No licensor:
zot ha-mana_i še-hexzarti et ha-salat [bli lit'om pg_i].
 this the-dish that-I.returned ACC the-salad without to-taste pg_i
 'This is the dish that I returned the salad without tasting.'

Experiment 2

Instructions

Instructions in Hebrew

שלום ותודה על הנכונות להשתתף בניסוי!

שימו לב: אם השתתפתם לאחרונה בניסוי עם הוראות כמעט זהות, אל תשיבו על הניסוי הנוכחי. הניסוי מיועד לדוברי שפת אם עברית בלבד, ללא שפות אם נוספות (לא דו־לשוניים). אנא קראו את ההוראות בעיון לפני שאתם מתחילים.

בניסוי זה יוצגו לפניכם 27 משפטים בעברית. לגבי כל משפט עליכם לענות על שתי שאלות:

1. **עד כמה המשפט תקין בעברית?** עליכם לקבוע האם המשפט נשמע לכם תקין כדוברי עברית. הכוונה ב"תקין" אינה לתקין מבחינת עברית תקנית או עברית כתובה, אלא להאם תגדירו אדם שאמר את המשפט כדובר עברית כשפת אם. על מנת להקל עליכם את הקביעה, דמיינו שמדובר במשפטים שנאמרו על-ידי אנשים שונים וכי על פי הדירוג שלכם ייקבע האם אדם מסוים הוא דובר עברית כשפת אם או לא, והאם יש לשלוח אותו ללמוד עברית.

2. **עד כמה המשפט מסובך/מסורבל?** עליכם לקבוע האם המשפט מסובך/מסורבל. משפט יכול להיות תקין במובן שהוא יכול להיאמר על-ידי דובר עברית, אבל מסובך או קשה להבנה. על מנת להקל עליכם את הקביעה, דמיינו שעל פי הדירוג שלכם אנשים מסוימים המדברים באופן מסורבל מדי יישלחו לקורס ברטוריקה.

שימו לב, משפט יכול להיות תקין ולא מסובך, תקין אך מסובך, לא תקין ומסובך או לא תקין וגם לא מסובך. כלומר, אין בהכרח קשר בין תקינותו של המשפט למידה שבה הוא מסובך להבנה.

לדוגמה:

המשפט **"הקטן הכלב בלילה נבח"** אינו תקין בעברית, אך אינו מסורבל או מסובך להבנה: למרות שסדר המילים אינו אפשרי בעברית, ניתן להבין בדיוק מה האירוע שהמשפט מתאר. לכן, משפט

זה יקבל דירוג נמוך בסקאלה המתייחסת לשאלה "עד כמה המשפט תקין בעברית?" ודירוג נמוך יחסית בסקאלה שמתייחסת לשאלה "עד כמה המשפט מסובך/מסורבל?" לעומת זאת, המשפט: **"הספר שדני הזמין מהספריה במחלקה לתלמידים מחו"ל הושאל לסטודנט מהתכנית ללימודים קוגניטיביים בפקולטה למדעי הרוח אתמול בשלוש אחר הצהריים"** מאוד מסורבל, אבל לא ניתן לומר שמי שאומר משפט כזה אינו דובר עברית כשפת אם. לכן, המשפט הזה יקבל דירוג גבוה יחסית מבחינת התקינות שלו בעברית וגם דירוג גבוה בסקאלה המתייחסת למידת הסרבול של המשפט.

לשאלה **עד כמה המשפט תקין בעברית?** עליכם לתת דירוג על סקאלה מ-1 עד 7 כאשר 1 = לא תקין בכלל ו-7 = תקין לגמרי.

לשאלה **עד כמה המשפט מסובך/מסורבל?** עליכם לתת דירוג על סקאלה מ-1 עד 7 כאשר 1 = לא מסובך בכלל ו-7 = מסובך מאוד.

וודאו שאתם עונים לפי הקצוות הנכונים של הסקאלות, המופיעים ליד הנקודות "1" ו-"7".

Translation

Hello and thank you for your willingness to participate in the experiment!
Note: if you recently participated in an experiment with almost identical instructions, please do not participate in the current experiment.
The experiment is for monolingual native Hebrew speakers. Please read the instructions with attention before you start.

In this experiment you will be presented with 27 Hebrew sentences. With regard to each sentence, you are requested to answer two questions:

How acceptable is the sentence in Hebrew? You have to determine whether the sentence sounds acceptable to you as Hebrew speakers. When we say "acceptable" we do not mean "correct" in proper Hebrew, but rather ask whether you would define a person that said the sentence as a native Hebrew speaker. To make your judgment easier imagine that the sentences were spoken by different people and that according to your judgment it will be determined whether or not a particular person is a native speaker of Hebrew and whether they should be sent to learn Hebrew.

How complex/cumbersome is the sentence? You have to determine how complex/cumbersome the sentence is. A sentence can be acceptable in the sense that it can be uttered by a native Hebrew speaker but complex and difficult to understand. To make your judgment easier imagine that according to your judgment it will be determined whether or not some people who speak in a cumbersome manner should be sent to a rhetoric course.

Note that a sentence can be acceptable and not complex, acceptable but complex, not acceptable and complex, or not acceptable and not complex. Namely, there is no obligatory relation between the sentence's acceptability and how complex it is.

For example:

The sentence: **"ha-katan ha-kelev ba-layla navax"** (the small the dog in the night barked) is not acceptable in Hebrew but it is not cumbersome or complex to

understand: despite the fact that the word order is not possible in Hebrew, one can understand exactly what the event that the sentence describes is. Thus, this sentence would get a low rating on the scale that refers to the question “How acceptable is the sentence in Hebrew?”, and a low rating on the scale that refers to the question “How complex/cumbersome is the sentence?”

Contrastingly, the sentence “**ha-sefer še-dani hizmin me-ha-sifria ba-maxlaka le-talmidim me-xul huš'al le-student me-ha-toxnit le-limudim kognitivim ba-fakulta le-mada'ey ha-rux etmol be-šaloš axar ha-cahara'im**” (the book that Dani ordered from the library in the department for students from abroad was loaned to a student from the program of cognitive studies in the faculty of humanities yesterday at three in the afternoon) is very cumbersome, but we cannot say that whoever says this sentence is not a native Hebrew speaker. Thus, this sentence would get a relatively high rating with regard to its acceptability in Hebrew, and will also get a high rating on the scale that refers to how cumbersome the sentence is.

To answer the question **How acceptable is the sentence in Hebrew?** you have to provide your rating on a 1-7 scale where “1”= “completely unacceptable” and “7”= “fully acceptable”.

To answer the question **How complex/cumbersome is the sentence?** you have to provide your rating on a 1-7 scale where “1”= “completely not complex” and “7”= “very complex”.

Please verify that you answer according to the correct ends of the scales, which appear next to the points “1” and “7”.

Experimental items

- (210) a. Adjunct parasitic gap, gap licenser:

zot ha-mexonit_i še-kaniti t_i [bli lakaxat pg_i le-nesi'at
 this-is the-car that-I.bought t_i without to-take pg_i to-drive
mivxan]
 test

‘This is the car that I bought without taking to a test drive.’

- b. Adjunct parasitic gap, direct object pronoun licenser:

zot ha-mexonit_i še-kaniti ota_i [bli lakaxat pg_i le-nesi'at
 this-is the-car that-I.bought it_i without to-take pg_i to-drive
mivxan]
 test

‘This is the car that I bought without taking to a test drive.’

- c. Adjunct parasitic gap, PP pronoun licenser:

zot ha-mexonit_i še-himlacti aleha_i [bli lakaxat pg_i
 this-is the-car that-I.recommended on-it_i without to-take pg_i
le-nesi'at mivxan]
 to-drive test

‘This is the car that I recommended without taking to a test drive.’

- (211) a. Adjunct parasitic gap, gap licensor:
zot ha-simla_i še-ibadeti t_i [bli lilboš pg_i]
 this-is the-dress that-I.lost t_i without to-wear pg_i
 ‘This is the dress that I lost without wearing.’
- b. Adjunct parasitic gap, direct object pronoun licensor:
zot ha-simla_i še-ibadeti ota_i [bli lilboš pg_i]
 this-is the-dress that-I.lost it_i without to-wear pg_i
 ‘This is the dress that I lost without wearing.’
- c. Adjunct parasitic gap, PP pronoun licensor:
zot ha-simla_i še-šafaxti aleha_i mic [bli lilboš pg_i]
 this-is the-dress that-I.spilled on-it_i juice without to-wear pg_i
 ‘This is the dress that I spilled juice on without wearing.’
- (212) a. Adjunct parasitic gap, gap licensor:
ze ha-baxur_i še-nišakti t_i [bli lehakir pg_i].
 this-is the-guy that-I.kissed t_i without to-know pg_i
 ‘These is the guy that I kissed without knowing.’
- b. Adjunct parasitic gap, direct object pronoun licensor:
ze ha-baxur_i še-nišakti oto_i [bli lehakir pg_i].
 this-is the-guy that-I.kissed him_i without to-know pg_i
 ‘These is the guy that I kissed without knowing.’
- c. Adjunct parasitic gap, PP pronoun licensor:
ze ha-baxur_i še-rixalti alav_i [bli lehakir pg_i].
 this-is the-guy that-I.gossiped about-him_i without to-know pg_i
 ‘This is the guy that I gossiped about without knowing.’
- (213) a. Adjunct parasitic gap, gap licensor:
ele ha-mismamaxim_i še-tiyakti t_i [bli leharo’t pg_i]
 these-are the-documents that-I.filed t_i without to-showing pg_i
la-mazkira]
 to-the-secretary
 ‘These are the documents that I filed without showing to the secretary.’
- b. Adjunct parasitic gap, direct object pronoun licensor:
ele ha-mismamaxim_i še-tiyakti otam_i [bli leharo’t pg_i]
 these-are the-documents that-I.filed them_i without to-showing pg_i
la-mazkira]
 to-the-secretary
 ‘These are the documents that I filed without showing to the secretary.’
- c. Adjunct parasitic gap, PP pronoun licensor:
ele ha-mismamaxim_i še-xatamti alehem_i [bli leharo’t pg_i]
 these-are the-documents that-I.signed on-them_i without to-showing pg_i
la-mazkira]
 to-the-secretary

‘These are the documents that I signed on without showing to the secretary.’

- (214) a. Adjunct parasitic gap, gap licensor:
zot ha-baxura_i še-he’eracti t_i [bli lifgoš pg_i]
 this-is the-girl that-I.admired t_i without to-meet pg_i
 ‘This is the girl that I admired without meeting.’
- b. Adjunct parasitic gap, direct object pronoun licensor:
zot ha-baxura_i še-he’eracti ota_i [bli lifgoš pg_i]
 this-is the-girl that-I.admired her_i without to-meet pg_i
 ‘This is the girl that I admired without meeting.’
- c. Adjunct parasitic gap, PP pronoun licensor:
zot ha-baxura_i še-hit’ahavti ba_i [bli lifgoš pg_i]
 this-is the-girl that-I.fell.in.love in-her_i without to-meet pg_i
 ‘This is the girl that I fell in love with without meeting.’
- (215) a. Adjunct parasitic gap, gap licensor:
zot ha-mana_i še-hexzarti t_i [bli le-hamli’ax pg_i]
 this-is the-dish that-I.returned t_i without to-salt pg_i
 ‘This is the dish that I returned without salting.’
- b. Adjunct parasitic gap, direct object pronoun licensor:
zot ha-mana_i še-hexzarti ota_i [bli le-hamli’ax pg_i]
 this-is the-dish that-I.returned it_i without to-salt pg_i
 ‘This is the dish that I returned without salting.’
- c. Adjunct parasitic gap, PP pronoun licensor:
zot ha-mana_i še-hitlonanti aleha_i [bli le-hamli’ax pg_i]
 this-is the-dish that-I.complained on-it_i without to-salt pg_i
 ‘This is the dish that I complained about without salting.’
- (216) a. Adjunct parasitic gap, gap licensor:
ze ha-kelev_i še-imacti t_i [bli le-latef pg_i]
 this-is the-dog that-I.adopted t_i without to-pet pg_i
 ‘This is the dog that I adopted without petting.’
- b. Adjunct parasitic gap, direct object pronoun licensor:
ze ha-kelev_i še-imacti oto_i [bli le-latef pg_i]
 this-is the-dog that-I.adopted it_i without to-pet pg_i
 ‘This is the dog that I adopted without petting.’
- c. Adjunct parasitic gap, PP pronoun licensor:
ze ha-kelev_i še-baxarti bo_i [bli le-latef pg_i]
 this-is the-dog that-I.chose in-it_i without to-pet pg_i
 ‘This is the dog that I chose without petting.’

- (217) a. Adjunct parasitic gap, gap licensor:
ele ha-yeladim_i še-hizmanti t_i [bli lehakir pg_i]
 these-are the-children that-I.invited t_i without to-know pg_i
 ‘These are the children that I invited without knowing.’
- b. Adjunct parasitic gap, direct object pronoun licensor:
ele ha-yeladim_i še-hizmanti otam_i [bli lehakir pg_i]
 these-are the-children that-I.invited them_i without to-know pg_i
 ‘These are the children that I invited without knowing.’
- c. Adjunct parasitic gap, PP pronoun licensor:
ele ha-yeladim_i še-hitkašartu elehem_i [bli lehakir pg_i]
 these-are the-children that-I.called to-them_i without to-know pg_i
 ‘These are the children that I called without knowing.’
- (218) a. Adjunct parasitic gap, gap licensor:
ze ha-bosem_i še-heraxti t_i [bli liknot pg_i]
 this-is the-perfume that-I.smelled t_i without to-buying pg_i
 ‘This is the perfume that I smelled without buying.’
- b. Adjunct parasitic gap, direct object pronoun licensor:
ze ha-bosem_i še-heraxti oto_i [bli liknot pg_i]
 this-is the-perfume that-I.smelled it_i without to-buying pg_i
 ‘This is the perfume that I smelled without buying.’
- c. Adjunct parasitic gap, PP pronoun licensor:
ze ha-bosem_i še-hištamašti bo_i [bli liknot pg_i]
 this-is the-perfume that-I.used in-it_i without to-buying pg_i
 ‘This is the perfume that I used without buying.’

Obligatory direct object questionnaire

Instructions

Instructions in Hebrew

שלום לכולם,
 האם תוכלו לתת שיפוטים למשפטים הבאים? עבור כל משפט, סמנו אם הוא דקדוקי או לא
 דקדוקי בעברית בעיניכם, ועד כמה הוא דקדוקי בסקאלה של 1 עד 5
 (1=לא דקדוקי בכלל, 5=דקדוקי לגמרי).
 במהלך מילוי השאלון תוכלו לחזור אחורה לשאלות קודמות אם תרצו.
 אשמח לשמוע הערות/הארות.
 תודה רבה, טלי

Translation

Hi everybody,

Could you provide your judgments with regard to the following sentences?

For each sentence, please decide whether it is grammatical in Hebrew or not, and how grammatical it is on a 1-5 scale (“1” - “completely ungrammatical”; “5” - “fully grammatical”). During the survey you will be able to go back to previous questions if you want to. I would be happy to hear your comments.

Items

Experimenter object of a psych verb

- (219) a. Experiencer object:

*ele ha-anašim_i še-hix'is otam_i/*t_i še-ha-seret be-carfatit*
 these the-people_i that-angered them_i that-the-movie in-French
[bli še-šixnanu pg_i lavo].
 without that-we.convinced pg_i to-come

‘These are the people that it angered that the movie was in French without that we convinced to come.’

- b. Control 1:

ele ha-anašim_i še-t_i hayu ad me'uxar ba-mesiba [bli
 these the-people that-t_i were until late in-the-party without
še-šixnanu pg_i lavo].
 that-we.convinced pg_i to-come

‘These are the people that were at the party until late without that we convinced them to come.’

- c. Control 2:

ele ha-anašim_i še-ha-mesiba hayta muclaxat [bli
 these the-people_i that-the-party was successful without
še-šixnanu pg_i lavo].
 that-we.convinced pg_i to-come

‘These are the people that the party was successful without that we convinced them to come.’

- (220) a. Experiencer object:

*zot ha-iša_i še-sime'ax ota_i/*t_i še-ha-xatuna be-tel-aviv*
 this the-woman_i that-made-happy her_i that-the-wedding in-Tel Aviv
[bli še-hizmanu pg_i].
 without that-we.invited pg_i

‘This is the woman that it made happy that the wedding is in Tel Aviv without that we invited.’

- b. Control 1:
zot ha-iša_i še-t_i hitlonena še-ha-xatuna be-tel-aviv
 this the-woman_i that-t_i complained that-the-wedding in-Tel Aviv
[bli še-hizmanu pg_i].
 without that-we.invited pg_i
 ‘This is the woman that complained that the wedding is in Tel Aviv
 without that we invited her.’
- c. Control 2:
zot ha-iša_i še-ha-xatuna hayta smexa [bli še-hizmanu
 this the-woman_i that-the-wedding was happy without that-we.invited
pg_i].
 pg_i
 ‘This is the woman that the wedding was happy without that we invited
 her.’
- (221) a. Experiencer object:
*ele ha-anašim_i še-hirgiz otam_i/*t_i še-ha-harca’a be-anglit*
 these the-people_i that-annoyed them_i that-the-lecture in-English
[bli še-hizmanu pg_i be-ofen iši].
 without that-we.invited pg_i in-manner personal
 ‘These are the people that it annoyed that the lecture is in English without
 inviting personally.’
- b. Control 1:
ele ha-anašim_i še-t_i hayu ba-harca’a [bli še-hizmanu pg_i
 these the-people_i that-t_i were in-the-lecture without that-we.invited pg_i
be-ofen iši].
 in-manner personal
 ‘These are the people that were in the lecture is without inviting them
 personally.’
- c. Control 2:
ele ha-anašim_i še-ha-kenes haya muclax [bli
 these the-people_i that-the-conference was successful without
še-hizmanu pg_i be-ofen iši].
 that-we.invited pg_i in-manner personal
 ‘These are the people that the conference was successful without inviting
 them personally.’
- (222) a. Experiencer object:
*ze ha-iš_i še-he’eliv oto_i/*t_i še-ha-pgiša be-yerušalaim*
 this the-man_i that-insulted him_i that-the-meeting in-Jerusalem
[bli še-hizmanu pg_i la-pgiša].
 without that-we.invited pg_i to-the-meeting

‘This is the man that it insulted him that the meeting was in Jerusalem without that we invited to the meeting.’

b. Control 1:

ze ha-iš_i še-t_i nasa bimyuxad le-yerušalaim [bli
this the-man_i that-t_i went especially to-Jerusalem without
še-hizmanu pg_i la-pgiša].
that-we.invited pg_i to-the-meeting

‘This is the man that especially drove to Jerusalem without that we invited him to the meeting.’

c. Control 2:

ze ha-iš_i še-ha-pgiša hayta muclaxat [bli še-hizmanu
this the-man_i that-the-meeting was successful without that-we.invited
pg_i la-pgiša].
pg_i to-the-meeting

‘This is the man that the meeting was successful without that we invited him to the meeting.’

Complement of *only*

(223) a. Complement of *Only*:

zot ha-yalda_i še-zihiti rak ota_i [bli še-pagašti pg_i kodem].
this the-girl_i that-I.identified only her_i without that-I.met pg_i before
‘This is the girl that I identified only her without meeting her before.’

b. Control:

zot ha-yalda_i še t_i šalxa li mixtav [bli še-pagašti pg_i
this the-girl_i that t_i sent to-me a-letter without that-I.met pg_i
kodem].
before

‘This is the girl sent me a letter without meeting her before.’

(224) a. Complement of *Only*:

ele ha-mismaxim_i še-tiyakti rak otam_i [bli še-šixpalti pg_i].
these the-documents_i that-I.filed only them_i without that-I.copied pg_i
‘These are the documents that I filed only them without copying them.’

b. Control:

ele ha-mismaxim_i še-ha-misrad nisraf [bli še-šixpalti
these the-documents_i that-the-office was.burned without that-I.copied
pg_i].
pg_i

‘These are the documents that the office was burned without copying them.’

- (225) a. Complement of *Only*:
ele ha-agilim_i še-hiš'alti rak otam_i le-axoti [bli
 these the-earings_i that-I.lent only them_i to-my.sister without
še-anadeti pg_i kodem].
 that-I.wore pg_i before
 'These are the earrings that I lent only them to my sister without wearing
 them before.'
- b. Control: I mistakenly tho_i še-kufsat ha-taxšitim nigneva [bli še-anadeti
 pg_i kodem].
 these the-earings_i that-the-box the-jewelry was.stolen without that-I.wore
 pg_i before
 'These are the earrings that the jewelry box was stolen without that I wore
 them before.'
- (226) a. Complement of *Only*:
zot ha-simla_i še-hezarti rak ota_i [bli še-lavašti pg_i kodem].
 this the-dress_i that-I.returned only it_i without that-I.wore pg_i before
 'This is the dress that I returned only it without wearing before.'
- b. Control:
zot ha-simla_i še-'avda li ha-mizvada [bli še-lavašti pg_i
 this the-dress_i that-lost to-me the-suitcase without that-I.wore pg_i
kodem].
 before
 'This is the dress that my suitcase was lost without wearing it before.'

B Subject parasitic gaps

In this appendix I discuss subject parasitic gap constructions more thoroughly. In section B.1 I review in detail the results of a questionnaire that support my claim, made in section 3.2, that subject parasitic gaps are not parasitic, but rather real gaps. In section B.2 I discuss possible factors that seem to affect the acceptability of subject parasitic gap constructions with no licensor. In section B.3 I discuss the possibility to extract out of subjects and out of relative clauses, and in section B.4 I propose an explicit account that assumes that Hebrew allows extraction out of subjects modified by a relative clause and aims to explain the pattern of judgments observed in the questionnaire discussed in section B.1. For convenience, throughout this appendix, I continue to refer to the construction as ‘subject parasitic gap construction’ despite the fact that I argue that the gap inside the subject is not parasitic. In particular, the subject parasitic gap constructions that I discuss involve a relative clause which modifies the subject. The construction is demonstrated in (227).

(227) [NP RC-head [RC Op_i [NP RC-head(subject) [RC Op_j t_j ...V... t_i]] V ...]]

B.1 The subject parasitic gaps questionnaire

The pattern of judgments presented in (29) in section 3.2 is supported by an acceptability judgment questionnaire which I distributed among fellow linguists Hebrew speakers. In this section I thoroughly review the results of this questionnaire.

Five monolingual native Hebrew speakers were asked to provide their judgments with regard to three types of subject parasitic gap constructions. The questionnaire included five items, each presented in its three types. The five items from the questionnaire are presented in (228)-(232) below. The a-examples were subject parasitic gap constructions with a licensing gap, similar to the gap-licensor sentences from Experiment 1 (discussed in section 3.1). The b-examples were subject parasitic gap constructions with no licensor, in which the matrix predicate was a transitive verb with a lexical NP object. These examples were similar to the no licensor sentences from Experiment 1. The c-examples also involved no licensor, but differed from the b-examples in that the matrix verb was an intransitive or a transitive that does not take an NP complement (I refer to the two kinds as ‘intransitive’ below). Respondents were asked to provide their judgments for the a-c examples, and to specify whether the c-examples were better or worse compared to the a-examples and the b-examples.

- (228) a. *ze ha-seret_i še-kol mi še-ra'a t_i ahav t_i.*
 this the-movie that-every who that-saw t_i liked t_i
 'This is the movie that everyone that saw liked.'
- b. *ze ha-seret_i še-kol mi še-ra'a t_i ahav et ha-saxkan ha-raši.*
 this the-movie that-every who that-saw t_i liked ACC the-actor the-main
 'This is the movie that everyone that saw liked the main actor.'
- c. *ze ha-seret_i še-kol mi še-ra'a t_i halax ha-bayta*
 this the-movie that-every who that-saw t_i went home
ve-hit'abed.
 and-killed.himself
 'This is the movie that everyone that saw went home and killed himself.' or:
- ze ha-seret_i še-ha-anašim še-ra'u t_i hexlitu linso'a le-hodu.*
 this the-movie that-the-people that-saw t_i decided to-go to-India
 'This is the movie that the people that saw (it) decided to go to India.'
- (229) a. *zot ha-iša še-kol mi še-pagaš t_i ahav t_i me-ha-rega*
 this the-woman that-every who that-met t_i loved t_i from-the-moment
ha-rišon.
 the-first
 'This is the woman that everyone that met loved from the first moment.'
- b. *zot ha-iša še-kol mi še-pagaš t_i ahav et ha-bayit*
 this the-woman that-every who that-met t_i loved ACC the-house
me-ha-rega ha-rišon.
 from-the-moment the-first
 'This is the woman that everyone that met loved the house from the first moment.'
- c. *zot ha-iša še-kol mi še-pagaš t_i hexlit lilmod refu'a.*
 this the-woman that-every who that-met t_i decided to-study medicine
 'This is the woman that everyone that met decided to study medicine.'
- (230) a. *ze ha-sefer_i še-kol mi še-kara t_i ahav t_i.*
 this the-movie that-every who that-read t_i liked t_i
 'This is the book that everyone that read liked.'
- b. *ze ha-sefer_i še-kol mi še-kara t_i ahav et ha-dmut*
 this the-movie that-every who that-read t_i liked ACC the-character
ha-rašit.
 the-main
 'This is the book that everyone that read liked the main character.'
- c. *ze ha-sefer_i še-kol mi še-kara t_i hexlit linso'a le-hodu.*
 this the-movie that-every who that-read t_i decided to-go to-India
 'This is the book that everyone that read decided to go to India.'

- (231) a. *ze ha-iton_i še-ha-anašim še-kor'im t_i ohavim t_i.*
 this the-newspaper that-the-people that-read t_i love t_i.
 'This is the newspaper that the people that read love.'
- b. *ze ha-iton_i še-ha-anašim še-kor'im t_i ohavim liftor*
 this the-newspaper that-the-people that-read t_i love to-solve
tašbecim.
 crossword puzzles
 'This is the newspaper that the people that read love to solve crossword puzzles.'
- c. *ze ha-iton_i še-ha-anašim še-kor'im t_i yoc'im harbe*
 this the-newspaper that-the-people that-read t_i go a-lot
le-hafganot.
 to-protests
 'This is the newspaper that the people that read protest a lot.'
- (232) a. *ze ha-šir še-ha-lehaka še-šara t_i he'elta t_i la-yutyub.*
 this the-song that-the-band that-sing t_i uploaded t_i to-the-Youtube
 'This is the song that the band that sings uploaded to Youtube.'
- b. *ze ha-šir še-ha-lehaka še-šara t_i he'elta sirton la-yutyub.*
 this the-song that-the-band that-sing t_i uploaded video to-the-Youtube
 'This is the song that the band that sings uploaded a video to Youtube.'
- c. *ze ha-šir še-ha-lehaka še-šara t_i hitparsema bizrut*
 this the-song that-the-band that-sing t_i got-famous thanks-to
ha-kšarim še-hayu la.
 the-connections that-were to-her
 'This is the song that the band that sings got famous thanks to its connections.' or:
- ze ha-šir še-ha-lehaka še-šara t_i hofi'a be-indinegev.*
 this the-song that-the-band that-sing t_i performed in-In-D-negev
 'This is the song that the band that sings performed in In-D-negev (festival).'

The results are summarized in Table B.1. The a-examples (with a gap licenser) were all judged as grammatical by all five speakers except for (232a), which was judged as ungrammatical by two speakers. One of these two speakers mentioned that the a-example of this item was worse than the c-example. Out of the 23 cases that were judged as grammatical, 19 a-examples were specified as better than the b-examples and 4 were specified as worse than the b-examples, while 17 were specified as better than the c-examples, 4 as equal to the c-examples, and 2 as worse than the c-examples. Out of the 2 cases of a-examples that were judged as ungrammatical, 1 case was specified as better than the b-example and 2 were specified as better than

the c-examples.¹

The b-examples (with no licenser and a transitive verb) were judged as ungrammatical in 13 out of 25 judgments, as marginal in 3 out of 25 judgments, and as grammatical in 9 out of 25 judgments. Out of the 9 cases in which the b-examples were judged as grammatical, 6 were specified as equal to the a-examples and 3 as worse than the a-examples, while 6 were specified as better than the c-examples, 2 as worse than the c-examples, and 1 as equal to the c-example. All the b-examples that were judged as ungrammatical or marginal were judged as worse than the c-examples and the a-examples, except for one marginal example that was judged as equal to the c-example.

The c-examples (with no licenser and an intransitive verb) were judged as grammatical in 16 out of 25 judgments, as marginal in 3 out of 25 judgments and as ungrammatical in 6 out of 25 judgments. Out of the 16 cases in which the c-examples were judged as grammatical, 5 were specified as better than the a-examples, 7 as worse than the a-examples and 4 as equal to the a-examples, while 10 were specified as better than the b-examples, 5 as worse than the b-examples and 1 as equal to the b-example. Out of the 9 ungrammatical or marginal c-examples, 9 were specified as worse than the a-examples, while 6 were specified as better than the b-examples, 2 as equal to the b-examples and 1 as worse than the b-example.

¹One speaker did not provide relative judgments for one of the items, hence the missing relative judgment of the a-example vs. the b-example. The relative judgment of the a-example vs. the c-example could be concluded since for that item the c-example was judged as grammatical whereas the a-example was judged as ungrammatical, thus, the a-example is necessarily worse than the c-example. The same kind of explanation also explains the missing relative judgments in the B vs. A cell and the non-missing judgment in the B vs. C cell, the C vs. A cell and the C vs. B cell, since the b-example was judged as ungrammatical while the c-example was judged as grammatical. Since the a-example was judged as ungrammatical, nothing could be concluded with regard to the relative grammaticality of it compared to the b-example.

B.1 The subject parasitic gaps questionnaire

	Gramm.	Ungramm.	Marginal	vs. A	vs. B	vs. C
A	23/25	2/25	-	-	Grammatical: 19/23 - better 4/23 - equal Ungrammatical: 1/2 - better	Grammatical: 17/23 - better 4/23 - equal 2/23 - worse Ungrammatical: 2/2 - worse
B	9/25	13/25	3/25	Grammatical: 6/9 - equal 3/9 - worse Ungrammatical or marginal: 15/16 - worse	-	Grammatical: 6/9 - better 1/9 - equal 2/9 - worse Ungrammatical or marginal: 1/16 - equal 15/16 - worse
C	16/25	6/25	3/25	Grammatical: 5/16 - better 4/16 - equal 7/16 - worse Ungrammatical or marginal: 9/9 - worse	Grammatical: 10/16 - better 1/16 - equal 5/16 - worse Ungrammatical or marginal: 6/9 - better 2/9 - equal 1/9 - worse	-

Table B.1: Judgments of subject parasitic gap constructions

The results demonstrate variation with respect to the grammaticality of the b-examples and the c-examples. The variation was observed both among speakers and within the judgments of the same speaker. However, a general trend can be noticed, according to which most of the b-examples are ungrammatical or marginal, whereas most of the c-examples are grammatical. The interpretation of this trend is not simple. On the one hand, the grammaticality of the c-examples suggests that the gap in these constructions is not a parasitic gap, but rather a real gap. On the other hand, this seems incompatible with the ungrammaticality of the b-examples; if the gap does not have to be licensed by another gap, why are the b-examples ungrammatical? Moreover, if the gap does not have to be licensed, why are most of the c-examples judged as better than the b-examples?

Looking at the results by speaker, it seems that there are two different trends.

Four out of five speakers found most of the c-examples better than the b-examples, whereas one speaker found most of the c-examples worse than the b-examples. This variation must be accounted for, and I suggest an account in section B.4.

Interestingly, three out of five speakers mentioned that they understood the b-examples as if they included a pronoun that refers to the relative clause head. Consider the following b-examples from the questionnaire.

- (233) a. *ze ha-seret_i še-kol mi še-ra'a t_i ahav et ha-saxkan ha-raši.*
 this the-movie that-every who that-saw t_i liked ACC the-actor the-main
 'This is the movie that everyone that saw liked the main actor.'
- b. *zot ha-iša še-kol mi še-pagaš t_i ahav et ha-bayit*
 this the-woman that-every who that-met t_i loved ACC the-house
me-ha-rega ha-rišon.
 from-the-moment the-first
 'This is the woman that everyone that met loved the house from the first moment.'
- c. *ze ha-sefer_i še-kol mi še-kara t_i ahav et ha-dmut*
 this the-movie that-every who that-read t_i liked ACC the-character
ha-rašit.
 the-main
 'This is the book that everyone that read liked the main character.'
- d. *ze ha-iton_i še-ha-anašim še-kor'im t_i ohavim liftor*
 this the-newspaper that-the-people that-read t_i love to-solve
tašbecim.
 crossword puzzles
 'This is the newspaper that the people that read love to solve crossword puzzles.'
- e. *ze ha-šir še-ha-lehaka še-šara t_i he'elta sirton la-yutyub.*
 this the-song that-the-band that-sing t_i uploaded video to-the-Youtube
 'This is the song that the band that sings uploaded a video to Youtube.'

The b-examples involve a lexical NP as the direct object of the transitive verb. This NP appears in the position in which a gap could have appeared as the licenser of the parasitic gap. Note that the lexical NPs are semantically related to the relative clause head. That is, movies involve main actors, books involve main characters, newspapers involve crossword puzzles, and songs may have video clips. Even the house in (233b) may be related to the woman, as people tend to possess houses. Indeed, three out of five speakers mentioned that they had understood the lexical NP as related to the relative clause head. For example, one speaker mentioned that (233a) lacks a referring pronoun: the main actor *of it* or the main actor *in it* (it = the movie). Another speaker mentioned that he had understood (233d) as if it involved a pronoun: 'love to solve crossword puzzles *in it*' (i.e., in the newspaper). A third

speaker mentioned about (233e) that the sentence does not sound right because the pronoun that is attached to *šel* ('of') is omitted. With regard to (233b), one speaker mentioned that she did not understand the sentence and asked whether the intended meaning was that the house is the woman's house. Another speaker mentioned that this sentence was very difficult to understand, but she finally understood it as meaning that the house is the woman's house.

These comments suggest that in the b-examples, speakers of Hebrew expect to find a licenser for the parasitic gap. When they do not find it, they force an interpretation in which there is 'a conceptual licenser' that refers to the relative clause head. This interpretation is sometimes very easy (as in the *book* or *movie* cases) and sometimes more difficult (as in the *woman* and the *house* case). However, if speakers expect a licenser, why do some speakers find the c-examples more acceptable than the b-examples even though they also do not involve a licenser? Another question is why speakers should expect a licenser in the first place; if subject parasitic gap constructions do not involve a parasitic gap as the results of Experiment 1 suggest, why should speakers expect a licenser?

In the following sections I address these questions. As a first step, I discuss in section B.2 some notable differences between the good subject parasitic gap examples and the bad subject parasitic gap examples. In particular, I discuss two factors that might affect the acceptability of subject parasitic gap constructions: *expectations* and *causality*. In section B.3 I discuss the possibility that extraction out of a subject modified by a relative clause is grammatical in Hebrew from its two angles: the possibility to extract out of a subject and the possibility to extract out of a relative clause. Furthermore, I show that there is additional evidence for subject parasitic gaps not being parasitic but rather real gaps. Finally, in section B.4, I suggest a possible account for the relative acceptability of different subject parasitic gap constructions, which assumes that extraction out of a subject modified by a relative clause is possible. I argue that the acceptability pattern observed in the answers to the questionnaire and the variation among speakers and among items can be accounted for by assuming that the expectations with regard to whether or not extraction is possible affect the processing difficulty of sentences, which in turn affects their acceptability.

B.2 When are subject parasitic gaps good and why?

As a first step of providing an account for the pattern of judgments discussed above, according to which examples with no licenser in which the verb is intransitive are usually better than examples with no licenser in which the verb is transitive, the factor that differentiates these two kinds of subject parasitic gap constructions needs to be identified.

A possible factor that might differentiate the transitive examples from the intransitive examples is *expectations*. As I mentioned in section B.1, speakers that I consulted mentioned that they often interpreted the transitive examples as if they involved an

‘implicit pronoun’ that refers back to the matrix relative clause head, such as *šelo* (of-it) or *bo* (in-it). For example, with regard to *this is the movie that everyone that saw loved the main actor*, speakers mentioned that they interpreted *loved the main actor* as *loved the main actor in it*, where ‘it’ refers to the movie. This fact suggests that speakers expect to find a licensor in these cases. Namely, they interpret the gap located in the subject-modifying relative clause as a parasitic gap, which requires a licensor in the matrix relative clause. When they do not find such a licensor, they ‘force’ an implicit one.

No such comments were made with regard to intransitive examples like *this is the movie that everyone that saw went home and killed himself*. Thus, it seems that people do not expect to find a licensor in intransitive examples. Note that although in the case of *this is the movie that everyone that saw went home and killed himself* an implicit pronoun like *biglalo* (because-of-it) might be inserted, there were also examples that were judged as good in which no such pronoun can be inserted, like *this is the newspaper that the people that read protest a lot*.

Therefore, it seems that in the transitive examples, namely, in examples in which the matrix relative clause involves a verb that takes an NP-complement, speakers have an expectation to find a licensor. This suggests that speakers assume that the gap inside the subject-modifying relative clause is parasitic. Contrastingly, it seems that in the intransitive examples, namely, in examples in which the matrix relative clause involves a verb that does not take an NP-complement, speakers do not expect to find a licensor. This suggests they do not assume that the gap in the subject-modifying relative clause is parasitic. Hence, the general trend whereby intransitive examples are better than transitive examples might be explained by the fact that in both cases, there is ultimately no licensing gap or pronoun. Thus, the intransitive examples, in which speakers do not expect to find a licensor, are judged as better than transitive examples, in which speakers expect to find a licensor but end up not finding it.

At this point the question is why there should be such a difference in expectations between transitive examples and intransitive examples. A plausible account might be that with transitive verbs speakers expect to find a licensing position, while with intransitive verbs speakers do not expect to find a licensing position, as the verb does not take an NP-complement. Note, however, that before encountering the transitive/intransitive verb, both kinds of examples are in principle equally likely to involve a licensor for the gap located inside the subject-modifying relative clause. I further discuss this issue in section B.4.

Note that one could argue that subject parasitic gaps are parasitic, and that resumptive pronouns do license them, by claiming that the fact that speakers mentioned that they had interpreted the transitive examples as if they involved an implicit pronoun suggests that these examples involve a ‘null resumptive pronoun’ which licenses the parasitic gap. Recall, however, that speakers did not mention with regard to the intransitive examples that they had interpreted them as if they included an ‘implicit pronoun’. Therefore, if it is the case that a null resumptive pronoun licenses the parasitic gap in the transitive examples, we would expect the transitive examples

to be *better* than the intransitive examples, which arguably do not involve such null resumptive pronoun. Since the transitive examples were judged as worse than the intransitive examples in most cases, this direction seems unlikely.

Another factor that might be involved in the acceptability of the intransitive examples is ‘*causality*’. Many good intransitive examples involve some sense of ‘causality’: there seems to be a causal relation between the situation described by the subject-modifying relative clause and the situation described by the matrix relative clause. For example, the most natural way to interpret the sentence ‘*this is the movie that everyone that saw went home and killed himself*’ is one in which people that saw the movie went home and killed themselves *because of the movie*. Another example in which the most salient interpretation is one that involves causality is ‘*this is the woman that everyone that met decided to study medicine*’. It seems that these examples are most naturally interpreted as if the matrix relative clause involves a causal preposition with a pronoun that refers back to the matrix relative clause head. Note that interpreting these examples in a causal way is not inevitable. Namely, a correlative, rather than causal relation between the two parts of the sentence makes perfect sense. For example, it could be the case that the same group of people that saw the movie went home and killed themselves but their suicide was not causally related to the movie. Admittedly, the causal interpretation does seem more salient and more plausible than the non-causal interpretation.

Note that there are also good intransitive examples in which the correlative relation is more salient than the causal one. For example, in ‘*this is the newspaper that the people that read protest a lot*’ the relation between the situation described by the subject-modifying relative clause and the situation described by the matrix relative clause does not seem to be causal. Namely, the people that read that paper do not protest a lot *because of* the paper. Rather, there is a *correlation* between the group of people that read that paper and the group of people that protest a lot (this correlation might be due to a common cause).

Note also that there are examples with no causality relation between the two parts of the sentence which seem to be relatively bad. (234) is such an example. Note that in (234) there does not even seem to be a common causal source for the two parts of the sentence. Moreover, the subject-modifying relative clause involves a verb in the future tense, while the matrix relative clause involves a verb in the past tense. Thus, it is impossible to construct a causal interpretation of the sentence, as things that will happen in the future cannot be the cause of things that happened in the past. Note that it could be that future book-reading and past shirt-wearing are both caused by a third factor, such that there is some kind of meaningful correlation, which is conceivably relevant. This correlation is not salient here, though. It is truly unclear what exactly governs the acceptability of subject parasitic gap constructions in general and in particular, what governs their plausibility in terms of a conceivable relation between the subject-modifying relative clause and the outer relative clause.

- (234) ?? *ze ha-sefer še-kol mi še-yikra ba-šana ha-ba'a lavaš*
 this the-book that-every who that-will.read in-the-year next wore
xulca levana etmol
 shirt white yesterday
 'This is the book that everyone who will read (it) next year wore a white
 shirt yesterday.'

Another piece of evidence that suggests that the acceptability of the intransitive subject parasitic gap constructions has something to do with causality comes from an acceptability judgment experiment that I conducted to further investigate the acceptability of subject parasitic gap constructions. In this experiment, the intransitive examples were controlled for causality; they were intentionally constructed such that they would not involve a salient clausal relation between the subject-modifying relative clause and the matrix relative clause, and following their completion of the acceptability judgment questionnaire, participants were asked to determine whether the situation described by the experimental intransitive examples (and fillers) involved a causality relation. It was emphasized in the instructions that the question is not whether or not the sentence *has to* imply a causality relation but rather whether they intuitively understood the sentence as involving causality. Participants had to answer this question by choosing between 'yes' and 'no'. An intransitive example from this experiment is presented in (235) below.

- (235) *zot ha-iša še-ha-anašim še-pagšu garim be-cfon ha-'arec*
 this the-woman that-the-people that-met live in-north the-country
 'This is the woman that the people that met (her) live in the north of the
 country.'

Interestingly, the ten intransitive experimental items were judged as not involving a causality relation. In particular, the highest number of positive responses to the question 'Does the situation described by the sentence involve a causality relation?' for a single item was 5 out of 35 responses. The mean number of positive responses to this question was 3 out of 35 responses. Contrastingly, the highest number of positive responses for a filler was 33 out of 35, and the mean number of positive responses for the fillers was 26.8. Notably, the ten fillers were identical or very similar to the intransitive examples that I used in the questionnaire discussed in section B.1.

Unlike the results of the acceptability judgment questionnaire discussed in section B.1, the results of the acceptability judgment experiment in which the intransitive examples did not involve causality did not show the pattern according to which the intransitive examples were better than the transitive examples. In particular, there was no significant difference between the intransitive condition and the transitive condition, and the quantitative trend showed the opposite direction than the one observed in the questionnaire discussed in section B.1; the mean rating (on a 7-point scale where 1 stands for "completely unacceptable" and 7 for "fully acceptable") was 2.54 for the transitive condition and 2.18 for the intransitive condition. The

results of a mixed-effects model in which licensing was included as a fixed factor and items and participants as random factors are summarized in Table B.2, which shows the estimated coefficient and the expected value of acceptability for each licensing condition.

The experiment also involved a condition in which the verb was transitive but its NP-complement was unrelated to the relative clause head, a condition in which there was a gap in the potentially licensing position, and a condition in which the potentially licensing position was occupied by a direct object resumptive pronoun. An example of one item with its five conditions is presented in (236) below.

- (236) a. Gap:
ze ha-seret_i še-[ha-anašim_j še-t_j rau t_i] ahavu t_i.
 this the-movie that-the-people that-t_j saw t_i liked t_i
 ‘This is the movie that the people that saw liked.’
- b. Transitive, related NP:
ze ha-seret_i še-[ha-anašim_j še-t_j rau t_i] ahavu et ha-saxkan
 this the-movie that-the-people that-t_j saw t_i liked ACC the-actor
ha-raši.
 the-main
 ‘This is the movie that the people that saw liked the main actor.’
- c. Transitive, unrelated NP:
ze ha-seret_i še-[ha-anašim_j še-t_j rau t_i] ahavu šokolad.
 this the-movie that-the-people that-t_j saw t_i liked chocolate
 ‘This is the movie that the people that saw liked chocolate.’
- d. Intransitive:
ze ha-seret_i še-[ha-anašim_j še-t_j rau t_i] niznesu la-ulam
 this the-movie that-the-people that-t_j saw t_i entered to-the-theater
ba-rega ha-axaron.
 in-the-moment the-last
 ‘This is the movie that the people that saw entered the theater at the last minute.’
- e. Resumptive pronoun:
ze ha-seret_i še-[ha-anašim_j še-t_j rau t_i] ahavu oto_i.
 this the-movie that-the-people that-t_j saw t_i liked it_i
 ‘This is the movie that the people that saw (it) liked it.’

CONDITION	COEF. ESTIMATE	EXP.VALUE	STD. ERROR	t-VALUE	pMCMC
gap (Intercept)	4.35	4.35	0.25	-	-
transitive, related	-1.81	2.54	0.25	-7.14	0.0001
transitive, unrelated	-2.07	2.28	0.25	-8.18	0.0001
intransitive	-2.16	2.19	0.25	-8.52	0.0001
resumptive pronoun	-0.35	3.99	0.25	-1.38	0.1814

Table B.2: Effect of Licensing on acceptability judgments

Table B.2 shows that all conditions, except the resumptive pronoun condition, were significantly worse than the gap condition. Post-hoc pairwise comparisons using Tukey correction for multiple comparisons, showed that all the no-licensing conditions (i.e., transitive-related, transitive-unrelated, and intransitive) were significantly worse than the resumptive pronoun condition and that there was no significant difference among these three no-licensing conditions. The estimated differences and statistic values are presented in Table B.3.

COMPARISON	ESTIMATE	STD. ERROR	Z-VALUE	p-VALUE
RP - transitive-related	1.46	0.25	5.76	0.0001
RP - transitive-unrelated	1.72	0.25	6.8	0.0001
RP - intransitive	1.8	0.25	7.14	0.0001
transitive-related - transitive-unrelated	0.26	0.25	1.04	0.83
transitive-related - intransitive	0.35	0.25	1.38	0.64
transitive-unrelated - intransitive	0.08	0.25	0.33	0.99

Table B.3: Effect of Licensing on acceptability judgments, post-hoc pairwise comparisons

These results suggest that the causality factor affects the acceptability of intransitive subject parasitic gap constructions; unlike in the questionnaire discussed in section B.1, where the intransitive examples involved causality and were judged as better than the transitive examples, the intransitive examples in this experiment, which did not involve causality, were not rated as better than the transitive examples. Interestingly, there was no significant difference between the transitive-related condition and the transitive-unrelated condition. This is quite surprising, since if it is the case that speakers interpret transitive examples as involving an ‘implicit pronoun’ that refers back to the relative clause head, we might expect transitive-unrelated examples to be worse than transitive-related examples, as inserting such an implicit pronoun in transitive-unrelated examples is difficult or even impossible. Note, however, that the numerical trend did show the expected direction.

To conclude, the pattern of judgments with respect to different kinds of no-licensing subject parasitic gap constructions seems complex, and more work has to be done to determine what actually governs it. Nevertheless, the fact that there are subject parasitic gap constructions with no licenser which are relatively acceptable is mysterious if subject parasitic gaps are indeed parasitic. Therefore, I concluded in section 3.2 that the acceptability of resumptive pronouns in subject parasitic gap constructions cannot be taken as evidence for their ability to license parasitic gaps and hence for their compatibility with movement.

In an attempt to provide an explanation for the fact that causality affects the acceptability of intransitive subject parasitic gap constructions and the fact that resumptive pronouns are good in subject parasitic gap constructions, there are two possible directions that one might pursue. The first is to argue that the acceptability of subject parasitic gap constructions is not related to licensing, but rather to causality, or to some kind of strong relation between the situation described by the subject-modifying relative clause and the situation described by the outer, matrix, relative clause. Under this account it could be argued that the resumptive pronoun examples are good because the pronoun reinforces this causality relation as it refers back to the first part of the sentence. For example, in *this is the movie that everyone that saw liked it*, the pronoun reinforces a relation between the situation of seeing the movie and liking it.

The second direction would be to argue that the acceptability of subject parasitic gap constructions is related to licensing, and to argue that when there is a causality relation between the two parts of the sentence, there is actually an ‘implicit pronoun’ that licenses the parasitic gap. This however, does not necessarily indicate that pronouns are compatible with movement, since the nature of this ‘implicit pronoun’ is not yet well understood.

Providing an explicit account for the factors that govern the acceptability of subject parasitic gap constructions is beyond the scope of the current study, but it seems that the acceptability is strongly related to factors that have something to do with the plausibility of the situation described by the sentence. This suggests that licensing by a position related to its antecedent by movement is not the crucial factor that governs the acceptability of these constructions.

In this section I discussed the possible factors that affect the acceptability of subject parasitic gap constructions. The fact that there are complex factors that affect the acceptability of subject parasitic gaps strongly suggests that the gap inside the subject-modifying relative clause is not parasitic in Hebrew. Rather, it seems that extraction out of a subject modified by relative clause is possible. In the next section I discuss the possibility to extract out of a subject modified by a relative clause. In section B.3.1 I discuss the possibility to extract out of subjects, which are generally assumed to be islands for movement. In section B.3.2 I discuss the possibility to extract out of relative clauses, which are also assumed to be islands for movement. Then, in section B.4 I propose a more explicit account for the pattern of judgments observed in the questionnaire discussed in section B.1, which is based on the assumption that extraction out of a subject modified by a relative clause is possible

under certain conditions. This account has to do with the expectations that speakers develop during the processing of subject parasitic gap constructions.

B.3 Extraction out of subject-modifying relative clauses

In this section I discuss the possibility to extract out of a subject modified by a relative clause. In section B.3.1 I discuss extraction out of subjects and in section B.3.2 I discuss extraction out of relative clauses.

B.3.1 Subject islands

The fact that there are acceptable subject parasitic gap constructions with no licensing gap or resumptive pronoun suggests that the gap inside the subject-modifying relative clause is a real gap, that does not need to be licensed by another gap.

As I mentioned in section 1, Hebrew does not seem to have parasitic gaps in subject islands that do not involve a relative clause modifier, as demonstrated in (18), repeated here as (237). Thus, I concentrated in the current study on parasitic gaps that occur in a subject modified by a relative clause, leaving aside parasitic gaps in subjects that do not involve a relative clause.

- (237) a. * *zot ha-yalda_i še-[le-ha'aric pg_i] me'acben t_i*
 this the-girl that-to-admire pg_i annoys t_i
 Intended meaning: 'This is the girl that admiring her annoys her.'
- b. * *zot ha-yalda_i še-[ha-wda še-lo hizmanti pg_i] icbena t_i*
 this the-girl that-the-fact that-not invited.I pg_i annoyed t_i
 'This is the girl that the fact that I did not invited annoyed.'
- c. * *zot ha-yalda_i še-[xaverim šel pg_i] ma'aricim t_i*
 this the-girl that-friends of pg_i admire t_i
 'This is the girl that friends of admire.'

In (237a) there is a parasitic gap inside an infinitival clausal subject and the gap in the object position of 'annoy' does not license it. In (237b) there is a parasitic gap inside a subject that takes a clausal complement, and the gap in the object position of 'annoy' does not license it either. In (237c) there is a parasitic gap which is the complement of the preposition 'of' and again, it is not licensed by the outside gap. For (237c), it can be assumed that the parasitic gap is not licensed because Hebrew does not have preposition standing, so it does not allow gaps to appear as complements of prepositions regardless of the context in which the preposition occurs. With regard to (237a) and (237b) it is less clear why Hebrew does not allow the parasitic gap, and discussing this is beyond the scope of this thesis.² In any case, since Hebrew

²English equivalents of (237b) and (237c) are grammatical, while English equivalent of (237a) is ungrammatical, see also footnote (11) in section 1.

only seems to have parasitic gaps in subjects that involve a relative clause modifier, I concentrate on these constructions.

Although Hebrew does not allow extraction out of all kinds of subjects, the possibility that Hebrew allows extraction out of a subject in certain circumstances (i.e., when the subject is modified by a relative clause and when other conditions are satisfied, see discussion in section B.2) calls for thorough investigation, since subjects are generally assumed to be strong islands, an assumption that goes back to Ross's (1967) dissertation. A thorough investigation of the grammatical status of subject islands is beyond the scope of this study. I do, however, discuss additional evidence for the claim that Hebrew allows extraction out of subjects modified by a relative clause, and I also briefly review recent proposals that aim to determine the circumstances under which extraction out of subjects is possible and provide an account for them. I also discuss how some of these proposals might be relevant for the current case of subject parasitic gap constructions in Hebrew.

I start by showing that the facts from Hebrew do indicate that Hebrew allows extraction out of subjects modified by a relative clause.

A possible objection to the claim that the gap inside the subject-modifying relative clause is a real gap is to argue that the reason that the subject parasitic gap constructions with no licensor which were discussed here are good is that they involve verbs like *ra'a* (*see*) or *kara* (*read*), which tend to allow object drop to some extent in Hebrew.³ For example, the examples in (238)-(239) do not involve any movement, but they are perfectly good without the direct object of *see* or *read*. If the object can be dropped in (238)-(239), it can in principle be dropped in subject parasitic gap constructions. In that case, the acceptability of subject parasitic gap constructions with no licensor would not be due to the fact that the gap inside the subject-modifying relative clause is not parasitic, but rather due to the fact that this alleged gap is not really a movement gap, but rather a case of object drop.

Note that even if subject parasitic gap constructions without a licensor are only good when the verb allows object drop, the acceptability of resumptive pronouns in these constructions in any case does not point at the ability of resumptive pronouns to license subject parasitic gaps and at their compatibility with movement. Namely, whether the empty position in the subject-modifying relative clause is the result of object drop or A'-movement, the fact that subject parasitic gap constructions are good with resumptive pronouns does not indicate that resumptive pronouns are compatible with movement.

- (238) *eyze seret! kol mi še-ra'a ahav (oto)/xataf dika'on!*
 what movie every who that-saw liked (it)/got depression
 'What a movie! Everyone that saw (it) liked (it)/got depressed!'
- (239) *eyze sefer! kol mi še-kara ahav (oto)/xataf dika'on!*
 what book every who that-saw liked (it)/got depression
 'What a book! Everyone that saw (it) liked (it)/got depressed!'

³I thank Tal Siloni (p.c) for pointing this out.

To argue that the gap inside the subject-modifying relative clause in parasitic gap constructions is a real movement gap (namely, that movement can apply out of the subject-modifying relative clause), verbs that do not allow object drop must be tested.

Tal Siloni (p.c) notes that when verbs that do not allow object drop occur in subject parasitic gap constructions these constructions are not acceptable without a licenser. Examples (240a) and (241a) show that the verbs *ilef* (*train*) and *xika* (*imitate*) do not allow object drop. Examples (240b) and (241b) show that when these verbs occur in a subject-modifying relative clause with no overt direct object and no licenser, the construction is ungrammatical. The examples and judgments are hers.

- (240) a. * *eyze kelev! kol mi še-ilef ahav (oto)/zaxa be-pras!*
 what dog every who that-trained liked (it)/won in-prize
 ‘What a dog! Everyone that trained (it) liked (it)/won a prize!’
 b. * *ze ha-kelev še-ha-anašim še-ilfu *(oto) zaxu be-pras*
 this the-dog that-the-people that-trained *(it) won in-prize
 ‘This is the dog that the people that trained (it) won a prize.’
- (241) a. * *eyze tipus! kol mi še-xika sana (oto)/zaxa be-pras!*
 what character every who that-imitated hated (him)/won in-prize
 ‘What a character! Everyone that imitated (him) hated (him)/won a prize!’
 b. * *ze ha-tipus še-ha-anašim še-xiku *(oto) zaxu be-pras!*
 this the-character that-the-people that-imitated *(him) won in-prize
 ‘This is the character that the people that imitated (him) won a prize.’

According to my judgment, (240b) and (241b) are not that bad. In fact, there are other verbs that do not allow object drop but do seem to be acceptable when they occur in subject parasitic gap constructions with no licenser. Examples (242a) and (243a) show that the verbs *pagaš* (*meet*) and *imec* (*adopt*) do not allow object drop. Examples (242b) and (243b) show that when these verbs occur in a subject parasitic gap construction with no licensing gap, the sentence is relatively acceptable.

- (242) a. * *eyzo iša! kol mi še-pagaš ahav (ota)/hexlit lilmod*
 what woman every who that-met loved (her)/decided to-study
refu’a!
 medicine
 ‘What a woman! Everyone that met (her) loved (herr)/decided to study medicine’
 b. *zot ha-iša še-kol mi še-pagaš hexlit lilmod refu’a*
 this the-woman that-every who met decided to-study medicine
 ‘This is the woman that everyone that met (her) decided to study medicine.’

- (243) a. * *eyze kelev! kol mi še-imec ahav (oto)/zaxa be-pras!*
 what dog every who that-trained liked (it)/won in-prize
 ‘What a dog! Everyone that adopted (it) liked (it)/won a prize!’
 b. *ze ha-kelev še-ha-anašim še-imcu zaxu be-pras*
 this the-dog that-the-people that-adopted won in-prize
 ‘This is the dog that the people that adopted (it) won a prize.’

Moreover, in Experiment 1 (subject PGs vs. adjunct PGs, discussed in section 3.1) the resumptive pronoun examples in items that involved verbs like *pagaš* or *hikir* (*meet*), which do not allow object drop, were relatively acceptable. For *pagaš*, the pronoun version was almost as good as the gap version (Mean_{pronoun}=4.28; Mean_{gap}=4.3). For *hikir*, the pronoun version was better than the gap version (Mean_{pronoun}=3.75; Mean_{gap}=3.57).

In addition, in the subject parasitic gap questionnaire, discussed in section B.1, the example with *pagaš*, which was identical to (242b), was judged as grammatical.

Although the question of whether subject parasitic gap constructions without a licenser are good because the empty position is the result of object drop or the result of A'-movement is not crucial for the current discussion of resumptive pronouns' ability to license parasitic gaps, there seems to be another piece of evidence that supports the real gap story rather than the object drop story. The empty position inside subject-modifying relative clauses can license another parasitic gap.⁴ Example (244d) shows that a subject 'parasitic' gap licenses another gap in an adjunct which is located inside the subject-modifying relative clause. The contrast between examples (244a) and (244b) shows that the adjunct parasitic gap is indeed parasitic and requires a licenser, and example (244c) shows that the subject parasitic gap does not require a licenser.

- (244) a. * *zot ha-kalba_i še-imacnu et ha-gurim [kedey lehacig*
 this the-dog that-we.adopted ACC the-puppies in-order to-present
pg_i be-ta'aruxut]
pg_i in-exhibitions
 ‘This is the dog that we adopted the puppies in order to present (it)
 in exhibitions.’
 b. *zot ha-kalba_i še-imacnu t_i [kedey lehacig pg_i*
 this the-dog that-we.adopted t_i in-order to-present pg_i
be-ta'aruxut]
in-exhibitions
 ‘This is the dog that we adopted in order to present in exhibitions.’

⁴I thank Julia Horvath for suggesting this test.

- c. *zot ha-kalba_i še-[ha-anašim še-imcu t_i] hofi'u be-katava*
 this the-dog that-the-people that-adopted t_i appeared in-article
 ba-iton
 in-the-newspaper
 ‘This is the dog that the people that adopted (it) appeared in a news-
 paper article.’
- d. *zot ha-kalba_i še-[ha-anašim še-imcu t_i] [kedey lehacig pg_i*
 this the-dog that-the-people that-adopted t_i in-order to-present pg_i
 be-ta'aruxut]] hofi'u be-katava ba-iton
 in-exhibitions appeared in-article in-the-newspaper
 ‘This is the dog that the people that adopted (it) to present (it) in
 exhibitions appeared in a newspaper article.’

Similarly, an alleged subject parasitic gap can also license an adjunct parasitic gap in an adjunct located in the matrix relative clause. Example (245d) shows that a subject ‘parasitic’ gap licenses a gap located in an adjunct which is located in the matrix relative clause. The contrast between examples (245a) and (245b) shows that the adjunct parasitic gap is indeed parasitic and requires a licenser, and example (245c) shows that the subject parasitic gap does not require a licenser.

- (245) a. * *ze ha-kelev_i še-dani hixnis et ha-smixa la-mexonit [kedey*
 this the-dog that-Dani inserted ACC the-blanket to-the-car in-order
 lakaxat pg_i la-veterinar]
 to-take pg_i to-the-veterinarian
 ‘This is the dog that Dani put the blanket in the car in order to take
 (it) to the vet.’
- b. *ze ha-kelev_i še-dani hixnis t_i la-mexonit [kedey lakaxat pg_i*
 this the-dog that-Dani inserted t_i to-the-car in-order to-take pg_i
 la-veterinar]
 to-the-veterinarian
 ‘This is the dog that Dani put in the car in order to take to the vet.’
- c. *ze ha-kelev_i še-[ha-anašim še-imcu t_i] higi'u meraxok*
 this the-dog that-the-people that-adopted t_i arrived from-far
 le-yerid ha-imuc
 to-fair the-adoption
 ‘This is the dog that the people that adopted (it) arrived to the adop-
 tion fair from far away.’
- d. *ze ha-kelev_i še-[ha-anašim še-imcu t_i] higi'u meraxok*
 this the-dog that-the-people that-adopted t_i arrived from-far
 [kedey lakaxat pg_i la-veterinar]
 in-order to-take pg_i to-the-veterinarian
 ‘This is the dog that the people that adopted (it) arrived from far away
 in order to take (it) to the vet.’

Interestingly, there are also acceptable examples from English in which there are two gaps, one inside a subject and one inside an adjunct. Such examples were noted by Levine and Sag (2003) and Levine and Hukari (2006), who call them ‘symbiotic gaps’, as shown in (246). (246c) is more acceptable than (246a) and (246b). This suggests that also in English, extraction out of subjects is possible.⁵

- (246) a. * What kinds of books do authors of _ argue about royalties after writing malicious pamphlets?
 b. ?? What kinds of books do authors of malicious pamphlets argue about royalties after writing _?
 c. What kinds of books do authors of _ argue about royalties after writing _?
 (ex. (21) from Chaves 2013)

The fact that gaps inside subject-modifying relative clauses can license an adjunct parasitic gap strongly suggests that they are real gaps. In addition, if the reason for the grammaticality of subject parasitic gap constructions without a licenser is that the verbs that were used allow object drop, we would expect adjunct parasitic gap constructions with these verbs to be good without a licenser as well, which is not the case, as the ungrammaticality of (247) shows.

- (247) * *ele ha-sfarim še-nasati le-xul [bli likro]*
 these the-books that-I.traveled to-abroad without to-read
 ‘These are the books that I traveled abroad without reading.’

I now turn to a brief review of recent works that suggest that the ungrammaticality of extraction out of subjects is in some circumstances less robust than in others. The aim of this review is not to provide an explicit account for extraction out of subject islands in Hebrew, but rather to provide various directions or ‘starting points’ for future research.

Traditionally, subjects were assumed to be islands for extraction. This assumption was based on the fact that overt extraction out of subjects, as opposed to objects, is degraded in English and in many other languages, as exemplified by the contrast between (248a) and (248b).

- (248) a. ?* Who_i does [a picture of t_i] hang on the wall?
 b. Who_i did you see [a picture of t_i]?
 (ex. (1a) and (64a) from Stepanov 2007)

⁵Of course, (246) may also suggest that extraction out of adjuncts is possible. However, extraction out of adjuncts does seem to be much more restrictive than extraction out of subjects, and since the Hebrew data in the current study suggest that adjunct parasitic gaps *are* parasitic, I do not argue here in favor of extraction out of adjuncts being grammatical too. See Chaves (2013) for acceptable examples of extraction out of adjuncts in English and for the claim that adjunct islands, like subject islands, are not a grammatical phenomenon.

However, recent research suggests that subjects are not always islands for extraction. There are different lines of research in the literature that investigate the acceptability of extraction out of subjects which might be relevant for the current discussion of subject parasitic gap constructions in Hebrew. I discuss three lines of research here: subject islands as fundamentally different from adjunct islands, the variability in the grammatical status of subject islands, and subject islandhood as an extra-grammatical phenomenon. The first two lines of research assume that subject islandhood is a grammatical phenomenon. Namely, these lines of research assume that the grammar involves a condition/conditions that prohibit extraction out of subjects. According to these lines of research, the exceptions in which extraction out of subjects is allowed do not violate the relevant grammatical condition(s). In contrast, the third line of research assumes the opposite; it assumes that there is no prohibition in the grammar against extraction out of subjects, but rather only processing heuristics that are derived from extra-grammatical factors. According to this view, extraction out of subjects becomes acceptable when there are certain cues that help the processor arrive at the correct parse. I briefly discuss these three lines of research below and argue that the Hebrew facts from subject parasitic gap constructions are most compatible with the extra-grammatical line of research.

B.3.1.1 Subjects vs. adjuncts

The first line of research aims to explain the difference between subjects and adjuncts with regard to extractability. Since there is certainly a contrast between subject parasitic gap constructions and adjunct parasitic gap constructions in Hebrew, defining the factors that tease apart subject islands from adjunct islands is definitely important.

Stepanov (2007) is one recent work that aims to provide a non-unified analysis of subject islands and adjunct islands. Early approaches to subject islands treated subject islands on a par with adjunct islands. Namely, it was assumed that there is a common source for the ungrammaticality of extraction out of subjects and extraction out of adjuncts. In particular, it has been assumed that the relevant distinction between objects on the one hand and subjects and adjuncts on the other hand is the complement/non-complement distinction (Huang 1982, Chomsky 1986, Chomsky & Lasnik 1993, Takahashi 1994, Nunes & Uriagereka 2000, among others). An important prediction of these approaches is that subjects and adjuncts would behave on a par with regard to extraction. However, there are many languages that allow extraction out of subjects (e.g., Japanese, Navajo, Turkish, among others, see Stepanov 2007 for a review), but there seems to be no language that allows extraction out of adjuncts. Approaches that would like to maintain a uniform treatment of adjunct and subject islands, account for the ability to extract out of subjects in some languages by assuming that subjects in these languages are like complements in the relevant property that is crucial for extraction. For example, Lasnik and Saito (1992) and Takahashi (1994) suggest that the subject in Japanese stays within the VP and does not move to Spec-IP, as it does in English. This property is relevant to extraction

according to Huang’s (1982) condition on extraction which states that the extraction domain must be properly governed, or according to Chomsky’s (1986) condition on extraction according to which the extraction domain must be ‘L-marked’ (θ -marked by a lexical head). The assumption that the subject stays in the VP is also relevant to Takahashi’s (1994) approach, which is formulated within the Minimalist framework.⁶

Stepanov (2007) suggests an approach to extraction domains according to which extraction out of subjects and extraction out of adjuncts are not regulated by the same components of grammar. Abstracting away from the details of the proposal, Stepanov (2007) suggests that extraction out of subjects is governed by a PF requirement which has to do with the linearization of terminal elements. According to his approach, when the subject does not move out of the VP, the copies of the chain are identical and thus one of them can be deleted. In contrast, extraction out of adjuncts is governed by the phrase structural nature of adjuncts. In particular, it is governed by their obligatorily postcyclic Merger, namely, their Merger after the cyclic portion of the derivation has been completed. Abstracting away from the details of Stepanov’s proposal, what bans extraction out of adjuncts is that by the time the adjunct is merged, cyclic movement should have already applied.

In principle, a theory of extraction that does not treat subjects and adjuncts uniformly seems like a good direction, as Hebrew shows a contrast between subjects and adjuncts with respect to parasitic gap constructions. However, adopting Stepanov’s account would mean to assume that subjects in Hebrew, or at least those that we see in subject parasitic gap constructions, do not move out of the VP, which seems like an *ad hoc* assumption at the moment. Moreover, the Hebrew subject parasitic gap constructions involve a relative clause which modifies the subject. Since a relative clause is also an adjunct, Stepanov’s (2007) account actually predicts that extraction out of the relative clause would not be possible. To conclude, Stepanov’s (2007) proposal requires additional assumptions to capture the Hebrew data.

B.3.1.2 Subject islands variability

The second line of research aims to identify the factors that determine the grammatical status of extraction out of subjects. Bianchi and Chesi (to appear) provide a review of three proposals that aim to determine which subjects are transparent for extraction and which are opaque for extraction, and suggest a proposal of their own. I review these proposals very briefly, without going into the details of them, but rather only explaining what is the relevant factor for extractability that they suggest.

The three proposals for the relevant factor that governs extractability put of subjects are *External vs. Internal Merge*, *External vs. Internal Argument* and *Discourse Linking*. The *External vs. Internal Merge* proposal (Takahashi 1994, Stepanov 2007) suggests that subjects are islands for extraction only when they occupy a derived position. The *External vs. Internal Argument* proposal (Chomsky 2008) suggests that

⁶For a critical review of different approaches to extractability out of subjects, which directly discusses the issue of whether or not subjects and adjuncts should be treated uniformly, see Stepanov (2007).

subjects are islands only if they are external arguments, irrespective of their based or derived position. The *Discourse Linking* proposal (Jiménez Fernández 2009) suggests that only definite, D-linked subjects (in the sense of Pesetsky 1987, namely, subjects whose denotation is or belong in, a set of entities that is already familiar in the context) are islands for extraction.

Let us see whether one of these factors might explain the possibility to extract out of subjects modified by a relative clause in Hebrew. The *External vs. Internal Merge* proposal is based on the contrast between examples like (249a) and examples like (249b). When the subject is in a derived (internal Merge) Spec-IP position, extraction is not possible. However, when the subject is in a non-derived (external Merge) post-copular position, extraction is possible.

- (249) a. *Who does [a picture of t] hang on the wall?
 b. Who is there [a picture of t] on the wall?
 (ex. (1a) and (31) from Stepanov 2007)

This proposal does not seem promising with regard to explaining the extractability out of subjects in Hebrew, because it would force us to assume that (some) subjects in Hebrew occupy a base position (a VP-internal position). In the absence of independent evidence for the VP-internal position of subjects in Hebrew, this assumption is *ad hoc*.

The *External vs. Internal Argument* proposal, like the *External vs. Internal Merge* proposal, does not seem to be a promising option either. This proposal is based on the contrast between subjects of passives and subjects of actives, as demonstrated in (250a)-(250b).

- (250) a. *Of which car did [the (driver, picture) t] cause a scandal?
 b. Of which car was [the (driver, picture) t] awarded a prize?
 (ex. (6)-(7) from Chomsky 2008)

I do not see how it could be argued that the subjects in the subject parasitic gap constructions that are discussed here are internal arguments.

Finally, the *Discourse Linking* proposal does not seem promising either, as it predicts that discourse-linked subjects, namely, subjects that are already familiar in the context, would be islands for extraction. The subjects in the subject parasitic gap constructions that I discussed seem to be discoursed-linked, since they involve a definite article and are also modified by a restrictive relative clause. Thus, the Discourse-linking proposal actually predicts that the subjects in the subject parasitic gap constructions discussed here would be islands for extraction. To conclude, none of these three proposals seems relevant for the possibility to extract out of subjects in subject parasitic gap constructions in Hebrew.⁷

A recent study by Bianchi and Chesi (to appear) investigates the effects of the three factors (external vs. internal Merge, external vs. internal argument and

⁷See Bianchi and Chesi (to appear) for a review of experimental evidence that does not support the *External vs. Internal Merge* proposal and the *External vs. Internal Argument* proposal.

D(iscourse)-linking) on extractability out of subjects, and suggests an alternative proposal. Bianchi and Chesi (to appear) suggest that extractability out of subjects is governed by the syntactic position that the subject occupies *at the interface*. In particular, they argue that only subjects that occupy a thematic position (i.e., a VP-internal or Spec-vP position) are transparent for extraction. They relate the position of the subject to the semantic structure of the clause. They assume, following Ladusaw (1994), that subjects can be interpreted either as part of the predicative nucleus of the clause (a *thetic* structure), or as external to the predicative nucleus of the clause (a *categorical* structure). They further assume that a subject of a *thetic* structure, but not a subject of a *categorical* structure, reconstructs into its base position. Following Carlson (1977) and Diesing (1992) they assume that the nature of the predicate constrains the semantic structure of the clause; stage-level predicates are compatible either with a categorical or a thetic structure, whereas individual-level predicates are only compatible with a categorical structure.

The prediction of Bianchi and Chesi's proposal is that subjects of individual-level predicates would never allow extraction, while subjects of stage-level predicates would allow extraction only when they are part of a thetic structure. According to Bianchi and Chesi, various factors may affect whether the structure would be categorical or thetic. They suggest that inherently quantificational or presuppositional definite subjects have to be interpreted outside of the predicative nucleus, and thus force a categorical structure, which does not allow extraction.

On the one hand, the facts from Hebrew that I discuss here do not seem to be compatible with these predictions, because they involve a definite subject or a quantificational subject, which are predicted by Bianchi and Chesi's proposal to only allow a categorical structure, but are nevertheless good (e.g., (251) and (252)).

- (251) *ze ha-seret_i še-ha-anašim še-ra'u t_i hexlitu linso'a le-hodu.*
 this the-movie that-the-people that-saw t_i decided to-go to-India
 'This is the movie that the people that saw (it) decided to go to India.'
- (252) *ze ha-seret_i še-kol mi še-ra'a t_i halax ha-bayta ve-hit'abed.*
 this the-movie that-every who that-saw t_i went home and-killed.himself
 'This is the movie that everyone that saw went home and killed himself.'

On the other hand, some Hebrew facts do support Bianchi and Chesi's account; it seems that when the predicate in the outer relative clause is an individual-level predicate, the subject parasitic gap construction is unacceptable, as demonstrated in (253a). Contrastingly, subject parasitic gap examples in which the predicate in the outer relative clause is a stage-level predicate are acceptable, as demonstrated in (253b) and (253c).

- (253) a. * *ze ha-sefer_i še-ha-anašim še-kar'u t_i hem rusim.*
 this the-book that-the-people that-read t_i are Russian
 'This is the book that the people that read (it) are Russian.'

- b. *ze ha-sefer_i še-ha-anašim še-kar'u t_i ayefim axšav.*
 this the-book that-the-people that-read t_i tired now
 ‘This is the book that the people that read (it) are tired now.’
- c. *ze ha-sefer_i še-ha-anašim še-kar'u t_i hexlitu linso'a le-hodu.*
 this the-book that-the-people that-read t_i decided to-go to-India
 ‘This is the book that the people that read (it) decided to go to India.’

To conclude, neither earlier proposals like *External vs. Internal Merge*, *External vs. Internal Argument*, and *Discourse Linking* nor Bianchi and Chesi's (to appear) proposal seem to be able to account for the Hebrew subject parasitic gap facts without additional assumptions. A thorough experimental investigation of Hebrew subject parasitic gap constructions must be conducted before more can be concluded.

B.3.1.3 The extra-grammatical direction

The third line of research aims to account for the relative acceptability of apparent subject island violations by attributing it to extra-grammatical factors. According to this line of research, subjects islands are not a grammatical phenomenon. Rather, extraction out of subjects is permitted by the grammar, and the low acceptability of it under certain circumstances is attributed to extra-grammatical factors like pragmatics and processing limitations. In other words, according to this line of research there is no rule in the grammar that prohibits extraction out of subjects, but rather processing heuristics that affect the acceptability of such extraction.

The claim that extraction out of subjects is in principle permitted by the grammar is supported by the existence of many relatively acceptable examples of such extraction. For example, the examples in (254) involve extraction out subjects and are fairly acceptable. With the help of prosodic boundaries, many more examples are acceptable, as shown in (255). Note that the examples in (255) involve transitive predicates, so the subjects in these examples are external arguments, contrary to Chomsky's (2008) claim that only subjects which are internal arguments allow extraction. The examples in (256) are examples which involve extraction out of sentential subjects: infinitival-VP subjects, full-CP infinitival subjects, and even finite subjects, with the help of prosodic boundaries, marked in square brackets. See Chaves (2013) for a review of more acceptable examples that were observed in the literature.

- (254) a. What were picture of _ seen around the globe?
 (ex. (30a) in Chaves 2013, cited from Kluender 1998:268)
- b. There are certain topics that Jokes about _ are completely unacceptable.
 (ex. (30c) in Chaves 2013, cited from Levine & Sag 2003:252)
- (255) a. [Which president] [would the impeachment of _] [cause outrage]?
 b. [Which doctors] [have patients of _] [filed malpractice suits in the last year]?
 (ex. (32a) & (32c) from Chaves 2013)

- (256) a. In his bedroom, which to describe as small would be a gross understatement, he has an audio studio setup.
(ex. (35a) from Chaves 2013)
- b. This is something which - for you to try to understand - would be futile.
(ex. (38a) in Chaves 2013, cited from Kuno & Takami 1993:49)
- c. [Which actress does whether Tom Cruise marries] [make any difference to you?]
(ex. (39) from Chaves 2013)

Furthermore, some studies found that the acceptability of subject island violations increases with repeated exposure, namely, shows a *satiation* effect (Hiramatsu 1999, Snyder 2000, Francom 2009, Chaves & Dery 2013). If subject island violations indeed show a satiation effect as suggested by these studies, it suggests that subject islands are not a grammatical phenomenon. The idea is that if there is no grammatical representation of extraction out of subjects, extra-grammatical factors, that presumably apply to such representation, have nothing to apply to. If, on the other hand, there is a grammatical representation of extraction out of subjects, extra-grammatical factors such as repeated exposure are predicted to affect this representation.⁸

With regard to the current discussion of subject parasitic gap constructions in Hebrew, the fact that their acceptability seems to be affected by factors like the *causality* relation between the two parts of the sentence and the *expectations* speakers have with regard to finding a licensing gap supports the claim that subject islands in Hebrew are not a grammatical phenomenon. Namely, extraction out of subjects is possible in certain circumstances, which are affected by extra-grammatical factors.

Identifying these factors and coming up with a theory that has explicit predictions with regard to extractability out of subjects in general and extractability in subject parasitic gap constructions requires thorough investigation which I leave for future research. In what follows I discuss some extra-grammatical factors that were argued to affect extractability out of subjects, and evaluate them with regard to the data from subject parasitic gap constructions in Hebrew.

One recent proposal according to which extra-grammatical factors govern the acceptability of extraction out of subjects is Chaves (2013). Chaves argues that there is no grammatical condition that rules out extraction out of subjects. Instead, he argues that the low acceptability of many examples that involve extraction out of subjects is the result of factors that are independently observed to make extraction less acceptable. According to him, the relative acceptability of many other subject extraction examples is due to factors that help the parser to overcome these difficulties, or in other words, serve as ‘cues’ for the correct parse.

Different factors have been observed to have a negative effect on extraction in general, and on extraction out of subjects in particular. Following Kluender (2004) and others, Chaves (2013) assumes that the processing of complex subjects is difficult

⁸See Sprouse (2009) and Crawford (2011a; 2011b) for studies that did not find a satiation effect for subject island violations.

(in particular, more difficult than the processing of complex objects), and that the processing of sentence-medial gaps is more difficult than the processing of sentence-final gaps (regardless of whether the gap is located inside a subject or inside an object). He suggests that a sentence that starts with a complex structure casts a heavier burden on the processor than a sentence that ends with a complex structure because the speaker's memory resources are strained sooner and longer in the former case. Chaves (2013) further suggests that identifying the location of the gap when it is sentence-medial is difficult, because there is a risk of a garden path effect, which is absent when the gap is sentence-final. See Chaves (2013) and references therein for empirical support for these two assumptions.

Chaves (2013) further argues that these processing factors make speakers avoid complex subjects that contain filler-gap dependencies. This, in turn, leads to extremely low frequency of subject-internal gaps, and as a result, the human processor develops a parsing heuristic in which subjects are not expected to contain gaps. Though this heuristic helps processing in most cases (as subjects usually do not contain gaps), it results in processing difficulties when the correct parse does not fit the expectation of the parser. Hence the low acceptability of examples that involve subject-internal gaps. The higher acceptability of other examples that involve subject-internal gaps is explained by the presence of 'cues' that help the parser overcome the difficulty and arrive at the correct parse.

The three factors that are argued by Chaves to govern the acceptability of extraction out of subjects are the *specificity of the filler*, the *relevance of the filler* and *prosody*. He argues that these factors are independently known to aid the processing of other complex structures. I now briefly discuss these factors and evaluate their compatibility with the Hebrew subject parasitic gap facts.

Specificity of the filler. It has been observed (Erteschik-Shir 1973, Kluender 1992, among others) that filler-gap dependencies tend to be more acceptable when the filler is more specific. This is demonstrated by the triple contrast in (257). A relative clause is more specific and more acceptable than a *Which*-question, which is more acceptable than a *Who*-question.

- (257) a. This is the car that I don't know how to fix __.
 b. ? Which car don't you know how to fix __?
 c. ?? What don't you know how to fix __?
 (ex. (42) from Chaves 2013)

Clausen (2010) and Chaves and Dery (2013) show that the same amelioration effect arises in subject islands. For example, (258a) is more acceptable than (258b). Chaves (2013) argues, following Kluender (1998) and Hofmeister and Sag (2010) that more specific fillers reduce the processing difficulty because they are less prone to memory decay and therefore are more easily retrieved in the gap position.

- (258) a. Which musician will the full discography of __ never be released?

- b. Who will the full discography of __ never be released?
(ex. (46) from Chaves 2013)

The *specificity of the filler* factor seems to be compatible with the relative acceptability of subject parasitic gap constructions in Hebrew. The subject parasitic gap constructions discussed in the current study are all relative clause structures, which, as shown in (257), are relatively more immune to island violations than other filler-gap dependencies. (259) brings further support for the claim that relative clauses are more immune to extraction out of subjects than *wh*-questions. (259a) is a relative clause subject parasitic gap construction with no licensing gap or pronoun, and it is more acceptable than the equivalent *which* subject parasitic gap construction, which is in turn more acceptable than the *who* subject parasitic gap construction.

- (259) a. *ze ha-sefer_i še-ha-anašim še-kar'u t_i hexlitu linso'a le-hodu.*
this the-book that-the-people that-read t_i decided to-go to-India
'This is the book that the people that read (it) decided to go to India.'
b. *?? eyze sefer_i ha-anašim še-kar'u t_i hexlitu linso'a le-hodu?*
which book the-people that-read t_i decided to-go to-India
'Which book did the people that read (it) decide to go to India?'
c. ** ma_i ha-anašim še-kar'u t_i hexlitu linso'a le-hodu?*
what the-people that-read t_i decided to-go to-India
'What did the people that read (it) decide to go to India?'

Relevance of the filler. It has been argued that for the pragmatic coherence of the assertion, a filler must always be relevant for the assertion (Erteschik-Shir 1981, Kuno 1987, Deane 1992). This is demonstrated by the contrast in (260).

- (260) a. Who did John write a book about __?
b. ? Who did John destroy a book about __?
c. ? Who did John lose a book about __?
(ex. (47) from Chaves 2013)

(260a) is about writing a book, and since books have topics, the writing action is connected to the topic of the book. The actions in (260b)-(260c), on the other hand, are not immediately related to the topic of the book. Thus, (260b)-(260c) are less coherent than (260a). Chaves (2013) notes that the coherence of (260b) and (260c) is improved when the appropriate context is provided; for example, if John usually destroys or loses books.

Following Kluender (2004), Chaves (2013) argues that the relevance factor is also important for extraction out of subjects. For extraction out of subjects to be acceptable, the filler must be relevant for the main predicate of the assertion. He suggests that a subject-extracted phrase is relevant for the subject if the concept described by the subject presupposes the concept described by the extracted phrase, and is relevant for the main assertion if the referent it describes influences the truth conditions of the predication. He demonstrates this by the following contrast:

- (261) a. Which problem will the solution to impress everyone?
 b. ? Which city will the train to impress everyone?
 (ex. (48) from Chaves 2013)

In (261a), the extracted phrase, *problem*, is presupposed by the subject, *solution*. Thus, the problem is necessarily relevant for the subject and the predicate of the main assertion. In (261b), on the other hand, the extracted phrase, *city*, is not presupposed by *train*. Thus, the relevance of the extracted phrase for the subject and for the predication is weaker and causes the sentence to be less coherent.

It seems that Chaves' claim that the relevance of the extracted phrase for the subject and the main assertion is important for extraction is relevant for the current discussion of subject parasitic gap constructions in Hebrew. Consider (262).

- (262) *ze ha-sefer_i še-ha-anašim še-kar'u t_i hexlitu linso'a le-hodu.*
 this the-book that-the-people that-read t_i decided to-go to-India
 'This is the book that the people that read (it) decided to go to India.'

The *book* is definitely relevant for the subject, since the subject is modified by a relative clause that asserts something about reading, which presupposes something that is being read. With regard to the main assertion of the sentence (the decision to go to India), the relevance of the book is less clear, since a decision does not have to be made based on a book. However, recall from the discussion in section B.2 the fact that speakers tend to suppose a *causality* relation between the main predicate and the situation described by the subject-modifying relative clause. For example, the most natural interpretation of (262) is one in which people that read the book decided to go to India *because* of that book. So it seems that Chaves' (2013) proposal is on the right track; there seems to be a relation between the acceptability of extraction out of subjects and some notion of *relevance* of the extracted phrase to the main assertion. This is further supported by the relatively low acceptability of the Hebrew subject parasitic gap constructions in (263).

- (263) a. ?? *ze ha-sefer_i še-ha-anašim še-kar'u t_i lavšu etmol xulca*
 this the-book that-the-people that-read t_i wore yesterday shirt
levana.
 white.
 'This is the book that the people that read (it) wore a white shirt yesterday.'
 b. ?? *ze ha-sefer_i še-ha-anašim še-ibdu t_i hexlitu linso'a le-hodu.*
 this the-book that-the-people that-lost t_i decided to-go to-India
 'This is the book that the people that lost (it) decided to go to India.'

In (263a) the main assertion of the sentence is about *wearing a shirt*, to which *book* is not straightforwardly related. In (263b), the relative clause that modifies the subject is about *losing*, to which *book* is not straightforwardly related either. This explains the low acceptability of (263a) and (263b) compared to (262).

Now, recall that subject parasitic gap constructions with a resumptive pronoun in the main assertion are relatively acceptable, as demonstrated in (264).

- (264) *ze ha-sefer_i še-ha-anašim še-kar'u t_i ahavu oto_i.*
 this the-book that-the-people that-read t_i liked it
 ‘This is the book that the people that read (it) liked it.’

Assuming a relevance condition of the type Chaves (2013) assumes, it can be argued that the resumptive pronoun’s role is to emphasize the relevance of the extracted phrase to the main assertion; the pronoun that follows the predicate *like* emphasizes the fact that the *book* is related to the main assertion, because it creates a link between it and the predicate. Moreover, it could be argued that the same thing happens when a gap follows the predicate, as in traditional subject parasitic gap constructions, demonstrated in (265). The gap that follows *like* ‘refers’ to the extracted phrase *book* and emphasizes its relevance to the main assertion, which in turn makes the subject-internal gap more acceptable.

- (265) *ze ha-sefer_i še-ha-anašim še-kar'u t_i ahavu t_i.*
 this the-book that-the-people that-read t_i liked t_i
 ‘This is the book that the people that read liked.’

In fact, Chaves himself suggests that subject parasitic gap constructions are acceptable because the ‘licensing’ gap corefers with the extracted phrase and thus facilitates the creation of a link between it and the subject-internal gap. Though this idea certainly requires an explicit implementation, it does seem to be an interesting direction.

To conclude, it seems that *relevance* is important in constructions that involve extraction out of subjects, including in (alleged) subject parasitic gap constructions.

An important piece of evidence must be discussed at this point. Recall that Hebrew examples like (266), in which the main assertion involves a transitive verb with an NP-complement, are judged by speakers as less acceptable than examples like (262), in which the main assertion involves a non-transitive verb.

- (266) ?? *ze ha-sefer_i še-ha-anašim še-kar'u t_i ahavu et ha-dmut*
 this the-book that-the-people that-read t_i liked ACC the-character
ha-rašit.
 the-main
 ‘This is the book that the people that read liked the main character.’

Assuming the importance of the *relevance* factor, it is not clear why (266) is generally judged as unacceptable, since the reference to the *main character* presumably emphasizes the relation between the *book* and the main assertion. A possible explanation for the degradation of such examples is that speakers might be expecting a pronoun or a gap to follow the verb, and when they do not find them they are surprised. Interestingly, recall that speakers of Hebrew mentioned that they had interpreted such examples as if they involved a pronoun that refers back to the relative clause head.

It seems, then, that the semantic relation between the *main character* and the *book* is not enough to make the subject-internal gap acceptable, and speakers have to use an additional mechanism by which they force a relation between the main assertion and the relative clause head. This idea and the relative acceptability of examples like (262), compared to examples like (266) is further discussed in section B.4, where I propose an expectation-based account for the pattern of judgments observed in Hebrew.

Prosody. Lastly, Chaves (2013) argues that prosody can facilitate the processing of subject-internal gap constructions, as it can facilitate the processing of other complex constructions, like garden-path constructions. The prosodic boundaries cue the correct location of the gap, and thus help the parser arrive at the correct parse. (267) shows that extraction out of subjects is more acceptable when prosodic breaks mark the position of the gap (square brackets mark prosodic breaks).

- (267) a. [Which book] [did a review of] [appeared in the Times]?
 b. ?? [Which book did a review of appeared in the Times]?
 (ex. (56) from Chaves 2013)

The same seems to be true for Hebrew subject parasitic gap constructions. (268a) is better than (268b).

- (268) a. [ze ha-sefer_i] [še-ha-anašim še-kar'u t_i] [hexlitu linso'a le-hodu].
 this the-book that-the-people that-read t_i decided to-go to-India
 'This is the book that the people that read (it) decided to go to India.'
 b. ? [ze ha-sefer_i še-ha-anašim še-kar'u t_i hexlitu linso'a le-hodu].
 this the-book that-the-people that-read t_i decided to-go to-India
 'This is the book that the people that read (it) decided to go to India.'

In sum, assuming that subject-internal gaps are allowed by the grammar but have low acceptability due to general processing limitations that are facilitated by factors such as *specificity*, *relevance*, and *prosody* seems to be a good direction to pursue when attempting to account for the variability in the acceptability of subject parasitic gap constructions. Not only that the three factors suggested by Chaves (2013) seem to be relevant, the general claim that subject islands are not a grammatical phenomenon seems to be on the right track and compatible with the Hebrew facts. If there is no grammatical rule that prohibits extraction out of subjects (at least out of NP-subjects) in Hebrew, the acceptability of (alleged) subject parasitic gap constructions with no licensor can be explained, along with the variability in acceptability that seems to be influenced by extra-grammatical factors like expectations and causality relations.

Recall that the subject parasitic gap constructions that I discuss involve not only extraction out of a subject, but also extraction out of a relative clause that modifies the subject. This fact also calls for an explanation, as relative clauses are assumed

to be islands for extraction. I discuss this issue in the following section. In section B.4, I offer an expectation-based account for the acceptability of subject parasitic gap constructions in Hebrew and its variability, which assumes that nothing in the grammar bans extraction out of subjects, and that extraction out of relative clauses is sometimes allowed in Hebrew as well.

B.3.2 Extraction out of a relative clause

Relative clauses are commonly assumed to be islands for extraction (e.g., Ross 1967, Chomsky 1973, among many others). Since the subject parasitic gap constructions that I discuss here and which are claimed to involve real gaps rather than parasitic gaps involve a relative clause, it follows that Hebrew should allow extraction out of relative clauses, at least under certain conditions. An extensive discussion of the possibility to extract out of relative clauses in Hebrew and in general is beyond the scope of this study. However, I briefly review some suggestions with regard to the possibility to extract out of relative clauses. In section B.4 I assume that Hebrew allows extraction out of subjects and out of relative clauses (under certain conditions) and show how the pattern of judgments presented in section B.1 can be explained.

Although extraction out of relative clauses is generally assumed to be banned by the grammar, it has been observed that some languages allow extraction out of (some) relative clauses (see Erteschik-Shir 1973, Engdahl 1982;1997, Taraldsen 1982, among others, for extraction out of relative clauses in Scandinavian languages). Different authors attribute the possibility to extract out of relative clauses to different components of language. For example, Erteschik-Shir (1981) argues that extraction out of relative clauses is governed by pragmatic factors. A similar claim is made by Engdahl (1997). On the other hand, other authors have argued that the factors that govern extractability out of relative clauses are grammatical, i.e., related to structure. For example, Taraldsen (1981, 1982) argues that in Norwegian, only extraposed relative clauses, which are non-adjacent to the NP-head, allow extraction. Sichel (to appear) argues that relative clauses that possess a Raising structure (Bhatt 2002) allow extraction, while relative clauses that do not possess a Raising structure, do not allow extraction.

To conclude, it seems possible that some relative clauses allow extraction. In the next section, I assume that Hebrew sometimes allows extraction out of subjects modified by a relative clause. I do not commit myself to any specific theory that aims to explain *why* some subjects modified by a relative clause allow extraction while others do not. Rather, I only assume that such extraction is sometimes allowed, and that speakers of Hebrew have certain expectations while processing a subject parasitic gap construction which affect their acceptability judgments.

B.4 Explaining the variation

The results of the subject parasitic gaps questionnaire (discussed in section B.1) indicate that some examples in which there is no licensor are more acceptable than others; most speakers judged the c-examples, in which the matrix verb was intransitive, as better than the b-examples, in which the matrix verb was transitive. However, there were also cases in which the b-examples were judged as better than the c-examples. Furthermore, the speakers' comments suggest that there is an expectation for a licensor in the b-examples, but not in the c-examples. In this section I suggest an account for the relative acceptability of subject parasitic gap constructions and the variation in the relative acceptability of the (transitive) b-examples and the (intransitive) c-examples.

The account is based on the assumption that under certain circumstances, Hebrew allows extraction out of a subject modified by a relative clause. I do not commit myself to any specific theory that aims to explain why some subjects and some relative clauses are not islands for extraction. Rather, I assume that when speakers of Hebrew process subject parasitic gap constructions they can, in principle, either assume that the gap inside the subject modified by the relative clause is a parasitic gap, and thus expect a licensor to follow, or assume that this gap is a real gap, and thus not expect a licensor.

I argue that the pattern of acceptability judgments observed in the questionnaire can be explained if we assume that acceptability is affected by the sentence's processing difficulty, which is influenced by the expectations the speaker has while processing the sentence. I show that the initial choice between an analysis in which the gap is analyzed as a real gap and an analysis in which the gap is analyzed as parasitic, affects the expectation for a licensing gap, which in turn affects the processing difficulty associated with the sentence. An initial choice of an analysis in which the gap is real does not force an expectation for a real gap that would license the gap inside the subject-modifying relative clause. In contrast, an initial choice of an analysis in which the gap is parasitic forces an expectation for a licensing gap to follow the gap in the subject-modifying relative clause. I suggest that during the processing of the b-examples, in which the verb in the outer relative clause is transitive, a greater processing difficulty arises when the real-gap analysis is initially assumed compared to when the parasitic-gap analysis is initially assumed. In contrast, in the c-examples, in which the verb in the outer relative clause is intransitive, a greater processing difficulty arises when the parasitic-gap analysis is initially assumed. I argue that this expectation-based processing account explains the relative acceptability of the b- and c-examples, the variation in their relative acceptability among speakers and among items, and the general acceptability of the a-examples, in which there is a licensing gap. For the concreteness of the processing account, I adopt the *Surprisal* theory of difficulty (Hale 2001, Levy 2008) to demonstrate how the initial analysis affects the expectation for the licensing gap and the processing difficulty during the processing of the sentence.

Assuming that Hebrew sometimes allows extraction out of subjects modified by

a relative clause, the acceptability of the c-examples is accounted for; if the gap in the subject is a real gap, no licensing gap is necessary. However, the question that immediately arises is: why are the b-examples judged worse than the c-examples? Moreover, why do speakers seem to expect to find a licenser in the b-examples? And finally, why are the b-examples judged as better than the c-examples in some items and by some speakers? The answer, I argue, lies in the fact that Hebrew sometimes allows extraction from a subject modified by a relative clause, and in the initial assumption the speaker makes with regard to the nature of the gap; this initial assumption affects the processing difficulty of the sentence, which in turn affects the sentence's acceptability. I explain how below, but before that, I turn to a review of *Surprisal*, which I adopt as a theory of processing difficulty. Note that nothing hinges on this theory in particular. Any theory of processing that takes into account the effect of expectations on processing difficulty could be suitable.

Surprisal (Hale 2001, Levy 2008) is a probabilistic, expectation-based theory of syntactic comprehension. Under this theory, the human parser pursues in parallel all possible analyses that are consistent with the partial input. The analyses are ranked based on probabilistic grounds: a probabilistic grammar as well as other probabilistic information sources (lexical, pragmatic, and discourse information). The processing difficulty of a new word corresponds to the amount of reallocation necessary to update the ranking of possible analyses. The more reallocation needed, the more processing difficulty is predicted to occur. This idea is formalized in the theory by a measure called *Surprisal*, argued to be proportional to the difficulty associated with the processing of a word (see Hale 2001 and Levy 2008, for a detailed mathematical derivation of this measure):

$$(269) \quad \textit{Surprisal at word } i (w_i) = -\log P(w_i \mid w_1 \dots w_{i-1}, \text{CONTEXT})^9$$

The main idea of *Surprisal* is that the difficulty in processing a word is a function of its probability given the previous input. The *Surprisal* of a word is minimized (goes to zero) when a word must appear in a given context, and approaches infinity as a word becomes less and less likely. A connection between resource-allocation and the probability of a word given previous words was made explicit by Levy (2008), who derived *Surprisal* from another measure (Relative Entropy) which is more directly related to resource-allocation. Levy (2008:1129) defines the comprehension of a partial input sequence $w_1 \dots w_i$ as “placing a preference (i.e., probability) distribution P_i^T over the possible structures T based on $w_1 \dots w_i$ and sentence-external context”. Listeners are assumed to constantly update P_i^T : every input word can change the probability distribution of the possible structures. Levy (2008) proved that the update of the probability distribution of structures following an input word (P_i^T) equals the *Surprisal* of that word as defined in (269) above, regardless of the form of the complete structures T .

I now turn to account for the acceptability patterns observed in the subject parasitic gaps questionnaire using *Surprisal* and assuming that extraction out of a subject

⁹ $w_1 \dots w_{i-1}$ is the sentential context of the word. CONTEXT is its extra-sentential context.

modified by a relative clause is sometimes allowed in Hebrew.

The basic idea is the following. If Hebrew allows extraction out of a subject modified by a relative clause in some circumstances and disallows it in others, it is plausible to assume that listeners can allocate the probability between these two analysis options as they identify the gap. Namely, they allocate the probability distribution between a real-gap analysis and a parasitic-gap analysis. Then, as listeners process the sentence, they constantly update this probability distribution; when they encounter a word which is more compatible with one analysis and less compatible with the other, they enlarge the probability allocated to the former over the probability allocated to the latter. A word that is less compatible with the probability distribution at the point in which it is encountered induces a processing difficulty.

In order to make the account more concrete, I introduce the following assumption with regard to the probability of different analyses for a subject parasitic gap construction.

(270) Assumption:

The gap in the object position inside the subject modified by the relative clause can be either a real gap or a parasitic gap. Thus:

$$P(\text{real gap}|w_1...w_{i-1}) = \alpha; P(\text{parasitic gap}|w_1...w_{i-1}) = 1 - \alpha$$

Note that the sum of two probabilities equals 1. Namely, I assume, for convenience, that the parasitic gap analysis, in which it is assumed that the gap is parasitic and needs a licenser, and the real gap analysis, in which it is assumed that the gap is a real gap that does not need a licenser, are the only possible options. I assume that α (and thus $1 - \alpha$) is affected by whatever factors that determine whether the subject modified by the relative clause is transparent for extraction or not.

Now, let us observe how we can account for the acceptability of the a-, b- and c-examples using Surprisal and the assumption in (270).

B.4.1 The C (intransitive) examples

Consider (271), which was one of the c-examples in the questionnaire.

(271) *ze ha-seret_i še-ha-anašim še-ra'u t_i hexlitu linso'a le-hodu.*

this the-movie that-the-people that-saw t_i decided to-go to-India

‘This is the movie that the people that saw (it) decided to go to India.’

I now describe the parsing of (271) depending on the size of α , that is, depending on whether the parasitic gap or the real gap analysis is initially preferred.

Assume that the listener is assuming that the gap following *saw* is a real gap. Recall that according to Surprisal the parser pursues in parallel all possible analyses that are consistent with the partial input, so I do not assume that the probability of the real gap analysis equals 1, but rather that it is bigger than 0.5; so let us assume that $\alpha = 0.75$. In this case the probability of the parasitic gap analysis equals:

$$P(pg|w_1...w_{i-1}) = 1 - \alpha = 0.25$$

This is the probability distribution between the two analyses when the gap in the object position of *saw* is encountered. The probability portion allocated to the real gap analysis is relatively big, and it is bigger than the probability portion allocated to the parasitic gap analysis. In other words, there is little expectation for a licensing gap to follow the predicate of the outer relative clause headed by *movie*.

Next, the intransitive predicate *decided to go* is encountered. The intransitive predicate is compatible with the preferred analysis, because it does not have an object slot for the a licensing gap to occupy. Thus, the Surprisal of *decided to go* is low:

$$\begin{aligned} \text{Surprisal}(\text{decided to go}) &= -\log P(\text{decided to go} | w_1 \dots w_{i-1}) = \\ &= -\log(\text{a relatively big number}) = \text{a relatively small number} \end{aligned}$$

Thus, no processing difficulty arises.

Next, the parser arrives at the end of the sentence and discovers that there is no licensing gap. This is also compatible with the preferred analysis, according to which no licensing gap is expected. Again, no processing difficulty arises. Since no processing difficulties were involved in the processing of (271), the sentence is judged as relatively acceptable.

To summarize, when the real gap analysis is allocated a relatively big portion of the probability, no processing difficulty arises in the c-examples, because they are compatible with this analysis. Thus, these examples are relatively acceptable.

What happens when the parasitic gap analysis is preferred? If the listener assumes that the gap is parasitic, α is smaller than 0.5, (271) does involve a processing difficulty, and is thus less acceptable. Let us see why. Assume that $\alpha = 0.25$. In this case the probability of the parasitic gap analysis equals:

$$P(pg | w_1 \dots w_{i-1}) = 1 - \alpha = 0.75$$

This is the probability distribution between the two analyses when the gap in the object position of *saw* is encountered. The probability portion allocated to the real gap analysis is relatively small, and it is smaller than the probability portion allocated to the parasitic gap analysis. In other words, there is an expectation for a licensing gap to follow the predicate of the outer relative clause headed by *movie*.

Next, the intransitive predicate *decided to go* is encountered. The intransitive predicate is not that compatible with the preferred analysis, because it does not have an object slot for the licensing gap to occupy. Thus, the Surprisal of *decided to go* is high:

$$\begin{aligned} \text{Surprisal}(\text{decided to go}) &= -\log P(\text{decided to go} | w_1 \dots w_{i-1}) = \\ &= -\log(\text{a relatively small number}) = \text{a relatively big number} \end{aligned}$$

Thus, a processing difficulty arises when the intransitive predicate is encountered; the intransitive verb causes the parser to update the probability distribution in favor

of the real gap analysis, for instance:

$$P(pg|w_1...w_{i-1}) = 0.7$$

$$P(real\ gap|w_1...w_{i-1}) = 0.3$$

At the next step, the parser arrives at the end of the sentence and discovers that there is no licensing gap. This results in another update in the probability distribution in favor of the real gap analysis, which is finally chosen as the correct analysis for this sentence. Note that the processing difficulty induced by the discovery that there is no licensing gap depends on the previous allocation of the probability. If encountering the intransitive predicate had caused a big update in the probability in favor of the real gap analysis, the current processing difficulty would be relatively small. If, however, encountering the intransitive predicate had only caused a small update in favor of the real gap analysis, the current processing difficulty, induced by the discovery that there is no licensing gap, would be relatively big.

To summarize, when the real gap analysis is allocated a relatively small portion of the probability, the processing of the c-examples involves a processing difficulty, because they are not compatible with the preferred parasitic gap analysis. In this case, c-examples would be relatively not acceptable.

I now turn to the b-examples (where the verb is transitive).

B.4.2 The B (transitive) examples

It turns out that the b-examples show the opposite pattern compared to the c-examples. The difference lies in fact that they involve a transitive predicate rather than an intransitive predicate. Consider (272).

- (272) *ze ha-seret še-ha-anašim še-rau t_i ahavu et ha-saxkan ha-raši.*
 this the-movie that-the-people that-saw t_i liked ACC the-actor the-main
 ‘This is the movie that the people that saw liked the main actor.’

Let us examine the parsing of (272) depending on the size of α . First, assume that the listener is assuming that the subject-modifying relative clause allows extraction. Namely, α is bigger than 0.5, so let us assume that $\alpha = 0.75$, as we assumed before for the c-examples. In this case the probability of the parasitic gap analysis equals:

$$P(pg|w_1...w_{i-1}) = 1 - \alpha = 0.25$$

The probability portion allocated to the real gap analysis is bigger than the probability portion allocated to the parasitic gap analysis.

Next, the transitive predicate *liked* is encountered. Since the transitive predicate has an object slot which can potentially contain a licensing gap, it can be compatible with the parasitic gap analysis. Thus, it causes a relatively big update in the probability towards the parasitic gap analysis distribution, and its Surprisal is relatively high. Thus, a processing difficulty arises at the point of encountering the transitive

predicate. The probability distribution is updated towards the parasitic gap analysis. Let us assume that the following is the new probability distribution:

$$P(pg|w_1...w_{i-1}) = 0.6$$

$$P(real\ gap|w_1...w_{i-1}) = 0.4$$

Next, the phrase *the main actor* is encountered. The fact that the object position of *liked* is occupied by a lexical NP is not more compatible with the parasitic-gap analysis than with the real-gap analysis, since there is no empty position available for the licensing gap to occupy. The Surprisal induced by *the main actor* depends on how much we updated the distribution towards the parasitic gap analysis when encountering the transitive verb; the more probability portion allocated to the parasitic gap analysis when encountering the verb, the bigger the Surprisal is now. Let us assume that the following is the probability distribution following the discovery of *the main actor*. The probability portion allocated to the real gap analysis increases.

$$P(pg|w_1...w_{i-1}) = 0.55$$

$$P(real\ gap|w_1...w_{i-1}) = 0.45$$

Finally, the parser arrives at the end of the sentence and discovers that there is no licensor. At this point, the parser can simply update the distribution towards the real gap analysis and arrive at a fully grammatical structure. However, the comments made by the questionnaire respondents suggest that something else might be happening. Recall that three out of five respondents mentioned that they had interpreted the lexical NP (e.g., *the main actor*) as related to the relative clause head (e.g., *movie*) and that they felt that a pronoun referring back to the relative clause head was missing. I take this as an indication for what is going on during the processing of the b-examples. I suggest that listeners are applying some kind of ‘repair mechanism’ that allows them to preserve the parasitic gap analysis that they had assumed before when they discover that there is no licensing gap. They somehow force the sentence to contain a ‘conceptual pronoun’ that refers to the relative clause head, such that the structure is similar to a parasitic gap structure, where there is a relativized position outside of the island.

The obvious question is why listeners use this repair mechanism instead of just analyzing the gap inside the subject as a real gap. I have no clear answer to this question, but it seems to me that due to the expectation to find a licensor caused by the presence of the transitive verb, the repair mechanism solution might be easier than accepting the real gap analysis. Note that I do not argue that this is the only possible solution, but rather only suggest that it might be easier, or more available. Interestingly, it seems that speakers are aware of the fact that this interpretation does not necessitate itself; one of the respondents of the questionnaire had mentioned that this is how he had interpreted the sentence although he was aware of the fact that this interpretation is not obligatory. Another indication for the repair solution being the easier solution is that people seem to use it even when the lexical NP is less

conceptually related to the relative clause head; an example like (233b), where it is harder to conceptually relate *the house* to *the woman* was also mentioned to have an interpretation in which the house is ‘the woman’s house’. It seems that in this case too, speakers use the repair solution instead of analyzing the gap as a real gap. Note with regard to the c-examples, which involve an intransitive verb, that speakers seem to be perfectly okay with the real gap analysis. This is probably so because there is less expectation for a licenser due to the intransitivity of the verb.

Another way to explain the fact that speakers interpret the sentence as if it involves a pronoun that refers to the relative clause head is to argue that this ‘conceptual pronoun’ repair mechanism facilitates the acceptance of the real gap analysis. As I discussed in section B.3.1.3, it has been proposed by Chaves (2013) that extraction out of subjects is possible when the extracted phrase is relevant to the main assertion. Thus, it could be that the ‘conceptual pronoun’ that speakers tend to assume creates a relevance relation between the main assertion and the relative clause head, which facilitates the creation of the link between the subject-internal gap and the same relative clause head (*movie*). This possibility suggests that speakers do accept the real gap analysis, but use a ‘conceptual pronoun’ to create a relation between the two parts of the sentence. With regard to the c-examples, it could be the case that there is already a strong enough relation between the two parts of the sentence, which has to do with causality (see discussion in section B.2), and thus there is no need to postulate the ‘conceptual pronoun’ to accept the real gap analysis.

To summarize, when the real gap analysis is initially assumed ($\alpha > 0.5$), the transitive predicate in the b-examples causes a relatively big processing difficulty as its Surprisal is high. Contrary to the c-examples, which are judged as relatively acceptable because the intransitive predicate is compatible with the preferred real gap analysis, the b-examples are judged as relatively unacceptable due to the processing difficulty induced by the high Surprisal of the transitive verb.

What happens if it is the parasitic gap analysis, rather than the real gap analysis, which is initially assumed? e.g., when $\alpha < 0.5$? In this case there is an expectation for a licensing gap. Let us assume that $\alpha = 0.25$ (and thus $1 - \alpha = 0.75$).

When the transitive predicate *saw* is encountered, its Surprisal is relatively low, as its object slot is compatible with the preferred, parasitic gap analysis. Thus, no processing difficulty arises. It might induce a small update in favor of the parasitic gap analysis, such that the distribution would be, for example:

$$P(pg|w_1...w_{i-1}) = 0.8$$

$$P(real\ gap|w_1...w_{i-1}) = 0.2$$

Next, when *the main actor* is encountered, it is not compatible with the preferred, parasitic gap analysis, because it occupies the potentially licensing position. This induces a processing difficulty and causes an update in the distribution towards the real gap analysis such that it would be, for example:

$$P(pg|w_1...w_{i-1}) = 0.75$$

$$P(real\ gap|w_1...w_{i-1}) = 0.25$$

Finally, when no licensing gap is encountered, there are two alternatives. The gap can be analyzed as a real gap, which will demand a big update in the probability distribution, or it can be analyzed as a parasitic gap, using the repair solution that I discussed above. It seems that in the current case the repair solution is even easier than it was in the case where the real gap analysis was initially assumed, because a bigger portion of the probability distribution is allocated to the parasitic gap analysis. Thus, it might be the case that speakers would be more likely to use this solution here. Again, this solution does not necessitate itself, but it might be an easier and a more available solution than updating the probability distribution towards the real gap analysis. As I mentioned above, the use of the repair mechanism can be also seen as a way to more easily accept the real gap analysis, because the pronoun possibly creates a relevance relation between the two parts of the sentence, which facilitates the creation of the link between the subject-internal gap and the relative clause head.

To summarize, when the parasitic gap analysis is initially assumed, the transitive verb is compatible with the initial analysis, and thus there is no serious processing difficulty and the b-examples are judged as relatively acceptable. The sentence is ultimately interpreted by a repair mechanism which relates the lexical NP to the relative clause head.

This account yields a prediction with regard to the relative acceptability of the b-examples and the c-examples. If the real gap analysis is initially assumed, the c-examples are predicted to be more acceptable, while the b-examples are predicted to be less acceptable. Therefore, the c-examples are predicted to be better than the b-examples. In contrast, if the parasitic gap analysis is initially assumed, the c-examples are predicted to be less acceptable while the b-examples are predicted to be more acceptable. Therefore, the c-examples are predicted to be less acceptable than the b-examples. Thus, the variation in the acceptability relations among the c-examples and the b-examples is accounted for by assuming that different speakers (or the same speaker in different occasions) initially assume different analyses for the gap when they start processing the sentence. Once we can identify the factors that govern the initial choice between a real gap analysis and a parasitic gap analysis, we could test the predictions of the current expectation-based account. This could be done even if we do not have a theory that explains *why* those factors affect this choice.

Note that this account is compatible with the trend demonstrated in Table B.1, according to which when the b-examples are judged as grammatical, the c-examples are judged worse than b, and in contrast, when the b-examples are judged as ungrammatical, the c-examples are judged as better than b.

Before I continue on to suggesting an account for the general acceptability of the a-examples, a note has to be made about the size of α assumed above. For the clarity of the discussion, I chose the size of α such that one could either prefer the

real gap analysis or the parasitic gap analysis. Note, however, that it could be that the preferred analysis would always be one of the analyses, and only the difference between it and the other analysis would increase or decrease. The general idea is nevertheless the same: the bigger the difference between the preferred analysis and the other analysis is, the greater the difficulty that would emerge when some input word is incompatible with the preferred analysis. For example, in a case in which the probability of the parasitic gap analysis is initially 0.625 while the probability of the real gap analysis is initially 0.375, the Surprisal associated with an intransitive predicate that is less compatible with the parasitic gap analysis would be smaller compared to a case in which the probability of the parasitic gap analysis is initially 0.875 while the probability of the real gap analysis is initially 0.125.

I now turn to account for the consistent acceptability of the a-examples, which involve a licensing gap.

B.4.3 The A (licensing gap) examples

Consider (273).

- (273) *ze ha-seret_i še-ha-anašim še-ra'u t_i ahavu t_i*
 this the-movie that-the-people that-saw t_i liked t_i
 ‘This is the movie that the people that saw liked.’

This example involves a licensing gap.

First, assume that the listener is assuming that the gap inside the subject-modifying relative clause is a real gap. For example, assume that $\alpha = 0.75$, as we assumed before for the c- and b-examples. In this case the probability of the parasitic gap analysis equals:

$$P(pg|w_1...w_{i-1}) = 1 - \alpha = 0.25$$

When the transitive verb is encountered its Surprisal is relatively high, as it has an object slot in which a licensing gap can occur. Thus, it induces a processing difficulty. The probability distribution is thus updated towards the parasitic gap analysis, for example:

$$P(pg|w_1...w_{i-1}) = 0.6$$

$$P(real\ gap|w_1...w_{i-1}) = 0.4$$

Next, the parser discovers that there is a licensing gap. The Surprisal associated with this discovery depends on how big the previous update was. To summarize, when the real gap analysis is initially assumed, a processing difficulty emerges in the a-examples when the parser encounters the transitive verb, as it was in the b-examples. However, there is no additional difficulty since a licensing gap is ultimately encountered and the sentence can be analyzed as involving a parasitic gap.

Now, assume that the parasitic gap analysis is initially assumed, for example, assume that $\alpha = 0.25$. In this case the probability of the parasitic gap analysis equals

$1 - \alpha = 0.75$. When the transitive verb is encountered its Surprisal is low as it is compatible with the preferred, parasitic gap analysis. The licensing gap discovered at the end of the sentence is also compatible with this analysis. No processing difficulty is predicted to occur when the parasitic gap analysis is initially assumed.

To summarize, a processing difficulty is predicted to arise in the a-examples when the real gap analysis is initially assumed, while no processing difficulty is predicted to arise when the parasitic gap analysis is initially assumed. Note that the transitive verb in the a-example causes a processing difficulty, in the same way that the transitive verb in the b-examples does. This raises a question: why are the b-examples less acceptable than the a-examples? I believe that the answer to this question lies in the suggestion that speakers apply a repair mechanism in the b-examples, which they do not have to apply in the a-examples. That is, while the a-examples are ultimately compatible with a grammatical parasitic gap analysis, the b-examples are not compatible with such an analysis, but are rather only compatible with a grammatical real gap analysis, which speakers seem to have some difficulty to accept. In other words, while the b-examples force speakers to use a non-grammatical mechanism, this is not necessary in the a-examples. I stipulate that the use of this repair mechanism reduces the acceptability of the b-examples.

What about the relative acceptability of the a-examples compared to the c-examples? The c-examples, unlike the b-examples, do not involve the use of a repair mechanism in their processing. Furthermore, as I described above, they are predicted to involve a processing difficulty when the parasitic gap analysis is initially assumed and not to involve a processing difficulty when the real gap analysis is initially assumed. So, the a-examples are predicted to involve a processing difficulty exactly when the c-examples are predicted not to involve a processing difficulty - when the real gap analysis is initially assumed, and vice-versa: the a-examples are predicted not to involve a processing difficulty exactly when the c-examples are predicted to involve a processing difficulty - when the parasitic gap analysis is initially assumed. Thus, the prediction is that when the c-examples are judged as acceptable, they will be judged as more acceptable than the a-examples, while when the c-examples are judged as unacceptable, they will be judged as less acceptable than the a-examples. This prediction seems to be borne out. The results summarized in Table B.1 show that out of 16 cases in which the c-examples were judged as grammatical, 5 cases were judged as better than the a-examples and 4 cases are judged as equal to the a-examples. In contrast, all 9 cases in which the c-examples were judged as ungrammatical or marginal, were judged as worse than the a-examples.

At this point a question arises with regard to the acceptability of subject parasitic gap constructions with resumptive pronouns. Recall that Experiment 1 (discussed in section 3.1) showed that pronouns only marginally reduce the acceptability of subject parasitic gap constructions. I now show how this result could be accounted for by the assumption that Hebrew sometimes allows extraction out of a subject modified by a relative clause.

Consider (274), which involves a resumptive pronoun in the (potentially) licensing position.

- (274) *ze ha-seret_i še-ha-anašim še-ra'u t_i ahavu oto_i*
 this the-movie that-the-people that-saw t_i liked it_i
 'This is the movie that the people that saw liked.'

First, assume that the real gap analysis is initially assumed, e.g., that $\alpha = 0.75$. In this case the probability of the parasitic gap analysis equals:

$$P(pg|w_1...w_{i-1}) = 1 - \alpha = 0.25$$

When the transitive verb *liked* is encountered, its Surprisal is relatively high, as it has an object slot in which a licensing gap can occur. Thus, it induces a processing difficulty. The probability distribution is thus updated towards the parasitic gap analysis, for example:

$$P(pg|w_1...w_{i-1}) = 0.6$$

$$P(real\ gap|w_1...w_{i-1}) = 0.4$$

Next, the parser discovers that there is no licensing gap, as it encounters a pronoun as the object of *liked*. The pronoun potentially causes a processing difficulty as it is not compatible with the parasitic gap analysis. The Surprisal associated with this discovery depends on how big the previous update was.

What happens when the parasitic gap analysis is initially assumed? For example, when $\alpha = 0.25$? In this case the probability of the parasitic gap analysis equals $1 - \alpha = 0.75$. The transitive verb *liked* is not associated with a processing difficulty, as its Surprisal is low, due to its compatibility with the preferred parasitic gap analysis. However, when no licensing gap is encountered, the analysis should be inverted to the real gap analysis, which presumably causes a processing difficulty.

To summarize, a processing difficulty is predicted to occur in resumptive pronoun examples both when the real gap analysis is initially assumed and when the parasitic gap analysis is initially assumed.

This seems surprising. If resumptive pronoun examples, such as (274), are predicted to involve a processing difficulty regardless of the analysis initially assumed, some questions arise with regard to the pattern of results from Experiment 1. First, if the resumptive pronoun examples involve a processing difficulty regardless of the analysis initially assumed, why are they only marginally worse than gap examples? Second, why are the resumptive pronoun examples better than the no licenser examples (i.e., the b-examples)?

I suggest the following explanation for the fact that the pronoun examples are judged worse than the gap examples, but only marginally. Unlike the a-examples, in which the occurrence of the licensing gap does not require to re-update the probability towards the real gap analysis, the pronoun in (274) does require to re-update the probability towards the real gap analysis. Thus, examples with resumptive pronouns are predicted to be worse than the a-examples. Indeed, Experiment 1 shows that the pronoun licenser condition was judged worse than the gap licenser condition, though

this difference was only marginal in its significance. I argue that this difference is only marginal due to two facts. First, the existence of a real pronoun enables the understanding of the sentence using the referential nature of the pronoun. Namely, no ‘conceptual pronoun’ is needed, as opposed to the b-examples. Second, after all, a licenser is not necessary. The outer relative clause can simply be a no-movement relative clause realized with a resumptive pronoun, and the gap inside the subject-modifying relative clause can be a real gap. That is, though it appears as if the resumptive pronoun licenses the parasitic gap, this is only apparent. What is really going on is that the gap is not a parasitic gap but rather a real gap, and hence needs no licensing. The pronoun can either be taken to be coreferential with the relative clause head, which is the antecedent of the gap inside the subject-modifying relative clause, or be a resumptive pronoun, inhabiting a no-movement structure. The fact that the pronoun examples are better than the no-licenser examples (the b-examples) is accounted for by the fact that unlike in the b-examples, in the pronoun examples there is no need to use a non-grammatical repair mechanism. Namely, there is no need to assume a ‘conceptual pronoun’ that refers back to the relative clause head; since there is a real pronoun in the sentence, it can be used to refer to the relative clause head to understand the sentence. This pronoun can also be interpreted as a resumptive pronoun.

An immediate question arises with regard to the antecedent of the resumptive pronoun assuming that the gap inside the subject-modifying relative clause is not parasitic. If the gap inside the relative clause is not parasitic, its antecedent should be located outside of the subject-modifying relative clause. That is, its antecedent must be the outer relative clause head (e.g., *movie* in the examples above), or a null operator located in the highest Spec-CP. If the relative clause head *movie* or this null operator is the antecedent of the gap, what is the antecedent of the resumptive pronoun? It seems that the antecedent of the resumptive pronoun must be the same operator or relative clause head. But this means, if we would like to maintain the assumption that a resumptive pronoun does not inhabit a movement structure, that we are dealing with an antecedent that is related to one position by movement and to another position by binding. How can that be? How is such a structure derived?¹⁰

A possible answer is that the operator originates inside the subject-modifying relative clause (e.g., in the object position of *saw* in (274)), and then moves to Spec-CP. This operator can then bind both the gap and the resumptive pronoun. One problem with this possibility is that it has been argued that the traditional, null operator structure, is not part of the grammar (Safir 1999, Bhatt 2002). If we would like to maintain this assumption, we would have to assume that there is an internal head that originates in the position following *saw*. However, we would still need to assume that the resumptive pronoun is bound by an operator. This seems relatively plausible as both the Raising and the Matching structures (e.g., Bhatt 2002, Sauerland 2003),

¹⁰This problem does not arise when we have a gap in the outer relative clause, since in that case we can simply assume that the gap inside the subject-modifying relative clause is parasitic and the second gap is its licenser. Though extraction from the subject-modifying relative clause is possible, it is not obligatory.

which were suggested as structures that involve an internal representation of the relative clause head, are assumed to involve a null operator that moves with the head NP and is finally located in Spec-CP. Note that in this derivation, in which the null operator originates in the gap position and ultimately binds both the gap and the resumptive pronoun, the pronoun is still not compatible with movement in the sense that it is not related to its antecedent by movement; although its antecedent originated in a position different from its surface position (i.e., was not base-generated) it had not moved from the pronoun's position, so they are not related by a movement chain. Implementing this derivation mechanism requires more investigation which I leave for future research.

To conclude, I demonstrated how the acceptability pattern observed in the subject parasitic gaps questionnaire and in Experiment 1 might be accounted for assuming that acceptability is affected by processing, which is affected by the speaker's initial assumptions and the constant update in the probability distribution among possible analyses. In section B.4.4 I briefly summarize the predictions of the processing account that I suggested.

B.4.4 Predictions and open questions

The processing account, according to which the acceptability is affected by the initial assumption the speaker makes with regard to the nature of the gap, yields many interesting predictions with regard to the acceptability of subject parasitic gap constructions.

The c-examples are predicted to be more acceptable when a real gap analysis is initially assumed and less acceptable when a parasitic gap analysis is initially assumed. Thus, if something increases the probability of a real gap analysis (or enforces it) the c-examples should be more acceptable. For instance, as I noted in section B.3.2, Sichel (to appear) suggests that a Raising structure allows extraction out of a relative clause. In addition, Free Relatives were argued to enforce the Raising structure (Grosu & Landman 1998). If these two claims are on the right track, examples in which the predicate in the outer relative clause is intransitive (c-examples) should be more acceptable when the subject-modifying relative clause is a Free Relative. Thus, examples like (275a) should be more acceptable than examples like (275b).

- (275) a. *ze ha-seret_i še-[mi_j še t_j ra'a t_i] hexlit linso'a le-hodu.*
 this the-movie that-who that t_j saw t_i decided to-go to-India
 'This is the movie that whoever saw decided to go to India.'
- b. *ze ha-seret_i še-[ha-anašim_j še t_j ra'u t_i] hexlitu linso'a le-hodu.*
 this the-movie that-the-people that t_j saw t_i decided to-go to-India
 'This is the movie that the people that saw decided to go to India.'

The b-examples, on the other hand, are predicted to be more acceptable when a parasitic gap analysis is initially assumed and less acceptable when a real gap analysis is initially assumed. If something increases the probability of a the real gap analysis

(or enforces it) the b-examples should be less acceptable. Thus, if, for example, a Raising structure allows extraction and free relatives force a Raising structure, free relatives should make examples with a transitive verb less acceptable. Thus, (276a) is predicted to be less acceptable than (276b).

- (276) a. *ze ha-seret_i še-[m_{ij} še t_j ra'a t_i] ahav et ha-saxkan ha-raši.*
 this the-movie that-who that t_j saw t_i liked ACC the-actor the-main
 'This is the movie that whoever saw liked the main actor.'
- b. *ze ha-seret_i še-[ha-anašim_j še t_j ra'u t_i] ahavu et ha-saxkan*
 this the-movie that-the-people that t_j saw t_i liked ACC the-actor
ha-raši.
 the-main
 'This is the movie that the people that saw liked the main actor.'

The a-examples are predicted to be more acceptable when a parasitic gap analysis is initially assumed and less acceptable when a real gap analysis is initially assumed. Thus, if something increases the probability of a real gap analysis (or enforces it) the a-examples should be less acceptable. Again, if free relatives force a Raising structure which allows extraction, (277a) which involves a free relative, is predicted to be less acceptable than (277b).

- (277) a. *ze ha-seret_i še-[m_{ij} še t_j ra'a t_i] ahav t_i*
 this the-movie that-who that t_j saw t_i liked t_i
 'This is the movie that whoever saw liked.'
- b. *ze ha-seret_i še-[ha-anašim_j še t_j ra'u t_i] ahavu t_i*
 this the-movie that-the-people that t_j saw t_i liked t_i
 'This is the movie that the people that saw liked.'

The idea is that whatever the factors that govern extractability out of a subject and out of a relative clause might be, they affect the choice between analyzing the gap as a real gap and analyzing it as a parasitic gap. The initial choice a speaker makes induces expectations that affect the processing difficulty of the sentence. The processing difficulty affects the sentence's acceptability.

Obviously, more work is needed to define the factors that govern extractability out of subjects and out of relative clauses. Once those factors are defined, more fine-grained predictions can be stated with regard to the acceptability of subject parasitic gap constructions, which could then be tested.

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