

1. Introduction

Recent developments in the minimalist framework emphasise the importance of the interface between the narrow-syntactic component and the semantic (Conceptual-Intentional) component(s). Accordingly, recent syntactic theorising often endorses a desideratum of ‘interface transparency’: syntactic structures should be transparently legible for the C-I component(s). In this paper I wish to discuss from this perspective one well known property of resumptive relatives, namely the fact that optional resumptive pronouns¹ trigger specificity effects. After reviewing the relevant empirical evidence (§ 2), I will briefly discuss two recent approaches to resumption that explicitly endorse interface transparency: the doubling approach developed by Boeckx (2003) (§3), and the Agree chain approach proposed by Adger & Ramchand (2005) (§4). In § 5, I tentatively explore an extension of Adger & Ramchand’s proposal which may account for the infelicity of optional resumptive pronouns in amount relatives, and in §§ 6-7, I return to the semantic side of the issue with a few inconclusive speculations. In the Appendix I briefly discuss reconstruction effects in resumptive relatives, and I explain why I believe that they do not constitute compelling evidence for a movement derivation of resumption.

2. Specificity effects

It was originally observed by Doron (1982) that in Hebrew restrictive relatives, optional resumptive pronouns in object position restrict the range of possible interpretations with respect to those allowed by gap relatives. This is shown by the contrast in (1): the gap relative (1a) is ambiguous between a nonspecific (*de dicto*) and a specific (*de re*) interpretation of the relative “head”, whereas the resumptive relative (1b) is unambiguous, and only allows for the specific interpretation.

- | | | |
|--------|---|--|
| (1) a. | Dani yimca et ha-iša še hu mexapes _
Dani will find the woman that he seeks | √nonspecific — √specific |
| b. | Dani yimca et ha-iša še hu mexapes <i>ota</i>
Dani will find the woman that he seeks her | ?*nonspecific — √specific
(Doron 1982, via Sells 1984, 396) |

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¹ Throughout this paper, I adopt the usual distinction between resumptive and intrusive pronouns. Resumptive pronouns represent a grammatical relativization strategy in a given language; intrusive pronouns (in the sense of Chao & Sells 1983, Sells 1984, 453 ff.), instead, do not correspond to a fully grammatical relativization strategy, but they are inserted in order to rescue a long-distance dependency which violates some syntactic constraints (see however Alexopoulou & Keller 2007 for a criticism of the ‘rescuing’ view).

The relative clause verb *seek* is an intensional verb, and on the *de dicto* reading, its direct object lacks a specific reference (Dani does not stand in a relation to any particular individual);² on the other hand, the *de re* reading presupposes the existence of one particular individual whom Dani stands in a seeking relation to.

A second type of ‘specificity effect’ concerns single vs. multiple individual readings (2):

- (2) a. ha-iša še kol gever hizmin _ hodeta lo. (√single—√multiple individual)
 the woman that every man invited thanked him.
 b. ha-iša še kol gever hizmin *ota* hodeta lo. (√single—*multiple individual)
 the woman that every man invited her thanked him. (Doron 1982, via Sharvit 1999, 593)

The gap relative (2a) allows for both a single individual reading of the relative “head”, involving the same woman for all the men, and a multiple individual reading, such that for every man there is a possibly different woman that he invited (on this second reading, the pronoun *lo* in the matrix clause can be exceptionally bound by the universal quantifier embedded within the relative clause). The resumptive relative (2b), however, only allows for the single individual reading.

These specificity effects are not limited to Hebrew: they are also found in e.g., Porteño Spanish (Suñer 1998, 357-8), as exemplified in (3).

- (3) a. * Todo hombre encontrará (a) la mujer que *la* busca.
 every man_i will-find (a) the woman that (he_i) her-seeks
 b. los tres estudiantes que cada profesor debe entrevistarlos. (∃E>∀, *∀>∃E)
 the three students that every professor must interview them

In simple clauses, similar ambiguities are accounted for in terms of scope: a ‘multiple individual’ reading of an indefinite object arises when it has narrow scope with respect to some distributive operator, e.g. a universal quantifier. The *de dicto* reading of an indefinite object arises when it lies in the scope of an intensional verb; the *de re* reading may be obtained by scoping it out of the intensional verb (see however Zimmermann 1993, McNally & van Geenhoven 2005 for a different approach). At first blush, it is tempting to extend the scope account to the examples in (1)-(3), by assuming that in gap relatives the relative “head” can be interpreted either within or outside the scope of the relevant relative-clause internal operator, whereas in resumptive relatives, the “head” is forced to take wide scope, yielding the specific readings. The narrow scope reading of the relative “head” in gap relatives would be explained in terms of reconstruction.³ However, if the reconstructed “head” contains an individual variable that gets bound from the Comp position (cf. Jacobson 2002, § 4), a distributive reading cannot obtain.⁴

² In general, the nonspecific object of an intensional verb may also lack an existential presupposition: see e.g. Cooper (1983, 7), Zimmermann (2001, 526 ff.) for discussion. A third property of objects of intensional verbs is failure of substitutivity. Not all intensional verbs share all of the three properties: see Zimmermann (2001), Forbes (2004), McNally & van Geenhoven (2005).

³ See e.g. Sells’s (1984, 425 ff.) ‘condition lowering’ operation in his DRT approach. In recent minimalist approaches following Chomsky (1995, 202 ff.), reconstruction is taken to be a syntactic effect parasitic on the presence of a copy-trace of movement (see the Appendix for more discussion of this point).

⁴ As discussed by Hulsey & Sauerland (2006, 121-122), by Fox’s (1999) Trace Conversion the material reconstructed into the relative gap is converted into a definite description containing an individual variable which is bound from Comp: this is insufficient to yield a distributive reading, even though the reconstructed material in the gap position is in the scope of the universal quantifier within the relative clause. Hulsey & Sauerland propose that Quantifier Raising can extract a universal quantifier out of a (raising) relative clause. As for exceptionally bound pronouns – like the

Another possible strategy is to account for the specificity effects in resumptive relatives by restricting the semantic type of the resumptive pronoun's interpretation. This insight, originally due to Doron (1982), was developed by Sells (1984, 410 ff.) for the contrast in (1): a resumptive pronoun is always interpreted as an individual-level variable, but on the *de dicto* interpretation, the object of an intensional verb is of a different semantic type (a concept for Sells, a property of properties for Doron):⁵ whence the lack of a *de dicto* reading in (1b).

A similar strategy may be envisaged to account for the contrast in (2) as well. Sharvit (1999), building on Chierchia (1993), analyses the multiple individual reading of (2a) in terms of a functional dependency in which the relative trace is simultaneously bound by the relative operator from Comp and by the universal quantifier from the subject position: as a result, the trace is interpreted as $f(x)$, where f is a variable of type $\langle e, e \rangle$ (ranging over functions from individuals to individuals), and x is an individual variable bound by the universal quantifier. It is tempting to rule out the multiple individual reading in (2b) by the very same restriction of resumptive pronouns to individual-type denotation which was proposed by Sells in his account of (1b). However, Sharvit (1999, 602) explicitly argues that such a solution would be too restrictive: as a matter of fact, the multiple individual reading is not blocked by the presence of a resumptive pronoun in specificational sentences like (4).⁶

- (4) ha-iša še kol gever hizmin ota hayta išt-o. (√multiple individual)
 the woman that every man invited her was wife-his. (Sharvit 1999, 588)

Also, a *de dicto* interpretation is allowed in resumptive relatives in 'modal subordination' contexts (Sharvit 1999, 593, fn. 5):

- (5) ha-iša še Dan mexapes ota crixā lihyot blondit.
 the woman that Dan seeks her must be blond

matrix object pronoun in (2a) – Hulseley & Sauerland analyse them as E-type pronouns. For a comparison between the syntactic reconstruction approach and Sharvit's functional dependencies from two opposite perspectives, see Hulseley & Sauerland (2006, 131 ff.) and Grosu & Krifka (2007, § 2.2).

⁵ In the standard Montagovian analysis, the intensional type is quantificational ($\langle s, \langle et, t \rangle \rangle$; cf. e.g. Cooper 1983, 29 ff.). An alternative is the intensional property analysis proposed by Zimmermann (1993), vanGeehoven & McNally (2005). A third possibility could be the individual concept type $\langle s, e \rangle$, along the lines proposed by Grosu & Krifka (2007) for their equational intensional 'reconstruction' relatives' (thanks to Alex Grosu for discussion). In order to avoid an *in situ* interpretation of higher order NP denotations in the argument position, it is possible to adopt a 'propositionalist' analysis of intensional verbs (see Forbes 2004 for discussion).

⁶ Sharvit argues that in (4) the multiple individual reading results from a functional interpretation of the resumptive pronoun; however, the only permissible functional denotation for a pronoun is a natural function, and not a set of pairs of individuals; the natural function interpretation is only allowed in specificational sentences like (4), which express identity between two natural functions, but not in sentences with ordinary relational predicates. (I am grossly simplifying for reasons of space; see Sharvit 1999, 603 ff.).

Guillot & Malkawi (2006, 174-176) discuss a similar phenomenon in French and Jordanian Arabic resumptive *wh*-questions, where the resumptive pronoun blocks a functional interpretation. They propose that the functional reading arises by interpreting an (indefinite) copy-trace as a skolemized choice function; this interpretation is unavailable for a resumptive pronoun, because the latter is a covert definite description (with NP deletion, à la Elbourne 2001).

Thus, a categorical restriction on the semantic type of resumptive pronouns is not viable.⁷ It is important to bear in mind these semantic considerations while evaluating the interface-transparent syntactic analyses of resumption to be discussed in the next paragraphs.

3. A doubling analysis of resumption (Boeckx 2003)

Boeckx (2003) extends to resumptive pronouns the doubling (or big DP) analysis which was originally proposed for clitic doubling by Uriagereka (1995) (crediting Esther Torrego) and was subsequently extended to clitic left dislocation structures by Cecchetto (2000) and Belletti (2005). On this view, a doubling clitic originates as the outermost DP layer of the doubled argument, and gets cliticized to the verb. The doubled argument can also move independently (e.g. by topicalization), giving rise to a resumptive structure in which the doubling clitic is stranded in a position within IP. The derivation is schematically represented in (6): (6b) corresponds to the cliticization step, (6c) to left dislocation of the doubled XP.

- (6) a. ...I... V [_{DP} clitic XP]
 b. clitic+I+V ... [_{DP} t XP]
 c. XP ... clitic+I+V ... [_{DP} t_{CL} t_{XP}]

According to Boeckx, the derivation of a resumptive relative proceeds in a parallel fashion.⁸ The doubling D-layer checks the EPP feature of a case-checking head within IP (AgrO);⁹ the innermost phrase (the internal relative “head”) is extracted and checks the strong EPP feature of the C head, as shown in (7). By this splitting of the DP, each chain contains only one strong (i.e., EPP checking) occurrence, complying with Boeckx’s (2003, 13-14, 74 ff.) Principle of Unambiguous Chain.

- (7) [_{DP} D/the [book]_i] [_{CP} t_i′ [that [I T° [_{VP} read [t_i′ [D t_i]]]]]] (Boeckx 2003, 33, (43))

Leaving aside the details of the syntactic derivation, let us concentrate on the internal structure of the relativized DP. Boeckx proposes the structure in (8), and argues that this is essentially equivalent to (9), which he attributes to Rullman & Beck (1998).

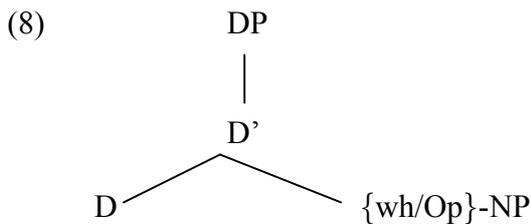
⁷ The impossibility of the *de dicto* reading in resumptive relatives is also called into question by Prince (1990). Based on the analysis of Yiddish and English corpora, Prince argues that resumptive pronouns outside islands are licensed in ‘predicational’ relatives with an indefinite “head”, like (i):

(i) You get a rack that the bike will sit on it. (Prince’s (15d))

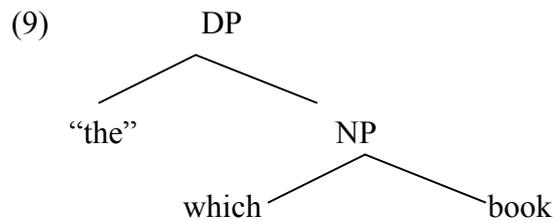
In Prince’s file card account, here the nominal “head” introduces a new entity and activates a file card by itself; the relative clause simply provides a further property which must be added to this file card. Thus, there is actually an anaphoric link between the resumptive pronoun and the relative “head”. Prince shows that in the corpora she analyses, some predicational resumptive relatives allow for a *de dicto*/nonspecific reading of the “head”; she suggests that the deviance of some resumptive relatives with a nonspecific “head” is due to the fact that the relative clause cannot be predicational, but is truly restrictive. The Hebrew contrast between (1b) and (4), however, does not seem to be amenable to this approach. (Prince herself in the end leaves open the problem w.r.t. Hebrew resumptive pronouns).

⁸ A doubling derivation of resumptive relatives is also proposed by Belletti (2006).

⁹ Boeckx (2003, 80 ff.) assimilates this derivational step to object shift.



Boeckx (2003, 28)



attributed to Rullman & Beck (1998)

If I understand correctly, the crucial idea is that the outermost DP layer is a definite determiner (of a sort), and is responsible for the specificity or D-linking of the relative “head” in resumptive relatives (Boeckx 2003, 29-32). As is well known, clitic doubling too forces a specific interpretation of the doubled direct object (see a.o. Dobrovie-Sorin 1994, Suñer 1988, Gutierrez-Rexach 2000): this parallelism follows straightforwardly from the doubling approach. The proposal in (8) also meets the desideratum of interface transparency: specificity is syntactically encoded in a designated functional projection; in turn, the postulated outermost layer of the doubling structure has well-defined semantic content.

Despite its intuitive appeal, the assimilation of resumption to clitic doubling is problematic. As shown in (10), in clitic doubling structures the doubled element can be a full DP:¹⁰ this is incompatible with the structure in (8), where the doubled element is a proper subconstituent of DP.

- (10) a. El profesor los invitó a algunos de los estudiantes. (Porteño Spanish; Suñer 2006, 141)
 the professor CL invited.3.SG. A some of the students
 b. Lo he visto a Juan. (Boeckx 2003, 51, (106), from Uriagereka 1995)
 CL have.1.SG seen A Juan

In order to maintain the parallelism between clitic doubling and resumption, Boeckx would actually have to assume a more expanded structure with recursion of the DP layer (cf. Belletti 2005, 7). Notice, however, that a recursive DP layer would not be semantically motivated in the same way as (8)-(9) is. On the other hand, if we give up the parallelism with clitic doubling, an essential part of the doubling analysis (cf. Boeckx 2003, 35-37; 50-53) becomes stipulative.

Furthermore, the assimilation of resumption to clitic doubling structure only supports the derivational step in (6b). As for the stranding step in (6c), Boeckx proposes a further parallelism with clitic left dislocation: both in dislocation and in resumptive relatives, the doubled constituent moves to the left periphery of the clause, stranding the clitic in a lower IP-internal position. This parallelism raises the same problem as above, because what is left dislocated is typically a full DP. Moreover, the parallelism between resumption and clitic left dislocation breaks down with respect to specificity: Gutierrez-Rexach (2000, 333) has pointed out that in Castilian Spanish it is possible to dislocate certain non-specific direct objects¹¹ which cannot be clitic-doubled.

- (11) Jugadores como Maradona, ja no los veremos más.
 players like Maradona, already not CL.DO.3PL see.FUT.1.PL more

Another question arises with respect to indirect object clitics in Spanish. As noted by Suñer (1988) and Gutierrez-Rexach (2000, 343 ff.), indirect object clitics do not require the doubled argument to

¹⁰ I disregard here the status of the prepositional marker *a*.

¹¹ More precisely, according to Gutierrez-Rexach the crucial property for clitic doubling to be possible is principal filterhood. The author also explicates the difference between principal filterhood and Enç's (1991) specificity (2000, 336 ff.), which is closer to the notion of ‘D-linking’ that Boeckx adopts, following Pesetsky (1987).

be specific (12a). In a parallel fashion, an indirect object resumptive clitic does not force a specific interpretation of the relative “head”: compare (12b) to (3b) above.

- (12) a. Todos los candidatos *les* han dicho la verdad a algunos electores. ($\exists > \forall, \forall > \exists$)
 all the candidates CL.IO have said the truth to some voters (Gutiérrez-Rexach 2000, (70b))
 b. los tres estudiantes que cada profesor *les* debe dar tarea extra ($\exists > \forall, \forall > \exists$)
 the three students that every professor CL.IO.3PL must give extra exercise (Suñer 1998, 358)

Although this parallel behaviour is compatible with Boeckx’s general approach, the question arises of how to analyse indirect object clitics: clearly, they cannot be assimilated to the outermost D-layer of (8), for this would entail a specific interpretation. Following Suñer and Gutiérrez-Rexach, it is possible to analyse indirect object clitics as something quite different from doubling D heads, namely, as mere agreement markers,¹² but notice that this move would significantly restrict the generality of the doubling approach.

A fourth question arises when we consider the specifics of Rullman & Beck’s (1998) proposal. In their semantic analysis, an interrogative *which* phrase is translated as a definite description containing the lexical restriction and an individual variable:

- (13) *which* $\text{man}_i \Rightarrow \text{the } (\lambda y[\text{man}(w)(y) \ \& \ y=x_i])$ (Rullman & Beck 1998, 226)

The variable in the *which*-phrase denotation is bound by the question operator in Comp, and the lexical restriction is interpreted *in situ*, as shown in (14):

- (14) a. Which man did Meg see?
 b. $\lambda p \exists x[p(w) \ \& \ p=\lambda w'[\text{saw}(w')(\text{meg}, \text{the}(\lambda y[\text{man}(w')(y) \ \& \ y=x]])]]$

The main reason for this analytical option is the observation that a *which*-phrase gives rise to presupposition projection in a way parallel to definite descriptions. For instance, in the context of (15a), example (15b) (Rullman & Beck’s (14a)) “can be uttered felicitously by a speaker who does not believe in the existence of unicorns but only ascribes such a belief to Bill”. This is entirely parallel to the presupposition projection of the definite description *the green unicorn* in (15c).

- (15) a. Bill thought he saw two unicorns, a green one and a blue one.
 b. ... Which unicorn does Bill want to catch?
 c. ... He wants to catch the green unicorn.

On Rullman & Beck’s proposal, all presuppositional *which*-phrases are interpreted as (implicit) definite descriptions. Boeckx’s assumption of the structure (8)-(9) for resumptive relatives, in which the D-layer encodes specificity, leads to the expectation that all relative clauses with a specific interpretation of the “head” should have a resumptive pronoun, corresponding to the D-layer. But this is actually not the case in Hebrew: as shown in (1a) and (2a) above, a specific interpretation is also possible in gap relatives.¹³ Conversely, if the specific D-layer is responsible

¹² As an aside, note that such a weaker status of indirect object clitics is apparently at odds with some recent morphosyntactic analyses (Anagnostopoulou 2003, Adger & Harbour 2007), according to which third person indirect object clitics are more specified than direct object ones (in particular, they have a Person feature specification that direct object clitics lack.)

¹³ According to Boeckx, an alternative derivation satisfying the PUC involves an Agree relation between the two EPP-checking heads, an Agreeing C and AgrO. It may be assumed that specific gap relatives involve such an Agree chain, and hence do not require the splitting of the relativized ‘big DP’. Even with this assumption, it is unclear why the D-layer would fail to be spelled out.

for the lack of a multiple individual reading in (2b) (Boeckx 2003, 31), then the possibility of this reading for the resumptive relative in (4) is problematic for the opposite reason: here the resumptive pronoun does not seem to encode specificity (a similar problem arises with respect to the nonspecific interpretation of (5), as compared to (1b)).

As far as I can see, the straightforward identification of the resumptive pronoun with the D-layer of (8)-(9) proves too strong.

4. Adger & Ramchand (2005)

Boeckx's movement analysis of resumption is related to the revival of the raising analysis of relative clauses (Kayne 1994). From a different perspective, Rouveret (2002, 2007) and Adger & Ramchand (2007) have pointed out that, with the introduction of the Agree operation in the minimalist system, it becomes possible to define an Agree chain whose links are independently merged and are connected by Agree, rather than by Move. Contrary to previous non-movement approaches,¹⁴ this chain is defined in strictly derivational terms, since the Agree operation too is subject to the Phase Impenetrability Condition. In this discussion I will focus on Adger & Ramchand's proposal, because it explicitly aims at interface transparency.

This proposal can be summarized in the following three points.

First, only semantically interpretable features are admitted in the derivation: more precisely, there is a universal 'minimal kit' of features which is necessary at the interface to encode a semantic dependency (Adger & Ramchand 2005, 190). This includes a LAMBDA feature, which is interpreted as an abstraction operator, and an ID feature, which is interpreted as a variable and can take two alternative values: the 'dep' value, whereby the pronoun is identified¹⁵ via an assignment function controlled by an operator, or the 'phi' value, whereby the pronoun is identified by an assignment function determined by the context.

Second, an Agree chain can be built by a local Agree relation between two occurrences of a feature specified on independently merged items. When two Complementizers Agree, this may give rise to an apparent 'successive cyclicity' effect.

Third, the principle Interpret Once under Agree only requires that one occurrence of a feature in an Agree chain get interpreted; crucially, a feature value transmitted by the Agree relation in the course of the syntactic derivation is legible for the semantic component. Interface conditions guarantee that each feature will get interpreted in the appropriate position of the chain.

Consider for instance the derivation of the Scottish Gaelic resumptive relative (16), which features a special relative complementizer and a null pronoun in the relativized position:

- (16) an duine *a* thuir *e a* bhuaileas *e* (Gaelic; Adger & Ramchand 2005, 176, (50))
 the man CREL said he CREL strike.FUT he
 'the man that he said he will hit'

On the basis of various kinds of empirical evidence, Adger & Ramchand argue that this cannot be derived by movement. However, we observe an apparent successive cyclicity effect, in that the special relative complementizer occurs in both the C positions intervening between the relative "head" and the relativized position. This results from the formation of an Agree chain in which each complementizer bears the specification [Λ , ID:dep], and the null resumptive pronoun bears an unvalued ID feature. At the lowest link of the Agree chain (17a), the pronoun receives the dep value

¹⁴ Cf. e.g. McCloskey (1990), which is representative of what McCloskey (2006) dubs the "consensus view of the '80s and the '90's." See McCloskey (2002) for a minimalist approach to resumption in Irish.

¹⁵ *Sic* (Adger & Ramchand 2005, 173).

for its unvalued ID feature by Agreeing with the closest complementizer.¹⁶ In turn, the lower complementizer Agrees with the higher one for the Λ and ID features (17b). At the C-I interface, the Λ feature will be interpreted only on the topmost complementizer (as a λ -operator), whereas the [ID:dep] feature value inherited by the resumptive pronoun through the Agree chain will only be interpreted in this lowest position, as a variable (17c). The Agree chain is thus transparently legible at the interface.

- (17) a. $a[C, \Lambda, \text{ID:dep}] \dots \text{pro} [D, \text{ID:}] \rightarrow a[C, \Lambda, \text{ID:dep}^\alpha] \dots \text{pro} [D, \text{ID:dep}^\alpha]$
 b. $a[C, \Lambda, \text{ID:dep}] \dots [a[C, \Lambda, \text{ID:dep}^\alpha] \dots \text{pro}[\text{ID:dep}^\alpha] \rightarrow$
 $a[C, \Lambda^\beta, \text{ID:dep}^\alpha] \dots [a[C, \Lambda^\beta, \text{ID:dep}^\alpha] \dots \text{pro}[\text{ID:dep}^\alpha]$
 c. $\lambda x \dots x$ (Adger & Ramchand 2005, (42), (49))

The situation is different in Modern Irish resumptive relatives, which show no successive cyclic effects: a special Complementizer (glossed *aN*) only occurs in the topmost position of the relative clause.¹⁷ In this language, resumptive pronouns are overtly specified for phi-features (18a). Adger & Ramchand propose that in this case, no derivational steps are required to yield an interpretable syntactic representation: the topmost complementizer bears the Λ feature, and the resumptive pronoun bears interpretable phi-features [ID:phi] (18b). Semantic binding can thus obtain without the mediation of an Agree chain (18c).

- (18) a. an scríbhneoir *aN* molann na mic léinn é
 the writer C-rel praised the students him
 b. $C[\Lambda] \dots \text{pro}[\text{ID:phi}]$
 c. $\lambda x \dots x$ (Adger & Ramchand 2005, (58)-(59))

Finally, in English *wh*-relatives a movement chain is created for reasons of legibility at the interface, namely, in order to create an occurrence of a feature in a position where it can be properly interpreted. The relative pronoun *who* bears both the Λ feature and specified phi-features ([ID:phi]). This element is merged in argument position, but the Λ feature cannot be interpreted there: consequently, the relative pronoun moves successive cyclically up to the highest complementizer of the relative clause.¹⁸ At the interface, the Λ feature is interpreted at the top of the chain, and the ID feature at the bottom of the chain, satisfying the IOA principle (19c).

- (19) a. the relatives [who C [I thought [\langle who \rangle C [_{TP} \langle who \rangle were moving]]]]
 b. $[\Lambda, \text{ID:phi}] \quad [\Lambda, \text{ID:phi}] \quad [\Lambda, \text{ID:phi}]$
 c. $\lambda x \quad \dots \quad x$ (Adger & Ramchand 2005, (97))

Even this brief summary makes clear that the desideratum of interface transparency plays a major role in shaping Adger & Ramchand's approach.

One common feature of the structures in (17) and (18) is the fact that the resumptive pronoun in the argument position is interpreted as an individual variable bound by a λ operator taking scope over the whole relative clause. If we try to extend this approach to the optional resumptive pronouns in the Hebrew relative clauses (1)-(2), either the Agree chain (17) or the semantic binding relation in (18) will correctly yield only the specific readings. However, this result also incorrectly extends to

¹⁶ The Agree chain is indicated by the superscripted Greek letters.

¹⁷ The abbreviation indicates that this complementizer triggers nasalization on the following segment (McCloskey 1990). See McCloskey (2002) on some complex chains where this special complementizer is not confined to the topmost C position.

¹⁸ In (19a), angled brackets indicate movement copies.

gap relatives: even if we adopt for these a movement derivation similar to (19), we cannot obtain the nonspecific (multiple individual or *de dicto*) readings (assuming that the latter require some reconstruction mechanism and/or a variable of a semantic type different from *e*). Thus, this approach too would fail to account for the ambiguity of the gap relatives (1a) and (2a), though for the opposite reason with respect to Boeckx's: here, the nonspecific readings remain unaccounted for. On the other hand, the restriction of resumptive pronoun to the individual type seems problematic with respect to the data in (4)-(5), as was Boeckx's analysis.

From a wider perspective, I believe that the minimal kit proposed by Adger & Ramchand can hardly capture Carlson's (1977) amount relatives, exemplified in (20a). These relative clauses involve abstraction over a degree variable rather than an individual variable (e.g. Heim 1987; Sauerland 1998, chapter 2; Grosu & Landman 1998; Grosu 2000):¹⁹

(20) a. It will take us three days to drink the wine that John drank that night.

b. [_{DP} the [_{NP} wine [_{λd} [that John drank [_{d} wine] that night]]]]

The analysis in (20b) relies on a reconstruction mechanism whereby the lexical "head" is interpreted in the relativized position. I do not want to imply that syntactic reconstruction is the only conceivable approach to amount relatives; the crucial point that I want to make is that their interpretation requires *some* extension of Adger & Ramchand's minimal kit. In the following section, I will tentatively explore one possible extension.

5. Another constraint on optional resumption: amount relatives

The discussion so far has only considered the semantic impact of optional resumptive pronouns in restrictive relative clauses. If we consider amount relatives like (20), an interesting constraint emerges: the relativized position cannot contain an optional resumptive pronoun.²⁰ This generalization was observed in Bianchi (2004) with respect to a small sample of 12 languages/dialects;²¹ I report only the relevant Hebrew data here.

(21) a. 'animicta 'er 'alha-zman še-bizbazti (*'oto)

I sorry about the-time that-[I] wasted (it)

b. 'samtiba-kis 'et kolha-kesef še-yakoltila-sim (*'oto).

[I] put in-the-pocket acc all the-money that [I] could put (it) (Bianchi 2004, (11))

Given the hypothesis of a degree variable in (20b), this constraint would immediately follow from the restriction of resumptive pronouns to individual type; but we have already seen that this constraint, despite its intuitive appeal, is too rigid. Therefore, I would like to propose a different approach to the problem, based on an extension of Adger & Ramchand's approach.

¹⁹ In Grosu & Landman (1998), the analysis of 'third kind' relatives involves two crucial ingredients: (a) abstraction over a degree variable, and (b) a maximalization operation applying at the CP-level. Grosu (2000) points out that not all the "amount" relative structures analysed by Carlson (1977) necessarily involve maximalization. The crucial point here is the necessity of a degree variable, which is not included in Adger & Ramchand's minimal kit.

²⁰ If instead the resumptive pronoun is syntactically obligatory (e.g., as a prepositional object in Hebrew), then it is also allowed in amount/maximalizing relatives (cf. Bianchi 2004). Thanks to Hamida Demirdache for discussion of this point.

²¹ More precisely, the generalization was the following: if a language allows resumptive pronouns in restrictive relatives, it also allows them in appositive relatives, but not vice versa; however, no language in the sample allows optional resumptive pronouns in amount relatives.

The analysis in (20b) implies that amount relatives involve a non-individual *syntactic* variable in their LF structure: in other terms, the actual relativized position corresponds to a proper subconstituent of the relative “head”. This hypothesis can be implemented in Adger & Ramchand’s terms, by allowing a wider distribution of the [ID:dep] feature, which effectively identifies syntactic variables. Let us assume that this feature can be specified not only on pronominal D heads, but also on other nominal categories that can be interpreted as semantic variables.²² For the sake of concreteness, let us represent a syntactic degree variable as an internal subconstituent of a DP, consisting of a relative Determiner bearing the features [Λ , ID:dep] and a covert AMOUNT noun.²³

(22) [_{DP1} D [_{XP} [_{DP2} D [Λ , ID:DEP] AMOUNT] ... [_{NP} wine]]]²⁴

Suppose now that the internal DP2 cannot be extracted from DP1. Since the Λ feature must be interpreted in an operator position, the only possibility to make it legible at the interface is to pied pipe the larger DP1 to CP. It is generally assumed that pied piping is allowed by some percolation mechanism which copies the features of the *wh*-phrase on the larger category to be pied-piped. Let us implement percolation by copying the features of the internal relative D on the higher head of the containing DP1 (23):

(23) [_{DP1} D [Λ , ID:DEP] [_{XP} [_{DP2} D [Λ , ID:DEP] AMOUNT] [_{NP} wine]]]



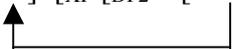
At this point, DP1 can move and bring the problematic Λ feature up to CP:²⁵

(24) [_{CP} [_{DP1} D [Λ , ID:DEP] [_{XP} [_{DP2} D [Λ , ID:DEP] AMOUNT] NP]]] [_{C°} ...
[_{IP} ... <[_{DP1} D [Λ , ID:DEP] [_{XP} [_{DP2} D [Λ , ID:DEP] AMOUNT] NP]]> ...]]]

By stipulation, assume that the occurrences of the features copied by the percolation mechanism are seen as members of one and the same chain by the principle Interpret Once under Agree, just like the occurrences created by movement in (19). The chain in (24) is then legible at the interface: by IOA, the Λ feature is interpreted in CP, and the [ID: dep] feature is interpreted at the foot of the chain – specifically, its occurrence on the head of the internal DP2 is interpreted as a degree variable. Thus, movement and pied piping yield an interpretable LF output.

On the other hand, a resumptive DP2 endowed with an unvalued ID feature cannot exploit the pied piping option. Suppose that the unvalued ID feature were copied on the head of the containing DP1 by the percolation mechanism, in a way parallel to (23):²⁶

(25) [_{DP1} D [ID:] [_{XP} [_{DP2} D [ID:] AMOUNT] [_{NP} wine]]]



²² Note that this assumption implicitly introduces an asymmetry between the two possible feature values of the ID feature: in fact, the phi value can plausibly be specified only on those D categories that are interpreted as individual variables. I am well aware that this point would require further investigation, but I have to leave it for the future.

²³ This is similar, though not identical, to Kayne’s (2005) silent nouns.

²⁴ For simplicity, here and in the following structures I have omitted the categorial features, which are already expressed by the category labels.

²⁵ I ignore for simplicity the vP phase.

²⁶ (25) involves a resumptive noun phrase containing a covert copy of the lexical restriction: this has been proposed by Guillot & Malkawi (2007), Guillot (2007), Rouveret (2007), extending the NP-deletion analysis of pronouns by Elbourne (2001). See the Appendix for further discussion.

Assuming that DP1 is a phase, its head can establish an Agree relation with a special Complementizer bearing the features $[\Lambda, \text{ID:DEP}]$ (cf. (17) above). This would allow the transmission of the dep value to the head of DP1, as indicated by the superscripted γ in (26):

(26) ... $[_{CP} C[\Lambda, \text{ID:DEP}^\gamma] [_{IP} \dots [_{DP1} D [\text{ID: DEP}^\gamma] [_{XP} [_{DP2} D[\text{ID: }] \text{AMOUNT}] \text{NP}]] > \dots]]$

However, this Agree relation fails to transmit a feature value to the lowest unvalued occurrence of the ID feature on the head of DP2, which is ‘buried’ within phase DP1. Therefore, this feature is not legible at the interface, and DP2 cannot be interpreted as a degree variable.

It follows that amount relatives are incompatible with an Agree chain, whereas they are compatible with a Move dependency. One crucial assumption here is that the resumptive chain involves an unvalued feature on the lowest link (as in (17), contrary to (18)); a second crucial ingredient is an analysis of amount relatives involving a copy of the “head” in the relativized position.²⁷ I leave open the question of whether Adger & Ramchand’s proposal could also be extended to incorporate a non-raising analysis of amount relatives, which would perhaps be more consonant with the general spirit of their approach.

6. Two ways to specificity?

At this point, I would like to go back to the semantic side of the problem. We have seen that the specificity effects associated with optional resumption raise nontrivial problems for the desideratum of interface transparency. In Doron’s (1982) original view, these specificity effects are thought of as a *restriction* on the possible interpretations of resumptive relatives: namely, there are certain non-specific interpretations that are compatible with a gap, but not with a resumptive pronoun. The reason is clear: if we hypothesize that optional resumptive pronouns positively encode specificity, as does Boeckx, the possibility of a specific interpretation of gap relatives is problematic (cf. (1a) and (2a) above). However, notice that this problem only arises if gap relatives and resumptive relatives are taken to encode the same kind of specificity. One possible alternative is to speculate that this is not the case, and that different kinds of specificity are involved.

As is well known, there are at least two views of specificity in the literature. One is the scopal view, according to which specificity is essentially a matter of wide scope – often exceptionally wide, given the apparent immunity of specific indefinites to scope islands.²⁸ Another one is the epistemic view of specificity, according to which a speaker who uses a specific indefinite “has one particular individual in mind”. Schwarzschild (2002) has proposed an interesting version of this view, based on the notion of a singleton indefinite. In his approach, specific indefinites are *bona fide* existential quantifiers whose restriction happens to be a singleton set. Singleton extension gives rise to scope neutralization: even if a singleton indefinite lies in the scope of a distributive operator, the resulting truth-conditions are indistinguishable from those that arise from the opposite scope relation; this is what gives the illusion of (exceptionally) wide scope. Crucially, singleton extension is typically not yielded by the overt restriction of the indefinite, but it arises via an implicit domain restriction based

²⁷ I believe that more generally, Adger & Ramchand’s approach could be made compatible with a raising approach of restrictive relatives as well, by letting relative *who* in (19) select a lexical NP, as in Kayne (1994); but this move would introduce the problem of multiple copies of the lexical NP (note that Adger & Ramchand (2005, 163) explicitly opt against Fox’s Trace Conversion Rule.) I will not explore this possibility, because in any event, it is unclear whether it would provide the basis for a coherent reconstruction analysis of the nonspecific readings of gap relatives (for one thing, in Hulse & Sauerland’s raising structure, the raised “head” is an NP rather than a DP).

²⁸ I will not discuss here the various analyses of exceptional scope that have been proposed; a synthesis of the relevant literature can be found in Schwarzschild (2002).

on information that is asymmetrically available to the speaker but not to the hearer²⁹ (see Schwarzschild's (2002, (52)) Privacy Principle). Consider for instance the following familiar example:

- (27) If a friend of mine from Texas had died in the fire, I would have inherited a fortune.
(51) in Schwarzschild 2002)

Here the indefinite *a friend of mine* seems to take scope out of the *if*-clause. According to Schwarzschild, (27) is naturally interpreted as being about a particular friend: it is a singleton indefinite, even though the information which narrows it down to singleton extension is only available to the speaker, and not to the hearer(s).

From a theoretical viewpoint, this view of specificity is a rival to the exceptional scope approach. However, if we restrict our attention to local configurations, any scope shifting mechanism can yield wide scope for an existential quantifier in object position;³⁰ similarly, in the restrictive relatives in (2), repeated here, I think we would need a special stipulation to rule out a 'wide scope/non-functional' interpretation, in which the relativized position is an individual variable bound by the topmost λ -operator taking scope over the universal quantifier.

- (2) a. ha-iša še kol gever hizmin _ hodeta lo. (√single—√multiple individual)
the woman that every man invited _ thanked him.
b. ha-iša še kol gever hizmin *ota* hodeta lo. (√single—*multiple individual)
the woman that every man invited her thanked him. (Doron 1982, via Sharvit 1999, 593)

Thus, it seems that at least in local configurations, scopal specificity and singleton specificity should be both available. We may then speculate that specific gap relatives like (1a) and relatives with optional resumptive pronouns like (1b) encode two different kinds of specificity. Given that resumptive pronouns are quite natural in appositive relatives, it is tempting to hypothesize that in restrictive relatives they encode singleton specificity. This assumption, I think, would be compatible with Sharvit's analysis of (4), repeated here:

- (4) ha-iša še kol gever hizmin *ota* hayta išt-o (Sharvit 1999, 588, (3))
the woman that every man invited her was wife-his

Recall that according to Sharvit, the resumptive pronoun here is functional. It seems reasonable that in an equative context like (4), the speaker has exactly one natural function in mind that maps every man to the woman that he invited.³¹

7. Intensional 'reconstruction'

Unfortunately, the requirement of singleton extension would not shed any light on the availability of the *de dicto* reading in (5) as opposed to (1b):

²⁹ The relevant information may even be available to a third party (Schwarzschild 2002, § V).

³⁰ This is compatible with Schwarzschild's proposal: the matter at issue is rather the treatment of cases like (27).

³¹ Notice that a requirement of singleton extension would be somewhat close to Prince's (1990) idea that in English and in Yiddish, resumptive relatives are 'pseudo-restrictive' and actually involve an anaphoric link between an indefinite "head" and the resumptive pronoun (cf. note 7).

performance). The second one is to plunge into spontaneous corpora and hope that, by a careful consideration of the contexts of occurrence, it will be possible to identify some formally definable semantic or pragmatic notion that accounts for the apparent optionality. This second line of attack may require a much more fine-grained notion of ‘specificity’ than the one that is currently assumed in formal syntax.

Appendix: Reconstruction effects for binding

Starting from Kayne (1994), reconstruction effects for binding in relative clauses have been argued to support a raising (or matching) analysis of relative clauses, whereby the relative “head” is syntactically represented within the relative clause – in particular, in the first merge position (see especially Sauerland 1998, 2005, for relevant discussion). There is by now a relatively ample literature on this topic. Aoun & Choueiri (1997) exploited the same argument to support a raising derivation of certain resumptive relatives in Lebanese Arabic. They argued that reconstruction effects correlate with sensitivity to islands: ³³ true resumptive structures, without a movement derivation, are insensitive to islands but show no reconstruction effects. More recently, however, Guillot (2006), Rouveret (2007) and Guillot & Malkawi (2006) have argued that partial reconstruction effects may be compatible with a non-movement derivation, if the resumptive pronoun is a covert definite description subject to NP-deletion, à la Elbourne (2001).³⁴

As for the two approaches discussed in §§ 3-4, Boeckx’s (2003) doubling derivation predicts full reconstruction effects in resumptive relatives, parallel to those that arise in *which*-questions. Adger & Ramchand’s non-movement derivation instead predicts the complete lack of reconstruction effects, which they argue to be correct for Scottish Gaelic (Adger & Ramchand 2005, 170-71).

Even a partial survey of the literature on reconstruction effects in resumptive relatives shows that neither of these categorical predictions is cross-linguistically valid: there is actually a lot of variation. Furthermore, it is by now widely recognized that even relative clauses derived by movement do not always show full reconstruction effects (see especially Sauerland 1998, chapter 2, Bianchi 2004, Authier & Reed 2005): if we attempt a comparison, it turns out that reconstruction effects in resumptive relatives show the same range of variation that is found in movement relatives. For reasons of space I cannot report all of the relevant data here, so I will simply report the relevant sources:

- (i) Full reconstruction effects including anaphor binding, quantificational pronoun binding, and Condition C effects:
 - Hebrew resumptive relatives according to Shlonsky (2004)
 - English ‘raising’ *that*-relatives (Sauerland 1998, cf. Carlson’s amount relatives).
- (ii) Partial reconstruction effects including anaphor binding and quantificational binding, but no Condition C effects under reconstruction:
 - Welsh resumptive relatives (Rouveret 2007)
 - German gap relatives (Salzmann 2006), English matching relatives (Sauerland 1998), Italian restrictive relatives with a specific interpretation of the “head” (Bianchi 2004).

³³ This correlation does not hold in Hebrew according to Shlonsky (2004).

³⁴ This type of reconstruction allows for binding of anaphors and quantificational binding of pronouns (since the resumptive definite description can contain a copy of the elements to be bound from within the relative clause), but it can alleviate Principle C effects (since the resumptive definite description need not contain a literal copy of an R-expression contained in the external “head”); furthermore, we cannot get reconstruction in intermediate chain positions of the type discussed by Fox (1999, 172-175).

(iii) Absence of reconstruction effects:

- Lebanese Arabic indefinite resumptive relatives (Aoun & Choueiri 1997), Scottish Gaelic resumptive relatives (Adger & Ramchand 2005)
- English *wh*-relatives (Aoun & Li 2003), Italian appositive relatives (Bianchi 1999, 2004).

It appears that reconstruction effects do not systematically correlate with the absence of overt resumptive material, nor with sensitivity to islands: in short, they do not in themselves constitute a reliable diagnostics for a movement vs. non-movement derivation. These observations, taken together, have led me to my present agnostic stance with regard to syntactic reconstruction.

References

- Adger, D. & G. Ramchand. 2005. Merge and Move: *wh*-dependencies revisited. *Linguistic Inquiry* 36, 161-193.
- Adger, A. & Harbour, D. 2007. Syntax and Syncretisms of the Person Case Constraint. *Syntax* 10, 2-36.
- Alexopoulou, D. & F. Keller. 2007. Locality, Cyclicity and Resumption: At the Interface between the Grammar and the Human Sentence Processor. *Language* 83, 110-160.
- Aoun, J. & Li, Y.A. *Essays on the representational and derivational nature of grammar*. Cambridge, Mass., MIT Press.
- Aoun, J. & L. Choueiri. 1997. Resumption and Last Resort. Ms., USC.
- Aoun, Choueiri & Hornstein, 2001. Resumption, movement, and derivational economy. *Linguistic Inquiry* 32, 371-403.
- Authier, J.M. & L. Reed. 2005. The diverse nature of non-interrogative *wh*. *Linguistic Inquiry* 36, 635-47.
- Belletti, A. 2006. Extending doubling to non local domains: complete vs partial copying + deletion and related reconstruction issues. In: P. Brandt & E. Fust (eds.), *Form, Structure and Grammar*, Akademie Verlag.
- Boeckx, C. 2003. *Islands and chains. Resumption as stranding*. Amsterdam/Philadelphia, John Benjamins.
- Belletti, A. 2005. Extended doubling and the VP periphery. *Probus* 17, 1-35.
- Bianchi, V. 2004. Resumptive relatives and LF chains. In L. Rizzi (ed.), *The Structure of CP and IP*, New York-Oxford, Oxford University Press, 76-114.
- Cecchetto, C. 2000. Doubling structures and reconstruction. *Probus* 12, 93-126.
- Chomsky, N. 1993/95. A minimalist program for linguistic theory. In: *The Minimalist Program*, Cambridge, MA, MIT Press.
- Doron, D. 1982. On the syntax and semantics of resumptive pronouns. *Texas Linguistic Forum* 19, 1-48.
- Elbourne, P. 2001. E-type anaphora as NP deletion, *Natural Language Semantics* 9, 241-288.
- Forbes, G. 2004. Intensional transitive verbs. *Stanford Encyclopaedia of Philosophy*, <http://plato.stanford.edu/entries/intensional-trans-verbs/>
- Fox, D. 1999. Reconstruction, binding theory, and the interpretation of traces. *Linguistic Inquiry* 30, 157-196.
- Guillot, N. 2007. Reconstruction: the islands' puzzle. M. C. Picchi & A. Pona (eds.), *Proceedings of the XXXII Incontro di Grammatica Generativa*, 107-118. Alessandria, Edizioni dell'Orso.
- Guillot, N. & Malkawi, N. 2006. When resumption determines reconstruction. *Proceedings of the 25th West Coast Conference on Formal Linguistics*, 168-176. Somerville, MA, Cascadilla Press.
- Grosu, A. 2000. Type resolution in relative constructions. Competing restrictive and maximalizing constructions. In H. Bennis, M. Everaert & E. Reuland (eds.), *Interface Strategies*, 127-152. Royal Netherlands Academy of Arts and Sciences

- Grosu, A. & M. Krifka. 2007. *The gifted mathematician that you claim to be: equational intensional 'reconstruction' relatives*. *Linguistics and Philosophy* 30, 445-485.
- Grosu, A. & Landman, F. 1998. Strange relatives of the third kind. *Natural Language Semantics* 6, 125-170.
- Hulsey, S. & U. Sauerland. 2006. Sorting out relative clauses. *Natural Language Semantics* 14, 111-137.
- Kayne, R. S. 2005. *Movement and Silence*. New York-Oxford, Oxford University Press.
- McCloskey, J. 2002. Resumption, successive cyclicity, and the locality of operations. In: Epstein, S. & Seeley, T. D., eds., *Derivation and explanation in the minimalist program*, Oxford, Blackwell, 184-226.
- McCloskey, J. 2006. Resumption. In Martin Everaert and Henk van Riemsdijk (eds.), *The Blackwell Companion to Syntax*, 94-117. Blackwell Publishing.
(<http://ohlone.ucsc.edu/~jim/PDFFiles/syncom.pdf>)
- Prince, E. 1990. Syntax and discourse: a look at resumptive pronouns.
ftp://babel.ling.upenn.edu/papers/faculty/ellen_prince/respro.ps
- Rouveret, A. 2007. Resumption, reconstruction and locality. In: *Foundational Hypotheses*, R. Freidin, C. Otero, M.L. Zubizarreta (eds.). Cambridge, Mass., The MIT Press.
- Rullman, H. & S. Beck. 1998. Presupposition projection and the interpretation of *which*-questions. *Proceedings of SALT VIII*, Ithaca, NY, Cornell University, 215-232.
- Salzmann, M. 2006. PhD dissertation, University of Leiden.
- Sauerland, U. 1998. *The meaning of chains*. PhD Thesis, MIT.
- Sauerland, U. 2004. The interpretation of traces. *Natural Language Semantics* 12, 63-127.
- Schwarzschild, R. Singleton indefinites. *Journal of Semantics* 19, 289-314.
- Sharvit, Y. 1999. Resumptive pronouns in relative clauses. *Natural Language and Linguistic Theory* 17, 587-612.
- Shlonsky, U. 2004. Resumptive pronouns in Hebrew. Seminar held at CISCL, University of Siena, May 15th 2004 (http://www.ciscl.unisi.it/eventi_arc.htm?selectedYear=2004)
- Sportiche, D. 2006. Merging and Moving domains. Seminar held at the University of Siena, October 2006.
- Suñer, M. 1988. The role of Agr(eement) in clitic-doubled constructions. *Natural Language and Linguistic Theory* 6, 391-434.
- Suñer, M. 1998. Resumptive restrictive relatives: a crosslinguistic perspective. *Language* 74, 335-364.

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