DOUBLING AND RESUMPTIVE PRONOUNS IN TYROLEAN WH-EXTRACTION

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SEPTEMBER 2006

1. Introduction

In the Tyrolean dialect of Meran, long wh-extraction is charaterized by the presence of doubling pronouns in intermediate [Spec,CP] positions both in relatives and interrogatives (1a. and b., respectively). Furthermore, we can observe an apparent optionality between the doubling structure and a resumptive pronoun structure limited to relatives in certain contexts (s. 1a. vs. 2; cf. McCloskey 1990, 2002, Rouveret 2002 and Adger&Ramchand 2005 for the discussion of similar structures in the Gaelic languages):

(1)a. I kenn es Haus, **des**$_i$ **wos** du glapsch, **des**$_i$ **wos** die Maria **t**$_i$ gekaaft hot
     I know the house, Relpron$_i$ C-rel you think,   Relpron$_i$ C   the Mary t$_i$ bought has
     'I know the house, which you think Mary bought'

   b. **Wos**   glapsch du, **wen**$_i$ dass die Maria   **t**$_i$ onruafn   werd?
      Scope marker think   you, whom$_i$ that the Mary t$_i$ call   will?
      'Whom do you think Mary will call?'

(2) I kenn es Haus, **des**$_i$ **wos** du glapsch,   **dass** die Maria **'s**$_i$ gekaaft hot
     I know the house, Relpron$_i$ C-rel you think,   C   the Mary it$_i$ bought has
     'I know the house, which you think Mary bought'

Differently from most phenomena discussed in the contributions to this conference, doubling in wh-movement is a real instance of repetition of a semantically superfluous element, hence "doubling" in the true sense of the word. In particular, This type of doubling can not be reinterpreted as a "spare-movement" strategy (cf. the contribution of Poletto), as an instantiation of two items with different function (cf. the contribution of Weiß), or as agreement. The existence of doubling structures in wh-movement thus shows that doubling as the repetition of semantically empty elements does exist as a phenomenon in need of explanation.

    The core of my proposal, cast in the framework of Optimality Theory, (Prince & Smolensky 1993, Legendre et al. 1995, Grimshaw, J. 1997, Legendre, G., P. Smolensky & C. Wilson 1998) is that doubling is triggered by a constraint requiring the base position of the pronoun to be traceable in a local fashion and hence the path of extraction to be visible. This constraint is best understood as a processing-optimizing strategy. When other constraints force a violation of this requirement, the resumptive pronoun strategy is employed, as in (2), where the verb introducing the lower clause selects the complementizer *dass*, which is incompatible with a relative pronoun in [Spec, CP].

An analysis along these lines explains why doubling is found extensively in dialect systems, though much less so in standard languages. Standard languages are, to a large extent, sometimes exclusively, used as written languages, whereas dialects are almost always used orally. Processing a complex sentence is arguably more difficult in oral than in written parsing, hence the predominance of structures facilitating processing in dialect systems.

2. Data

The doubling constructions described in this section can be observed in the dialect of Meran-Merano, Provinz Bozen-provincia di Bolzano, Italy. The Tyrolean dialect of Meran is a Southern Bavarian variety and is currently spoken by approximately 15.000 people in the city of Meran and surrounding areas. Data is based exclusively on my own native judgments with occasional verifications with family members. Basing an analysis on judgements of a single speaker, albeit a linguist, must seem appalling to the coscientious dialectologist, but considering the complexity of the described structures and the reluctance of dialect speakers to be exposed to them I cannot think of any way to extend the pool of informants.

Doubling structures are found under long extraction of wh-pronouns both in embedded relative and interrogative clauses, with different characteristics. I will present each clause type in turn and, in a third section, discuss the extraction of full XPs, which shows some differences with respect to the extraction of simple pronouns.

2.1. Long extraction out of relative clauses

Doubling takes place in relatives under long wh-movement, i.e., whenever a relative pronoun is extracted from a relative clause separated by at least one subordinate clause from the relative head DP, as in example (1a) above, repeated here for convenience:

(3)a. I kenn es Haus, **des$_i$**   **wos** du glapsch, **des$_i$**   **wos** die Maria **t$_i$** gekaaft hot
      I know the house, Relpron$_i$ C-rel you think,   Relpron$_i$ C   the Mary t$_i$ bought has
      'I know the house, which you think Mary bought'

Doubling affects two elements of the structure: in the above example the relative pronoun *des* is repeated in the intermediate [Spec, CP] position embedded under the verb *glapsch* and the relative complementizer *wos* is repeated in the intermediate C position. *Wos* is phonetically identical to the wh-pronoun *wos* 'what', but as a complementizer it is used only in relatives and comparatives (cf. Alber 1994).

In relatives in general, also outside the doubling construction, either *wos* or the relative pronoun, but not both, can optionally be omitted:[1]

(4)   Optionality of extracted pronouns and relative complementizer *wos*
   a. I kenn es Haus,   **wos** du glapsch,   **wos** die Maria **t$_i$** gekaaft hot
      I know the house, Relpron$_i$ C-rel you think,   Relpron$_i$ C   the Mary t$_i$ bought has
      'I know the house, which you think Mary bought'

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[1] Yet another possible structure in relatives is one where the head of the extraction chain is realized by the scope marker *wo*, a scope marker specific to relatives.

b. I kenn es Haus, **des**$_i$ du glapsch, **des**$_i$ die Maria **t**$_i$ gekaaft hot
I know the house, Relpron$_i$ C-rel you think, Relpron$_i$ C the Mary t$_i$ bought has
'I know the house, which you think Mary bought'

c. I kenn es Haus, **des**$_i$ du glapsch, **wos** die Maria **t**$_i$ gekaaft hot
I know the house, Relpron$_i$ C-rel you think, Relpron$_i$ C the Mary t$_i$ bought has
'I know the house, which you think Mary bought'

However, omission of the relative pronoun is somewhat marked when there is a case mismatch between the head of the relative clause and the omitted relative pronoun:

(5) Dr Monn hot ongruafn, ??(den$_i$) wos i t$_i$ in Kino gsechn hon
The man (nom.) has called (Relpron. acc.) C-rel I t$_i$ in-the cinema seen have
'The man called that I saw in the cinema'

I hon in Monn ongruafn, ??(der$_i$) wos t$_i$ ins geschtern psuacht hot
I have the man (acc.) called (Relpron. nom.) C-rel t$_i$ us yesterday visited has
'I have called the man that has visited us yesterday'

When there is a case mismatch, omission is more easily tolerated in contexts where the omitted pronoun is ambiguous in its phonetic form between the case assigned to the head of the relative and the case assigned to the pronoun itself as e.g. in the case of the relative pronoun *des* (neuter, sg., nom./acc.), in the following examples:

(6)a. Es Madl hot ongruafn, (des$_i$) wos i t$_i$ in Kino gsechn hon
The girl (nom.) has called (Relpron. acc.) C-rel I t$_i$ in-the cinema seen have
'The man called that I saw in the cinema'

b. I hon es Madl ongruafn, (des$_i$) wos t$_i$ ins geschtern psuacht hot
I have the man (acc.) called (Relpron. nom.) C-rel t$_i$ us yesterday visited has
'I have called the man that has visited us yesterday'

The possibility of a doubling structure in relative clauses depends on the type of verb selecting the subordinate clause out of which the wh-pronoun is extracted, i.e., it depends on whether the selecting verb belongs to the category of so called bridge verbs or not. In this variety of Tyrolean, as well as in Standard German, bridge verbs such as *glaabn* 'believe, think', *denkn* 'think', *sogn* 'say', *hoffn* 'hope', are characterized by the fact that they can select both for embedded Verb-second clauses as well as for verb final clauses introduced by *dass:*

(7) a. I glaap, er kimp bold
I think, he comes soon
b. I glaap, dass er bold kimp
I think, that he soon comes
'I think that he will come soon'

Non-bridge verbs like *megn* 'want' or *verschtian* 'understand' can select only for a *dass*-clause:

(8) a. *I mechet, er kimp bold
     I want, he comes soon
   b. I mechet, dass er bold kimp
     I want, that he soon comes
     'I want him to come soon'

I interpret the difference between the two verb-types in the following way: bridge-verbs can either select for the complementizer *dass* or for no specific complementizer at all. In the latter case the verb is free to move to C. Non-bridge verbs always select for the complementizer *dass*.

The two selection options of bridge verbs are reflected in the two options that arise under long extraction of relative pronouns across this type of verb. When the subordinate clause out of which the relative pronoun is extracted is introduced by a bridge verb both a doubling structure and a resumptive pronoun structure are possible:[2]

(9)   Extraction across subordinates introduced by a bridge verb:

   a. Doubling strategy and relative C *wos*
I kenn es Haus, **des$_i$** **wos** du glapsch, **des$_i$** **wos** die Maria **t$_i$** gekaaft hot
I know the house, Relpron$_i$ C-rel you think, Relpron$_i$ C the Mary t$_i$ bought has
'I know the house, which you think Mary bought'

   b. Resumptive pronoun strategy in the presence of the complementizer *dass*
I kenn es Haus, **des$_i$** **wos** du glapsch, **dass** die Maria **'s$_i$** gekaaft hot
I know the house, Relpron$_i$ C-rel you think, C the Mary it$_i$ bought has
'I know the house, which you think Mary bought'

If, on the other hand, the subordinate clause is introduced by a non-bridge verb, only the resumptive pronoun strategy can be chosen:

(10)   Extraction across subordinates introduced by a non-bridge verb:

   a. Doubling strategy and relative C *wos*: not possible
*I kenn es Haus, **des$_i$** **wos** du mechesch, **des$_i$** **wos** die Maria **t$_i$** kaaft
I know the house, Relpron$_i$ C-rel you want, C the Mary t$_i$ buys

   b. Resumptive pronoun strategy in the presence of the complementizer *dass*
I kenn es Haus, **des$_i$** **wos** du mechesch, **dass** die Maria **'s$_i$** kaaft
I know the house, Relpron$_i$ C-rel you want, C the Mary it$_i$ buys
'I know the house, which you would want Mary to buy'

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[2] cf. wh-doubling in Irish, where, in general, there is optionality between the doubling structure and the resumptive pronoun structure (McCloskey 1990, 2002, Adger&Ramchand 2005, Rouveret 2003).

The possible strategies of long extraction in relatives can be summarized as follows:

DP, **rel. p.**$_i$*wos* ..... glaapsch, [**rel. p.**$_i$ *wos* ... **t**$_i$ ...]		bridgeV + unselected C
DP, **rel. p.**$_i$ *wos* ..... glaapsch, [*dass* ... **res. p.**$_i$...]		bridgeV + dass
DP, **rel. p.**$_i$ *wos* .... mechesch, [*dass* ... **res. p.**$_i$ ...]		non-bridgeV + dass

Long extraction of relative pronouns under doubling is possible only in the presence of a bridge verb. We can assume that in this case the bridge verb does not select for any particular C, thus "freeing" the CP region for the presence of the doubling pronoun and the relative complementizer *wos*. If, however, the bridge verb selects the complementizer *dass,* the doubling structure is no longer possible and a resumptive pronoun strategy has to be chosen. Non-bridge verbs always select for *dass*, hence doubling is never possible and the resumptive pronoun structure remains the only possible option under long extraction.

2.2 Long extraction out of interrogative clauses

In long extraction out of interrogative clauses doubling is the only possible strategy both with bridge verbs and with non-bridge verbs; the resumptive pronoun structure is excluded in both cases:

(11) Doubling strategy both with bridge verbs and non-bridge verbs:
Wos   glapsch/mechesch du, **wen**$_i$ dass die Maria **t**$_i$ onruaft?
Scope marker think/want   you, whom$_i$ that the Mary   t$_i$ calls?
'Whom do you think Mary called?',
'Whom do you want Mary to call?'

(12) Resumptive pronoun strategy impossible both with bridge verbs and non-bridge verbs:
*Wos/wen$_i$ glapsch/meschesch du,   dass die   Maria **'n**$_i$ onruaft?
Scope marker/whom$_i$ think/want   you, that the   Mary him$_i$ calls?

In (11) above the head of the extraction chain is realized by *wos*, which, in this case, is a scope marker specific to interrogatives, similar to the scope marker *was* used in interrogatives in Standard German. The structure with a scope marker is preferred, though long extraction of the wh-pronoun is marginally possible:

(13) Extraction without scope marker:
?Wen   glapsch/mechesch du, **wen**$_i$ dass die Maria **t**$_i$ onruaft?
Scope marker think/want   you, whom$_i$ that the   Mary t$_i$ calls?
'Whom do you think Mary called?',
'Whom do you want Mary to call?'

We can see that (11) is indeed a case of doubling, if we extract across one more intermediate subordinate:

(14)   Extracton across two subordinates:
Wos glapsch du, **wen**$_i$ dass   der Hons sog, **wen**$_i$ dass die   Maria **t**$_i$ onruafn soll?
Sc.m.think   you, whom$_i$ that   the John says, whom$_i$ that   the   Mary t$_i$ call should?
'Whom do you think John will say that Mary should call?',

In all cases described so far, the complementizer *dass* is optional. The wh-pronoun has to be realized at least once per extraction chain, but is optional otherwise, as illustrated in the examples below. Whenever the wh-pronoun is omitted, the complementizer *dass* has to be present, i.e. either *dass* or the wh-pronoun have to be present in any case in the intermediate CP projection.

(15)   Optionality of the wh-pronoun and *dass:*
Wen$_i$ glapsch du, **t**$_i$ *(dass) der Hons   sog, **t**$_i$ *(dass) die Maria **t**$_i$ onruafn soll?
Whom$_i$. think   you,t$_i$ that   the John   says, t$_i$ that   the Mary t$_i$ call should?

Wos   glapsch du, **wen**$_i$ (dass) der Hons   sog, **t**$_i$ *(dass) die Maria **t**$_i$ onruafn soll?
Sc.m. think   you, whom$_i$ that   the John   says, t$_i$ that   the Mary t$_i$ call should?

Wos   glapsch du, **t**$_i$ *(dass) der Hons   sog, **wen**$_i$ (dass) die Maria **t**$_i$ onruafn soll?
Sc.m. think   you, t$_i$ that   the John   says, whom$_i$ that   the Mary t$_i$ call should?

*Wos glapsch du, **t**$_i$ dass   der Hons   sog, **t**$_i$ dass   die Maria **t**$_i$ onruafn soll?
Sc.m. think   you, t$_i$ that   the John   says, t$_i$ that   the Mary t$_i$ call should?

With respect to the doubling strategy, long extraction out of interrogative clauses can thus be summarized as follows:

Scope marker .... glaapsch, [**wh-interr. dass** ... **t**$_1$ ...]	bridge verb
Scope marker .... mechesch, [**wh-interr. dass** ... **t**$_1$ ...]	non-bridge verb

This means that in interrogatives, modulo optionality of the wh-pronoun, doubling occurs in long extraction irrespective of the type of embedding verb, while the resumptive pronoun structure is excluded in either case.

2.3 Long extraction of full XPs in relatives and interrogatives

An additional pattern of extraction emerges when the element that undergoes long extraction is not a simple pronoun, but a full XP as e.g. a PP or a full DP. The preferred pattern in these cases

is one where only the head of the extraction chain is realized, i.e. neither doubling nor resumptive pronouns occur. This is most striking in the case of relative clauses with an intermediate verb selecting *dass*, a type of sentence where we would expect no movement, but a resumptive pronoun structure (b. and c. below):

(16) Preferred pattern for long extraction of full XPs: no doubling, no resumption
      a. Long extraction of a PP in interrogatives:

Wos glapsch du, **[mit wem]**$_i$ dass der Hons sog,   **t**$_i$ *dass*   die M. **t**$_i$ kemmen soll?
Sc.m. think you, [with int.pron.]$_i$ C the John says,   t$_i$ C   the M. t$_i$ come should?
'With whom do you think that John says that Mary should come?'

      b. Long extraction of a PP in relatives: across bridge verb selecting *dass*

Des isch die Fraindin,   **[mit der]**$_i$ *wos* sie glap,   **t**$_i$ *dass*   die Maria **t**$_i$ spieln tat
This is the friend (femm.) [with rel.pron.]$_i$ C   she thinks,   t$_i$ C   the Mary   t$_i$ play would
'This is the friend with which she thinks that Mary would play'

Des isch es Madl,   **[wegn den]**$_i$ *wos* sie glap,   **t**$_i$ *dass*   die Maria   **t**$_i$ net kimp
This is the girl   [because rel.pron.]$_i$ C she thinks,   t$_i$ C   the Mary   t$_i$ not comes
'This is the girl because of which she thinks that Mary has come'

Des isch der Pua,   **[in Votr von den]**$_i$ *wos* i glaap,   **t**$_i$ *dass*   i   t$_i$ gsechn hon
This is the boy   [the father of rel.pron.]$_i$ C   I think   t$_i$ C   I   t$_i$ seen have
'This is the boy the father of which I think I have seen'

      c. Long extraction of a PP in relatives: across non-bridge verb

Des isch die Fraindin,   **[mit der]**$_i$ *wos* sie mechet,   **t**$_i$ *dass*   die Maria t$_i$ spielt
This is the friend (femm.) [with rel.pron.]$_i$ C   she thinks,   t$_i$ C   the Mary   t$_i$ spielt
'This is the friend with which she wants Mary to play'

Des isch es Madl,   **[wegn den]**$_i$ *wos*   sie mechet,   **t**$_i$ *dass*   die Maria t$_i$ kimp
This is the girl   [because rel.pron.]$_i$ C   she wants,   t$_i$ C   the Mary   t$_i$ comes
'This is the girl because of which she wants Mary to come'

Des isch a Konzert, **[während den]**$_i$ wos i mechet,   **t**$_i$ dass du   t$_i$ gonz   schtill   pisch
This is   a concert [during   rel.pr.]$_i$ C   I want   t$_i$ C   you   t$_i$ totally   quiet   are
'This is a concert during which I want you to be totally quiet'

When the extracted XP is not too heavy, doubling structures are still marginally possible, but they are clearly stylistically marked and lose in acceptability the heavier the extracted element becomes. The following examples are ordered in a hierarchy of increasing clumsiness, with the last example boardering to unacceptability:

(17) Doubling structure in long extraction of full XPs:

Des isch die Fraindin,   **[mit der]**$_i$ *wos* sie glap, **[mit der]**$_i$ *wos*   die Maria **t**$_i$ spieln tat
This is the friend (femm.) [with rel.pron.]$_i$ C she thinks, [with rel.pron.]$_i$ C   the Mary   t$_i$ play would
'This is the friend with which she thinks that Mary would play'

Des isch es Madl,   **[wegn den]**$_i$ *wos* sie glap, **[wegn den]**$_i$ *wos* die Maria   t$_i$ net kimp
This is the girl   [because rel.pron.]$_i$ C she thinks, [because rel.pron.]$_i$ C the Mary   t$_i$ come is

'This is the girl because of which she thinks that Mary has come'

Des isch der Pua,   **[in Votr von den]**$_i$ *wos* i glaap, **[in Votr von den]**$_i$ *wos* i   t$_i$ gsechn hon
This is the boy   [the father of rel.pron.]$_i$ C   I think [the father of rel.pron.]$_i$ C   I   t$_i$ seen have
'This is the boy the father of which I think I have seen'

Resumptive pronoun structures can also be found, but only when the extracted element is a PP containing a preposition which can form a resuming *do*-P phrase:[3]

(18) Long extraction of full XPs: resumptive structures with *do*-P
     a. Long extraction of a PP in relatives: across bridge verb selecting *dass*
Des isch die Fraindin,   **[mit der]**$_i$ *wos* sie glap,   *dass* die Maria   **domit**$_i$ spieln tat
This is the friend (femm.)   [with rel.pron.]$_i$ C she thinks,   C the Mary   do+P$_i$ play would
'This is the friend with which she thinks that Mary would play'

     b. Long extraction of a PP in relatives: across non-bridge verb
Des isch die Fraindin,   **[mit der]**$_i$ *wos* sie mechet,   *dass* die Maria   **domit**$_i$ spielt
This is the friend (femm.)   [with rel.pron.]$_i$ C she wants,   C the Mary   do+P$_i$ spielt
'This is the friend with which she wants Mary to play'

Interestingly, structures with *do*+P are possible in these cases even though the resumed DP is animated. Outside of long extraction *do*+P phrases resume only inanimated DPs:

(19) Resumption with *do*+P:
  a. Die Maria   spielt   mit'n Poll. Die Maria spielt domit.
     The Mary   plays with-the ball. The Maria plays *do*-P
     'Mary plays with the ball. Mary plays with it'

  b. Die Maria spielt mit ihrer Fraindin. *Maria spielt domit
     The Mary plays with her friend. Mary   plays *do*+P
     'Mary plays with her friend. Mary plays with her'

Similar to the doubling structures, in the context of full XP extraction resumptive pronoun structures are stylistically marked, simple extraction without a resumptive pronoun being the preferred pattern.
     The exact distribution of doubling structures and resumptive pronoun structures in the case of long extraction of full XPs is not entirely clear to me. Since all these structures sound marked, judgements become murky. I will therefore consider for the following analysis only the preferred pattern in all these cases, i.e. the pattern where no repetition of the extracted pronoun - be it a double in an intermediate CP or a resumptive pronoun - occurs.

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[3] The set of prepositions which can form *do+P* phrases are the same that form *da+P* phrases in Standard German, i.e. prepositions like *mit, auf, nach, über* etc.

2.4 Summary of extraction patterns

In the following table I have summarized the strategies of long extraction described in the previous sections. The extraction patterns are listed according to the type of extracted pronoun (extraction of a pronoun or of a complex XP; extraction of interrogative pronouns or relative pronouns) and according to the type of C crossed by long extraction. As mentioned before, I assume that bridge verbs subcategorizing for verb second clauses do not select the embedding C while bridge verbs followed by a *dass*-clause and non-bridge verbs do. The extraction strategies consist of a doubling strategy, where either the extracted pronoun or the relative complementizer *wos* are present in the intermediate CP, a resumptive pronoun structure and a structure where neither intermediate doubling nor a resumptive pronoun occur.

(20) Extraction strategies according to type of extracted element and type of C crossed:

type of extracted pronoun	type of C across which extraction occurs	Extraction strategies		
		doubling in intermediate CP	resumptive pronoun structure	no repetition of extracted element
Extraction of a pronoun:				
a. interrogative	not selected	X		
b. interrogative	selected	X		
c. relative	not selected	X		
d. relative	selected		X	
Extraction of a complex XP:				
e. interrogative	not selected			X
f. interrogative XP	selected			X
g. relative XP	not selected			X
h. relative XP	selected			X

When the extracted element is a simple pronoun, the doubling strategy is consistently chosen in interrogative clauses (a. and b.), regardless of the type of intermediate C-position. In relative clauses, the doubling structure is chosen when the intermediate C is not selected (c.), while the resumptive pronoun structure is obligatory when the intermediate C is selected by the verb in the intermediate clause (d.).

When the extracted element is a full XP, the preferred extraction pattern is one where no repetition of the extracted element, i.e. neither doubled pronouns in intermediate C positions nor resumptive pronouns occur (e. to h.).

3 Analysis

The Tyrolean wh-extraction patterns poses several puzzles. First of all, we may wonder about the status of semantically empty elements present in both the doubling structure (i.e. semantically empty doubles of the extracted pronoun in intermediate [Spec, CP] positions) and in the resumptive pronoun structure (the semantically empty doubled pronoun present in the base

position). Why do semantically empty elements seem to occur freely in the doubling structure, at each intermediate CP, while resumptive pronouns appear to be a last resort strategy, available only in certain contexts? In other words, if semantically empty pronouns may occur in a language at all, should they not be free in their distribution? In the following analysis, cast in the framework of Optimality Theory (Prince&Smolensky 1993/2004) I will propose that semantically empty elements in Tyrolean appear only under the pressure of certain constraints. Specifically, doubled pronouns in intermediate CPs are favored by a constraint requiring the base position to be traceable and resumptive pronouns are allowed when extraction becomes impossible.

The second problem that will be discussed is the extraction pattern that emerges when full XPs are extracted. A high ranking constraint against doubling of full XPs will lead to violation of the constraints favoring the doubling structure and the only remaining strategy is then to fall back on extraction without semantically empty elements.

I will start with the assumption that the default strategy for the formation of relatives and interrogatives in Tyrolean is extraction. We can express this fact in terms of constraint interaction, following Grimshaw 1997 Légendre et al. 1995 and Légendre, Smolensky & Wilson 1998 by claiming that a constraint *t against movement is dominated by the constraint DEP (for 'dependency'), militating against semantically empty elements as e.g. resumptive pronouns (for the faithfulness constraint DEP see also McCarthy&Prince 1995). The inverse ranking would be one where resumptive pronoun structures are favored over movement:

(21) *t: no movement
      DEP: every lexical element/morphological feature in the output must have a
            correspondent in the input - no doubling of elements.

(22) DEP >> *t   *traces rather than semantically*
                                                          empty material (e.g. res.pron.)

We can see that movement does indeed occur in Tyrolean wh-extraction because we can observe sensitivity to islands:

(23) No extraction possible out of islands
   a. Adjunct islands: no extraction possible
*Des isch es Haus, **des**ᵢ   **wos** mr froa   sein, nochdem mr **t**ᵢ gekaft   hom
This is   the house Relpronᵢ C   we happy are   after   we tᵢ bought   have

   b. Complex DP-island: no extraction possible
*Des isch es   Haus,
This is   the house
desᵢ   **wos** a Totsoch isch, **des**ᵢ   **wos** die Maria **t**ᵢ gsechn hot
Relpronᵢ C   a fact   is   Relpronᵢ C   the Mary   tᵢ   seen has

*Wosᵢ hot dr Hans gsog, **wen**ᵢ   *dass* a Totsoch isch, **(wen**ᵢ) *dass* die Maria **t**ᵢ gsechn hot
Sc.m. has Hans said,   whomᵢ *that* a fact is,   (whomᵢ) that the Mary tᵢ seen has

A resumptive pronoun structure, on the other hand, can rescue island structures, exactly because no movement occurs in this case.

(24) Island structures rescued by resumptive pronouns:
   a. Adjunct islands: resumptive pronoun structure possible

Des	isch	es	Haus,	**des**$_i$	**wos**	mr	froa	sein,	nochdem	mr	**'s**$_i$	gekaft	hom
This	is	the house	Relpron$_i$	C	we	happy	are	after	we	it$_i$	bought	have

   b. Complex DP-island: resumptive pronoun structure possible

Des	isch	es	Haus,
This	is	the	house

des$_i$	**wos**	a	Totsoch	isch,	**dass**	die	Maria	**'s**$_i$	gsechn	hot
Relpron$_i$	C	a	fact	is	C	the	Mary	it$_i$	seen	has

The constraint DEP is violated in doubling structures, because semantically empty elements are inserted in intermediate [Spec, CP] positions. I propose that violation of DEP is triggered in this case by a constraint which I will call L(ocally) V(isible) D(ependencies:

(25) Locally Visible Dependencies (LVD): the base position of long distance dependencies must be traceable in a local fashion

The LVD is a functional principle requiring that the base position of an extracted pronoun or a resumptive pronoun linked to a wh-element be traceable locally. It can be fulfilled by making visible each intermediate step of the extraction chain. In this sense this approach is reminiscent of McCloskey's (1990) treatment of wh-movement in Irish which he analyses as structures making cyclic movement visible by agreeing intermediate complementizers.
    The LVD can be understood as a hearer-oriented principle assuming that doubling facilitates processing of long-distance dependencies. In hearing a sentence which exhibits long extraction, repetition of the extracted element in intermediate positions allows the hearer to 'find' the base position more easily. It is not surprising thus that doubling structures should more often be found in dialects, rather than standard languages, considering that dialects are typically languages making use only of the oral register and may thus be more sensitive to hearer-oriented processing principles like the LVD. The hierarchy which permits doubling in a system where movement is the default strategy will thus be as follows.

(26) LVD >> DEP >> *t   *semantically empty material only if it facilitates processing*

Assuming that doubling structures emerge under the pressure of a principle such as the LVD makes several predictions. First, it is predicted that the extraction site is never doubled, i.e. that intermediate doubling of pronouns and resumptive pronouns do not cooccur. There is no need to make the extraction site visible, since it is 'close enough' to the first occurrence of the doubled pronoun in the CP of the clause from which it was extracted. As far as I know, in all languages that exhibit doubling in intermediate CP positions (apart from Tyrolean the Gaelic languages) this is indeed the case. Second, if all that matters is that the extraction chain is visible it is not important whether in the intermediate CP the relative pronoun, the relative complementizer or

both are visible. It is only important that the extraction is signaled somehow in intermediate positions. Indeed, as we have seen in the examples in (4) and (5), in relatives either the extracted pronoun or the relative complementizer *wos*, but not necessarily both, have to be present in intermediate CP positions. Third, we predict that doubling will typically occur under A-bar-movement, since only A-bar-movement creates long distances between the extracted element and the base position which has to be recovered.

The resumptive pronoun structure, on the other hand, does occur when extraction is not possible. It is in complementary distribution with the doubling structure since doubling is possible only when there is an extraction chain and as we have seen in (24), no movement can be detected in resumptive pronoun structures. As described in the previous section, resumptive pronoun structures occur in long extraction out of a relative clause when its C position is occupied by the complementizer *dass* selected by the intermediate verb. The crucial cases are repeated here for convenience:

(27)   Resumptive pronoun structure when intermediate C *dass* is selected
    a. Resumptive pronoun strategy with intermediate bridge verb
I   kenn es Haus, **des$_i$**   **wos** du glapsch,   **dass** die Maria **'s$_i$** gekaaft hot
I   know the house, Relpron$_i$ C-rel you think,   C   the Mary it$_i$ bought has
'I know the house, which you think Mary bought'

    b. Resumptive pronoun strategy with intermediate non-bridge verb
I   kenn es Haus, **des$_i$**   **wos** du mechesch,   **dass** die Maria **'s$_i$**   kaaft
I   know the house, Relpron$_i$ C-rel you want,   C   the Mary it$_i$ buys
'I know the house, which you would want Mary to buy'

The reason why extraction in these cases is not possible is that the complementizer *dass* is incompatible with an extracted relative pronoun passing through its [Spec, CP] position. In fact, *dass* is a complementizer introducing declarative and interrogative subordinates (a. and b. below), while the complementizer specialized for relatives (and comparatives, s. Alber 1994) is *wos* (c.):

(28) a. I woas, **dass** er in Hans gsechn hot
         I know, that he the Hans seen   has
         'I know that he has seen Hans'

     b. I woas net, **wen$_i$** **dass** er **t$_i$**   gsechn hot
         I know not whom$_i$ that he t$_i$ seen   has
         'I don't know whom he has seen'

     c. Des isch dr Monn, **den**   **wos** i **t$_i$** gsechn hon
         This is   the man   rel.pron. C   I t$_i$ seen   have
         'This is the man I saw'

The impossibility to extract in these contexts is analysed here by adding to the hierarchy a constraint requiring Spec-Head agreement in the CP projection:

(29)   SPECHEADAGR: the specifier of CP and its head must agree in their features

Assuming that this constraint dominates DEP we can explain why semantically empty elements such as resumptive pronouns are possible. Although movement is the default strategy in Tyrolean, a resumptive pronoun structure is allowed when movement is blocked by a higher ranking constraint, in this case SPECHEADAGR:

(30)   SPECHEADAGR, LVD >> DEP >> *t   *rather semantically empty material*
                                          than lack of Spec/Head agreement

In interrogatives we do not find the resumptive pronoun structure (s. ex. (11) and (12)) because it is not necessary. In fact, as we have just seen in the examples above, an extracted interrogative pronoun is compatible with the complementizer *dass*, and thus Spec-Head agreement is fulfilled even when *dass* is selected by an intermediate verb.
      The interaction of the proposed constraints is illustrated in the following tableaux:

Tableau 1: Long extraction from relatives - bridge Verbs - no C selected

	strategies	SHA	LVD	DEP	*t
☞ (a) DP, rel.pr.$_1$ wos ..... glaap, [rel.pr.$_1$ wos ... t$_1$ ...]	doubling			*	**
(b) DP, rel.pr.$_1$ wos ..... glaap, [... rp$_1$ ...]	res. pronoun		*!	*	
(c) DP, rel.pr.$_1$ wos ..... glaap, [rel.pr.$_1$ wos ... rp$_1$ ...]	res. pr. and doubling			**!	**
(d) DP, rel.pr.$_1$ wos ..... glaap, [t$_i$ ... t$_1$ ...]	extraction, no doubling		*!		**

When long extraction of a relative pronoun occurs across a C which has not been selected, the relative complementizer *wos* can be inserted and Spec-Head-agreement (SHA) will be fulfilled whenever the intermediate [Spec, CP] is filled by a relative pronoun. Among the candidates that fulfill SPECHEADAGR only a. and c. fulfill the LVD, because the intermediate CP position contains a doublet of the extracted pronoun. Note that the definition of the LVD states that long-distance dependencies must be locally traceable, not simply that an intermediate trace has to be spelled out. This means that a resumptive pronoun structure like b. will violate the LVD, since the resumptive pronoun is too far away from the relative pronoun to which it is coindexed. An interpretation of doubling as pure spell-out of intermediate traces can not be the correct solution, since in that case resumptive pronoun structures, avoiding intermediate traces, would always vacuously fulfill whatever constraint is responsible for doubling. They would therefore consistently be chosen over doubling structures since they exhibit also less *t violations. The decision between candidate a. and c. is taken by DEP. Candidate c. is worse than candidate a. because it contains two semantically empty elements, both a doubled and a resumptive pronoun, and hence collects two DEP violations. Note that the violations of *t are counted not in terms of movement chain links, not in terms of number of traces, since doubling structures exhibit movement but only one trace per chain. It is also interesting to note that candidate c. will never win, under any ranking of the proposed constraints, since it is harmonically bounded by

candidate a.[4] Thus, a structure like c. with both doubling and a resumptive pronoun, is universally excluded by the present analysis, a welcome result, it seems.

Tableau 2: Long extraction from relatives - non-bridge Verbs - *dass* selected

non-bridge Verb - *dass* selected		SHA	LVD	DEP	*t
(a) DP, rel.pr.$_1$ wos ..... mechesch, [rel.pr.$_1$ dass ... t$_1$ ...]	doubling	*!		*	**
☞ (b) DP, rel.pr.$_1$ wos ..... mechesch, [dass ...rp$_1$ ...]	res. pron.		*	*	
(c) DP, rel.pr.$_1$ wos ..... mechesch, [rel.pr.$_1$ dass ...rp$_1$ ...]	res. pr. and doubling	*!		**	
(d) DP, rel.pr.$_1$ wos ..... mechesch, [t$_i$ dass ... t$_1$ ...]	extr., no doubling	*!	*		**

Tableau 2 illustrates the case of long extraction of a relative pronoun across a selected complementizer *dass*. The example in the tableau contains a non-bridge verb, but structures with bridge verbs selecting for *dass* of course have the same violation profile. In this case, SPECHEADAGR excludes all cases where an element in the intermediate [Spec, CP], be it a spelled out relative pronoun or its trace, are incompatible with the complementizer *dass* (a., c., d.). The only remaining candidate is one where no movement occurs and a resumptive pronoun is present in the base position (b.).

Tableau 3: Long extraction from interrogatives

	strategies	SHA	LVD	DEP	*t
☞ (a) **Sc.marker** glaapsch/mechesch, [**wh$_i$** dass ... t$_i$ ...]	doubling			*	**
(a) **Sc.marker** glaapsch/mechesch, [dass ... **rp$_i$** ...]	res. pronoun		*!	*	
(a) **Sc.marker** glaapsch/mechesch, [**wh$_i$** dass ... **rp$_i$** ...]	res.pr. and doubling			**!	
(a) **Sc.marker** glaapsch/mechesch, [**t$_i$** dass ... **t$_i$** ...]	extr., no doubling		*!		**

In the case of long extraction out of an interrogative clause it is irrelevant whether the intermediate verb selects the complementizer or not, since *dass* is the complementizer chosen both by a crossing wh-pronoun and by intermediate embedding verbs. This means that SPECHEADAGR will never be violated and the decision between candidates is passed to the lower constraints. As we have seen in Tableau 1, when SPECHEADAGR is inactive, the lower constraints select the doubling structure, the resumptive pronoun structure being possible only when movement is blocked by SPECHEADAGR.

The tableaus illustrate clearly the distribution of semantically empty elements and their distribution. Semantically empty elements like doubles or resumptive pronouns can appear only when the constraint DEP, disfavoring them, is dominated by some higher ranked constraint. Thus doubles appear only under the pressure of the LVD over DEP and resumptive pronouns under the pressure of SPECHEADAGR over DEP.

The last piece of data that I will analyze here is long extraction of full XPs. As discussed in the data section, extraction of full XPs is conditioned by the heaviness of the extracted elements, the preferred pattern being one where neither doubling nor resumptive elements occur. I will tentatively assume that the reason for the absence of doubling and resumptive structures in this case is a constraint against the doubling of heavy XPS:

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[4] A candidate is harmonically bounded if there is another candidate that is (i) at least as good on all constraints, and (ii) better on at least one constraint (s. Samek-Lodovici and Prince 1999).

(31) *DOUBLED HEAVY: do not double heavy elements

It remains unclear to me how heaviness should exactly be measured, whether in terms of syllable length or syntactic complexity and whether a ban against repeated heavy elements can be found elsewhere in grammar, but the fact that heaviness influences the extraction patterns can not be denied.

        I assume that *DOUBLED HEAVY is top-ranked:

(32) *DOUBLED HEAVY >> SPECHEADAGR, LVD >> DEP >> *t   *neither doubling nor resumptive structures when the extracted wh-phrase is heavy*

The effect of *DOUBLED HEAVY is illustrated in the tableau below, for the following sentence:

(33) Extraction of full XP out of relative clause:

Des isch der Pua,	**[in Votr von den]**$_i$	*wos*	i	glaap,	**t**$_i$	*dass*	i	t$_i$	gsechn hon
This is the boy	[the father of rel.pron.]$_i$	C	I think		t$_i$	C	I	t$_i$	seen have

'This is the boy the father of which I think I have seen'

Tableau 4: Long extraction of full XP

	strategies	*DH	SHA	LVD	DEP	*t
(a) DP, [XP]$_1$ wos .... i glaap, [XP]$_1$ wos ... t$_1$ ...]	doubling	*			*	**
(b) DP, [XP]$_1$ wos .... i glaap, dass ... [XP]$_1$ ...]	res. pron.	*		*	*	
(c) DP, [XP]$_1$ wos .... i glaap, [XP]$_1$ wos ... [XP]$_1$ ...]	res. and doubl.	**			**	**
☞ (d) DP, [XP]$_1$ wos .... i glaap, t$_1$ dass ... t$_1$ ...]	extr., no doubl.		*!	*!		**

The winning candidate in this case is d., since it is the only structure where the wh-phrase is not repeated, even though this candidate violates the relatively high-ranked constraints favoring Spec-Head agreement and traceability of the base-position.

4. Summary

In wh-extraction in Tyrolean two main strategies can be observed, according to the type of complementizer introducing the clause containing the base position of the pronoun. We have to distinguish between cases where movement is possible because the complementizers lying between the extraction site and the head of the extraction chain agree with the extracted element and cases where movement is not possible because the intermediate complementizers are not compatible with the extracted pronoun. In the former case we find a doubling structure where either the extracted pronoun or the complementizer, or both, are doubled. In the latter case,a resumptive pronoun structure is found. Wehn the extracted element is a full XP the preferred pattern of extraction is one where neither doubling nor resumptive pronouns occur.

        In the analysis, doubling was attributed to the activity of a constraint requiring the base position of a long distance dependency to be traceable. This constraint is understood as a functional principle favoring processing of complex structures. Resorting to a principle of this type explains why doubling typically occurs in oral varieties like dialects, arguably more sensitive to processing principles. It also explains why only intermediate positions, but not the

base position are doubled, why doubling of either the intermediate pronoun or the intermediate complementizer is enough and why doubling typically occurs in (long-distance) A-bar-movement, but not in A-movement.

The resumptive pronoun structure emerges when movement is not possible, i.e., whenever an intermediate C position would cause a violation of Spec-Head agreement.

The interaction of the constraints involved in generating the doubling structure and the resumptive pronoun structure furthermore predicts that structures which exhibit both doubling and resumptive pronouns are universally excluded.

Finally, it has been shown that wh-extraction is sensitive to the heaviness of the extracted phrase. When the extracted phrase is a full XP the preferred strategy is one where no repetition of the extracted element, i.e. neither doubling nor a resumptive phrase do occur.

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