Transitivity failures in the left periphery and foot-driven movement operations*

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1.   Introduction: cartography and transitivity

Ever since Rizzi's (1997) seminal paper on the CP-domain, the hypothesis that CP should be split up into a series of distinct functional projections has gained considerable popularity in the generative literature (cf. for example the papers in Rizzi 2004b and references cited there). The central idea behind a lot of this work is that the left periphery of the clause can be fitted into a template, i.e. a rigidly ordered series of positions that can each be filled by a limited set of syntactic elements. Following standard practice, I will henceforth refer to this line of theorizing as the cartographic approach. Of crucial importance to cartography is the mathematical notion of transitivity. Translated into linguistic terms this principle states that if a syntactic element α linearly precedes a syntactic element β, and β in turn precedes a third element γ, then α should also linearly precede γ. Although the central role played by this principle is rarely explicitly acknowledged (though see Benincà 2001:42 and Rizzi 2001:291 for notable exceptions), the cartographic literature is rife with arguments based on transitivity. As an illustration of how this works, consider the following quote from Rizzi (2001), who discusses the relative position of the interrogative complementizer *se* 'if', focused XPs and *wh*-phrases:

> "As the position occupied by *se* is higher than the position occupied by Foc (..) and the Foc position is higher than the position occupied by Wh in embedded questions (..), we conclude, by transitivity, that the position of *se* is higher than the position of embedded Wh-elements." (Rizzi 2001:291)

In this paper I discuss a set of data that show that in some cases transitivity breaks down. Specifically, I explore a context where α obligatorily precedes β, β obligatorily precedes γ, and yet γ in turn obligatorily *precedes* (rather than follows) α (cf. Nilsen 2003 for comparable data related to the IP-domain). I take these data to show that cartography in its purest form cannot be upheld, and

that only a more flexible, non-templatic approach to syntax can account for all the observed word orders (cf. in this respect also Zwart 2004).

The paper is organized as follows. In the next section I discuss the data that constitute my central argument. I show that the ordering of complementizers, *wh*-phrases and CLLDed phrases in a number of northern Italian dialects cannot be accounted for by means of a template of linearly ordered left peripheral positions. Section 3 further establishes that point. I discuss and reject a number of possible cartographic analyses of the transitivity paradox. Section 4 considers a more flexible alternative to structure building. I argue that some movement operations are driven by the foot (rather than the head) of the movement chain, and that this assumption offers a way out of the transitivity failure. Section 5 sums up and considers some further research questions raised by the approach adopted here.

2.   The paradox: a transitivity failure in Venetian

Like many northern Italian dialects, the dialect of Venice allows for violations of the doubly filled COMP filter. Specifically, it allows for the complementizer *che* 'that' to co-occur with *wh*-phrases in embedded *wh*-questions. Moreover, the linear order of these two is fixed: the *wh*-phrase obligatorily precedes *che*. This is illustrated in (1)–(2) (all Venetian data are from Cecilia Poletto p.c.).

(1)   WH < CHE
      Me domando **chi   che** Nane ga   visto al   marcà.
      me I.ask   who that Nane has seen at.the market
      'I wonder who Nane saw at the market.' (Venetian)

(2)   CHE ≮ WH
      *Me domando **che chi** Nane ga   visto al   marcà.
       me I.ask   that who Nane has seen at.the market

Apart from the presence of these doubly filled COMP filter violations, the word order in the left periphery in Venetian — again, like that in most northern Italian dialects — is generally very similar to that of standard Italian. For example, the complementizer *che* 'that' obligatorily precedes CLLDed XPs (cf. Rizzi 1997:288 for the corresponding standard Italian data).

(3)   CHE < CLLD
      Me dispiase **che a Marco** i   ghe   gabia   ditto cussi.
      me is.sorry that to Marco they to.him have.SUBJ told so
      'I am sorry that they said so to Marco.' (Venetian)

(4)   CLLD ≮ CHE
      *Me dispiase **a Marco che** i   ghe   gabia   ditto cussi.
      me is.sorry to Marco that they to.him have.SUBJ told so

The data in (1)–(4) combined with the principle of transitivity now raise an interesting prediction. Given that *wh*-phrases must precede *che* and *che* in turn obligatorily precedes CLLD, *wh*-phrases should also precede CLLD. As the data in (5)–(6) illustrate, however, this prediction is not borne out.

(5)   WH ≮ CLLD
      *Me domando **a chi el premio Nobel** che i   ghe   lo podarìa dar.
      me I.ask   to who the prize   Nobel that they to.him it could   give

(6)   WH ≮ CLLD
      *Me domando **a chi** che **el premio Nobel** i   ghe   lo podarìa dar.
      me I.ask   to who that the prize   Nobel they to.him it could   give
      INTENDED: 'I wonder to whom they could give the Nobel Prize.' (Venetian)

The argument is complicated slightly by the fact that Venetian obligatorily violates the doubly filled COMP filter, i.e. every embedded *wh*-question contains an instance of *che*. Irrespective of whether *che* follows (cf. (5)) or precedes (cf. (6)) the CLLDed phrase, however, *wh*-phrases cannot precede CLLD. This means that the prediction raised by transitivity on the basis of the data in (1)–(4) is not borne out. To add insult to injury, the reverse order of these two elements *is* allowed. That is, CLLDed XPs can precede the *wh*-phrase in an embedded *wh*-question. This is illustrated in (7).

(7)   CLLD < WH
      Me domando **el premio Nobel a chi** che i   ghe   lo podarìa dar.
      me I.ask   the prize   Nobel to who that they to.him it could   give
      'I wonder to whom they could give the Nobel Prize.' (Venetian)

It is clear that the data reviewed in this section raise a serious challenge for the cartographic approach to the left periphery. They constitute a case where transitivity predicts the opposite word order from the one that is actually attested. Given that the cartographic approach to word order is crucially based on transitivity, the data presented here call in doubt the very foundations of that approach. In the next section I show that the type of answers usually provided by cartographers in the face of such problematic data are to no avail here.

3. Three unsuccessful accounts

3.1 Multiplying positions

The most straightforward way of dealing with problematic word order data from a cartographic point of view is to multiply the occurrence of a certain position. With respect to the paradox introduced above, it is either the complementizer position or the position of CLLDed phrases that can be multiplied. I discuss each option in turn.

3.1.1 *There is more than one che*

The basic idea behind this analysis is that the *che*'s found in the data in (1)–(7) are not all instances of the same C^0-head. In particular, while the *che* preceding the CLLDed XP in (3) is a high complementizer, the *che* in (1) and (7) lexicalizes a lower head in the extended CP-domain (cf. Poletto 2000:159–160; Benincà 2001:62). This approach can be represented as in (8) (Benincà 2001:54).[1]

(8) $[_{\text{ForceP}}$ *che*$_{(3)}$ $[_{\text{TopP}}$ CLLD Top^0 $[_{\text{FocP}}$ *wh* Foc^0 $[_{\text{FinP}}$ *che*$_{(1)/(7)}$…]]]]

At first sight, this approach receives strong support from the phenomenon known as *che*-recursion (cf. Paoli 2003:102–186), illustrated in (9) (Paoli 2003:157).

(9)   A chërdo **che**, col lìber, **ch'** a l' abia già lesulo
      SCL believe.3P that that book that SCL it have.SUBJ.3s already read.it
      'They believe that s/he has already read that book' (Turinese)

This sentence contains not one, but two instances of *che*. Moreover, while the first one precedes the CLLDed phrase *col lìber* 'that book', the second one follows it. Note that this is precisely the type of sequence that is predicted by the structure in (8). It seems, then, that the assumption that there is more than one *che* can offer a cartographic way out of the transitivity failure presented above.

The problems with this solution, however, are manifold. The first and most conspicuous one is that the structure in (8) vastly overgenerates. Specifically, while it correctly predicts the sequence in (9) to be grammatical, it incorrectly predicts that all the sequences in (10) should receive the same judgment.

(10)   a.   ** *che* wh*
       b.   ** *che* wh *che**
       c.   ** *che* CLLD wh*
       d.   ** *che* CLLD wh *che**

None of these sequences is attested in any of the northern Italian dialects. Needless to say, this fact renders the assumption that the data in (1)–(7) involve more than one type of *che* rather dubious.

A second problem for this approach is that it seems to predict that there should be a correlation between dialects displaying *che*-recursion and those allowing for the sequences in (1) and (3). In both cases, it is the same two C^0-heads that are spelled out (though not always simultaneously). No such correlation exists, however. For example, Venetian (i.e. the dialect used in the previous section to illustrate the transitivity failure) does not allow for *che*-recursion. Similarly, while younger speakers of Turinese and Ligurian do not allow for the lower *che* in *che*-recursion, they do have the sequence in (1) (Paoli 2003:125). The lack of a correlation between *che*-recursion and the word orders discussed in the previous section makes it unlikely that the two are related.

Thirdly, the assumption that the *che* found in (1) is different from the one in (3) opens up the possibility that the two are morphologically distinguished in some dialects. Once again, this turns out to be a false prediction. Specifically, while many northern Italian dialects morphologically distinguish between different types of complementizers (e.g. between declarative and modal complementizers), not a single one of them makes a morphological distinction between the complementizer following a *wh*-phrase as in (1) and the one preceding a CLLDed phrase as in (3). This suggests that we are dealing with one and the same lexical item.

Fourthly and finally, *che*-recursion imposes different restrictions on the morphology of the embedded verb than do doubly filled COMP filter violating contexts. As discussed extensively by Paoli (2003:102–186), the lower *che* in *che*-recursion contexts can only be followed by a verb in the subjunctive mood. If this is the same complementizer as the one that follows the *wh*-phrase in embedded *wh*-questions, then the same should be true there as well. As shown in (11), this is not the case. The mood of the embedded verb in embedded *wh*-questions is determined by the choice of the matrix predicate, and in (11) that matrix predicate requires an indicative.

(11)   Ghe   go   domandà cossa che el fa   stasera.
       to.him I.have asked   what that he does.IND tonight
       'I asked him what he is going to do tonight.' (Venetian)

3.1.2   *There is more than one CLLD-position*
A second way of getting out of the transitivity paradox while still adhering to the general cartographic approach, is by assuming that there is more than one CLLD-position. In particular, while the CLLDed XPs following *che* (as in (3)) spell out a lower topic position, the ones preceding the *wh*-phrase (as in (7)) occupy the highest available topic projection. This approach can be schematically presented as in (12).

(12) $[_{ForceP}$ Force^0 $[_{TopP}$ CLLD$_{(7)}$ Top^0 $[_{FocP}$ *wh che* $[_{TopP}$ CLLD$_{(3)}$ $[_{FinP}$ …

This view on the CP-domain was proposed most notably by Rizzi (1997), who presents examples such as (13) as evidence in favor of multiple CLLD-positions.

(13)   Credo   che domani,   QUESTO, a Gianni, gli   dovremmo dire
         I.believe that tomorrow this   to Gianni to.him we.should say
         'I believe that tomorrow we should say THIS to Gianni.' (Rizzi 1997:295)

In this example the focused DP *questo* 'this' is sandwiched between two CLLD-ed phrases. As such, these data render plausible the idea that there is more than one left-peripheral position for CLLD and hence, that this might be what is behind the transitivity failure of section two.

Once again, however, this solution is fraught with problems. First and foremost, just like the approach sketched in the previous subsection, it overgenerates. Specifically, according to the structure in (13) all the sequences in (14) should be well-formed, contrary to fact.[2]

(14) *wh che CLLD
     *CLLD wh *che* CLLD
     *CLLD *che* CLLD

Secondly, Benincà & Poletto (2004) show in great detail that what Rizzi (1997) identifies as a post-focus CLLD-position is in fact also a focus position (cf. in this respect also Rizzi 1997:299n17). According to B&P the entire topic field precedes the entire focus field (cf. B&P 2004:71).[3] This implies that there is no lower CLLD-position that can come to the rescue in trying to deal with the transitivity failure discussed in this paper.

Thirdly, the approach described here crucially has to assume that the complementizer *che* 'that' is situated no higher than Foc^0 and no lower than the low TopP (cf. (12)). This assumption, however, leads to a new contradiction. As Rizzi (1997) points out, *che* is a typical Force^0-complementizer. One of the crucial data supporting that claim is the fact that it obligatorily precedes focused XPs. Needless to say, this is incompatible with the assumption that *che* is situated no higher than Foc^0.

Summing up, the cartographic approach to the left periphery cannot be extended to account for transitivity failures by multiplying positions, regardless of whether it concerns multiple positions for the complementizer or for the CLLDed phrase. In the next section I consider another cartographic solution.

3.2 Moving the complementizer

A second way of dealing with the transitivity paradox — one which in some ways actually resembles the analysis I will propose in Section 4 — is to assume that the position of certain elements is not fixed. In Poletto's (2000:83–84, 2001:277–279) analysis of *che* 'that', for example, this complementizer starts out in a low C^0-head, and subsequently undergoes head movement inside the CP-domain. Given that the length of the movement may vary, this approach offers a possible way out of the transitivity failures. Consider the representations in (15)–(17).

(15) $[_{ForceP} \text{Force}^0 [_{TopP} \text{Top}^0 [_{FocP} \textit{wh } \text{Foc}^0 [_{FinP} \textit{che} \dots]]]]$

(16) $[_{ForceP} \text{Force}^0 [_{TopP} \text{CLLD Top}^0 [_{FocP} \text{Foc}^0 [_{FinP} \textit{che} \dots]]]]$

(17) $[_{ForceP} \text{Force}^0 [_{TopP} \text{CLLD Top}^0 [_{FocP} \textit{wh } \text{Foc}^0 [_{FinP} \textit{che} \dots]]]]$

In all these structures, *che* starts out as the head of the lowest CP (called FinP here), and it then undergoes head movement operations of varying lengths. In (15) and (17) it moves to Foc^0 and thus ends up to the right of the *wh*-phrase in (15) and the CLLD+*wh*-phrase in (17), while in (16) it moves all the way up to Force^0 and thus comes to precede the CLLD. As such, this approach succeeds in deriving the transitivity failure.

 Just like the cartographic proposals discussed in the previous section, however, the present account overgenerates. Specifically, if *che* can move either to Foc^0 or to Force^0, the following orders are incorrectly predicted to occur.

(18)   **che* wh
    *che CLLD wh
    *CLLD *che*

Related to this is the question of what triggers all these movements. Poletto (2001:277) suggests that the movement of *che* serves to check clause typing features. However, such a proposal would have to be fleshed out in more detail before it can be evaluated fully. Another question that arises is that of possible landing sites for *che*, i.e. can *che* in principle stop in every head inside the CP-domain? The fact that orders such as CLLD < *che* < focus do not occur suggests that it cannot, but a theory of why this is the case is once again lacking.

3.3 Scope sensitivity

The last approach I want to mention here has been relatively successful in dealing with transitivity failures in the IP-domain. It concerns Nilsen's (2003) account of adverb ordering. In a nutshell, the basic idea of this approach is that certain word orders are allowed, forced or disallowed because of the scopal properties of the elements involved. For instance, Nilsen shows that many speaker-oriented sentential adverbs are positive polarity items and that this explains their distribution *vis-à-vis* adverbs that create an NPI-licensing context.

Successful though it may be with respect to adverb ordering, however, it is clear that an account in terms of the scopal properties of the elements involved in the transitivity failure is not going to be of much help here. Specifically, *che* is scopally inert, as are CLLDed XPs (e.g. they do not trigger WCO, they do not create new scope or binding possibilities, and they do not license parasitic gaps), which makes it highly unlikely that their ordering is due to scope.

4.   An alternative approach: foot driven movement

4.1 Introduction: transitivity failures and foot-driven movement

The key to the problem, I want to suggest, lies in the view on movement that the cartographic literature is based on. In particular, given that movement is triggered by the target (or head) of the movement chain, and given that there is a rigid ordering of possible targets (i.e. the specifiers in the cartographic template), this line of reasoning inevitably leads to the conclusion that the landing site of a movement operation is fixed. As I have shown above, however, this type of rigidity leads to transitivity failures.

Now consider an alternative. In particular, consider a movement operation that is triggered by the *foot* of the movement chain. The landing site of such a movement operation is no longer immediately obvious (and possibly not fixed), and it is precisely this kind of flexibility that can offer a way out of the transitivity paradox. In the next section I work this out in more detail.

### 4.2 Platzack's (1996) Repel F and the left periphery in Venetian

Over the years a number of proposals have been made in which movement is triggered by the foot of the movement chain (cf. e.g. Van Riemsdijk 1997, Platzack 1996, Koeneman 2000, Zwart 2004). In this paper I focus on one of them, in particular Platzack (1996).

Platzack argues that next to Attract F, there is also the operation Repel F.[4] Any phrase in a particular structure can in principle be marked [Repel F]. This marking indicates that that phrase is forced to move out of the domain hosting F. As an abstract illustration of how this works, consider the structure in (19).

(19) $[_{YP}$ spec $Y^0_{[+F]}$ $[_{ZP}$ spec $Z^0_{[+F]}$ $[_W$ XP$_{[Repel F]}$ $W^0_{[+F]}$ …

In this representation, XP is marked [Repel F] and the [+F]-marked domain — i.e. the domain in which [+F] is present — is YP. This implies that XP is forced to move out of YP. Note that this movement is triggered by XP itself, i.e. by the source of the movement chain. This means that the landing site of this movement is not fixed. For example, had the [+F]-marked domain been bigger than YP, then XP would have had to move higher in the structure, notwithstanding the fact that the triggering feature of the movement operation had not changed.

How does Repel F offer a way out of the transitivity failure discussed in section two? Assume that CLLDed phrases are marked [Repel Focus], i.e. they have to leave the focus domain of the clause. To use Rizzi's (1997:297) line of reasoning, CLLD creates a topic/comment-structure, whereby the CLLDed phrase is the topic, and the rest of the clause the comment. I will assume, then, that in a normal declarative clause containing CLLD, the relevant [+Focus]-marked domain is the IP. Given that a CLLDed phrase is marked [Repel Focus] it has to leave IP and as a result ends up in between *che* and the rest of the IP, as illustrated schematically in the tree structure in (20) for the example in (3).[5]

(20)

CP

➜ **[+Focus]-marked domain**

che

IP

FP

FP

a Marco
[Repel Foc]

…
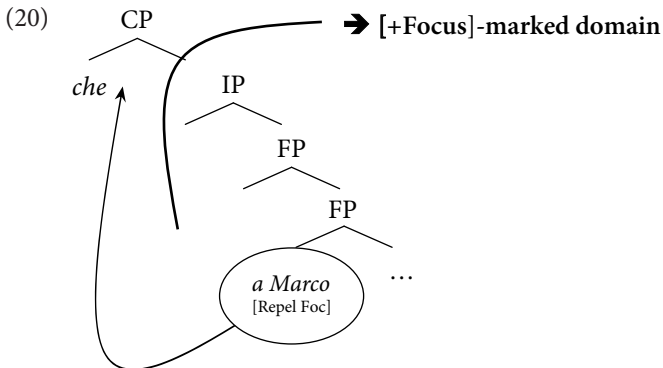
Now consider the case where a *wh*-phrase has moved to specCP. As is well-known, *wh*-phrases are focus-marked items (cf. Lipták 2001 and references cited there). This means that the [+Focus]-marked domain of the clause is 'stretched up' such that it includes CP. This in turn entails that it is insufficient

for a CLLDed phrase to move to the edge of IP (as in (20)), as that would mean that it is still inside the [+Focus]-marked domain. Instead, the CLLDed XP has to move to the edge of CP, to the left of the *wh*-phrase, in order to be licensed. Consider in this respect the partial derivation in (21) of the example in (7).

(21)

➜ **[+Focus]-marked domain**

CP

a chi   C'

che   IP

FP

il premio Nobel
[Repel Foc]   ...
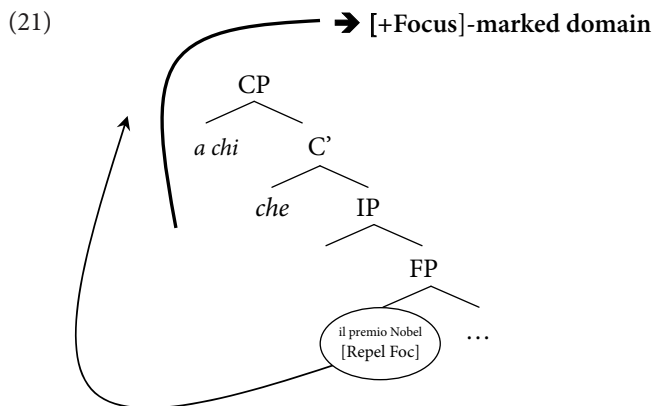
In other words, by making crucial use of the fact that Repel-driven movement has no fixed landing site, the at first sight paradoxical ordering of *wh*-phrases and CLLD *vis-à-vis* the complementizer can be straightforwardly derived. Moreover, a Repel-based analysis of CLLD also eliminates a number of more general problems that a cartographic analysis of the left periphery faces (cf. in this respect also Starke 2001:155–175). For example, one now no longer has to postulate a series of Top^0-heads whose sole function is to create a specifier for the CLLDed phrase to land in, but which do not trigger verb movement and are not morphologically expressed. The same holds for the — morphosyntactically dubious — Top^0-feature that is supposed to trigger this movement.[6] Finally, a Repel-analysis of CLLD also ties in nicely with Rizzi's (2004a:245–246) negative characterization of topics as [−Argumental, −Modifier, −Quantifier].

5.   Conclusions and prospects

The bulk of this paper has been devoted to showing that the cartographic approach to the left periphery of the clause leads to transitivity failures, and that these paradoxes cannot be solved by any of the known cartographic mechanisms. I have also introduced a non-cartographic, more flexible alternative (based on Platzack (1996)), in which some movement operations are triggered by the foot of the movement chain. This resulted in a non-rigid ordering of landing sites, which in turn offered an escape out of the transitivity paradox.

At the same time, the alternative I have introduced raises a host of new research questions. I have listed some of them in (22).

(22) a. Are there other instances of [Repel F] apart from Italian CLLD?
      b. Is [Repel F] a narrow syntactic or a PF operation?[7]
      c. Does [Repel F] operate successive-cyclically or in one fell swoop?
      d. Is there a locality restriction on [Repel F]?[8]

Although considerations of space prevent me from exploring these questions in any detail here, it is worth pointing out that at first glance the question in (22)a can be answered in the affirmative. In particular, there are a number of phenomena that have either explicitly been analyzed in terms of [Repel F] or that seem easily amenable to such an account: scrambling and focus scrambling (Neeleman 1994), object shift (Nilsen 1997) and topicalisation (Platzack 1996).[9] This suggests that the more flexible approach to structure building advocated in this paper may be on the right track.

Notes

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1. In this respect it is worth pointing out that Poletto (2000:159–160) discusses data comparable to those in (3)–(7), but that she does not consider these facts to be problematic. In her view, they show that the declarative and the interrogative complementizer occupy different positions inside the CP-domain.

2. Richard Kayne (p.c.) suggests that the first two sequences in (14) — and hence also the examples in (5)–(6) — might be unwellformed because CLLD induces a blocking/barrier effect for focus movement. This solution is rendered unlikely, however, by the fact that long focus movement is not sensitive to intervening CLLDed XPs (cf. Rizzi 2004a:232).

3. This claim also ties in nicely with the broader typological picture, as in many languages topics seem to be situated closer to the edge of the clause than focused XPs (cf. e.g. Aboh 2006 on Gungbe and Saramaccan and Lipták 2001 on Hungarian).

4. In this paper, I only follow the general idea of Platzack (1996), and not necessarily the way in which this idea is worked out. For example, Platzack argues that the division between Attract F and Repel F accounts for the division between A-movement and A'-movement, and that Repel F cannot create adjunction structures. Neither of these claims is adopted in this paper.

5. Note that I am assuming that the CLLDed PP in (20) is adjoined to IP. This means that adjunction to the highest [+F]-marked projection suffices to escape a [+F]-marked domain. That follows if the definitions in (i) and (ii) are adopted.

(i) REPULSION: A phrase α is repelled from a [+F]-marked domain iff it has undergone movement such that it is no longer dominated by a [+F]-marked projection.

(ii) DOMINATION: A phrase α is dominated by a phrase β iff it is dominated by every segment of β.

6. Note, by contrast, that [Repel Focus] is not a new feature, but that it makes use of one that is already present in the grammar (i.e. Focus). In a way, [Repel Focus] is the opposite of [Focus].

7. For example, the fact that (4) is ungrammatical suggests that a [Repel F]-marked phrase not only has to leave the [+F]-marked domain, it also cannot move any further than it needs to. Clearly, this is reminiscent of Economy or Last Resort properties of more familiar types of (syntactic) movement.

8. The fact that the example in (i) is wellformed suggests that there is such a locality restriction. Specifically, the *wh*-phrase in the higher clause does not stretch up the focus domain of the lower clause. Thanks to Richard Kayne p.c. for raising this issue.

(i) Me domando **chi** che ga dito che **sto libro** Giani lo gaveva za leto
me ask who that has said that this book Gianni it had already read.
'I wonder who said that Gianni had already read this book.' (Venetian)

9. Note that it is not immediately obvious what the value of F is under a [Repel F]-based analysis of these constructions, all the more so because the relevant domain for several of them seems to be a focus domain. This also ties in with a question from one of the reviewers, who points out that different types of topics occupy a different position in the left periphery in Italian. For example, pair list topics always follow other types of topics (Benincà & Poletto 2004). I leave as an open question if this means that the [Repel Focus]-feature as it stands is too broad and should be further refined and split up, or if this follows from more general considerations.

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