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Wh in situ and criterial freezing

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Shlonsky, Ur

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Ur Shlonsky

University of Geneva

1 Criterial freezing and French wh in situ subjects

The more stringent constraints delimiting subject movement as compared with object movement are attributed by Rizzi & Shlonsky (2007) and related work to criterial freezing: The goal of the criterial probe Subj^0, namely, the subject phrase, cannot move beyond its criterial position, i.e., Spec/Subj, to a higher position. For example, the familiar subject-object asymmetry in long movement from an embedded clause – the *that-trace* effect – is effectively reduced, in this approach, to a violation of criterial freezing. The subject in (1a) is frozen in Spec/Subj but in the absence of an object criterion parallel to the subject criterion, object wh movement in (1b) is unperturbed.

(1)   a. *Which boy do you think that saw this movie?
        b. Which movie do you think that this boy saw?

The main goal of this contribution – originally presented in the 2012 Complementizer Agreement workshop organized by Liliane Haegeman in Ghent – is to explore the relevance of the subject criterion for covert movement, in particular that of in situ wh.

The main target language of this study is French, which displays optional wh in situ, as illustrated in (2) and (3).

(2)   In situ wh

        a. Tu as vu qui?
            You have seen who
            'Who did you see?

        b. Tu es parti quand?
            you are left when
            'When did you leave?'

        c. Tu as fait ça comment?
            you have done that how
            'How did you do that?'

(3)   Ex situ wh

        a. Qui tu as vu <qui>?
            who you have seen

        b. Quand tu es parti <quand>?
            when you are left

        c. Comment tu as fait ça <comment>?
            how you have done that

What is the position of wh in (4)? Is the wh subject *qui* 'who' in situ - in the canonical subject position Spec/Subj - or ex situ, namely in the left peripheral domain, in Spec/Foc, as per Rizzi 1997?

(4)   Qui a fait ça?
        who has done that
        'Who did that?'

(4) provides no indication whether *qui* is in situ and not moved to Spec/Foc or whether it is string-vacuously moved to this position. The following paragraphs provide several arguments to the effect that subject wh words are not in situ and can only occur ex situ.[1]

1.1 The *que/quoi* alternation

Consider the *que/quoi* 'what' alternation. *Quoi* appears in situ, thus in (5a), but not ex situ in (5b), while *que* is the moved variant, as in the contrast in (6).

(5)   a. Jean a fait quoi?
            John has done what
            'What has John done?

        b. *Quoi a fait Jean?
            what has done John
            'What has John done?'

(6)   a. *Jean a fait que?
            John has done what
            'What has John done?

        b. Qu'a fait Jean?
            what has done John
            'What has John done?'

In subject position, neither *que* nor *quoi* are possible, (see Plunkett 2000, a.o.).

(7)   a. *Que flotte dans l'eau?
            what floats in the-water
            'What is floating in the water?

        b. *Quoi flotte dans l'eau?
            what floats in the-water
            'What is floating in the water?'

Friedemann (1997) argues that *que* is a clitic and requires a verbal host in C. Movement of T to C (subject clitic inversion) provides *que* with a host in (8). In subject wh questions such as (7a), however, T does not move to C (Rizzi 1996), and *que* is bereft of a host.

(8)   Qu'as-tu vu?
        what have-you seen?
        'What have you seen?'

This leaves us with the ungrammaticality of (7b), with *quoi*. Note, first, that *quoi* is not inherently incompatible with subjects or with nominative Case (pace Goldsmith (1978)). Plunkett (2000:514) cites (9)

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1   To the best of my knowledge, the claim that subject wh in French is not in situ was first defended in Koopman (1983; 1984). Koopman showed that in both Vata and French, *wh* in situ alternates with *wh* movement except in subject position, a fact she attributed to a violation of the Empty category Principle (ECP), induced by the unavailability of proper government from C.

under, as always, a non-echo interpretation. The marginal acceptability of this example, as compared with the ungrammaticality of (10), is quite probably due to the ameliorating effect of a third wh (*où* 'where') in (9), as Kayne (1983) discusses with respect to the examples in (11).

(9)   (?)Qui a dit que quoi traînait où?
       who has said that what lay around where
       'Who said that what was lying around where?'

(10)   *Qui a dit que quoi traînait dans le couloir?
       who has said that what lay round in the corridor
       'Who said that what was lying around in the corridor?'

(11)   a. ?We're trying to find out which man said that which woman was in love with which boy.
                                                                                    3 wh phrases
       b. *We're trying to find out which man said that which woman was in love with him.
                                                                                    2 wh phrases

Whatever the explanation for the 'third wh effect' may be (see Kayne (1983) and, more recently, Pesetsky (2000)), (9) demonstrates that *quoi* is not incompatible with subjects. The descriptive conclusion seems to be that in single-questions interrogatives, wh in situ phrases are impossible in subject position, whence the ungrammaticality of (7b).

1.2 The D-linking particle *ça*

The discourse particle *ça* can attach to bare (not lexically restricted) wh elements, inducing a D-linked interpretation of the wh expression. Cheng & Rooryck (2000) briefly discuss this particle, noting that it is only compatible with wh in situ, as shown by the contrast in (12) (see also Baunaz (2011:30))

(12)   a. T'as vu qui ça?   wh in situ
           you've seen who *ça*

       b. *Qui ça t'as vu?   wh ex situ
           who *ça* you've seen
           'Who did you see?'

Relevant to the status of subject wh is the fact that wh+*ça* is unacceptable in subject position:

(13)   *Qui ça est parti?

If *qui ça* in (13) were in-situ in subject position, it should be grammatical, on a par with (12a). The fact that is ungrammatical indicates that it cannot be in situ.

1.3 Subject object asymmetries in Bantu wh in situ

The French pattern of optional wh in situ for non-subjects and only ex-situ (cleft) for subjects is apparently not uncommon in Niger-Congo (nor in Austronesian: Potsdam (2006), Sabel (2005)). This asymmetry between subjects and non-subjects in Vata (Kru) was discussed by Koopman (1983) and has since been described in detail for many languages, particularly in Bantu. Some arbitrarily-chosen illustrations are the following.

In Northern Sotho non-subjects can be either in situ or appear clause-initially in what is characterized as a "cleft construction" (Zerbian 2006), which we can understand as an instantiation of a relative clause-like structure in which the wh word is external to the clause with which it is associated. These two options are

illustrated with a direct object in (14) (the wh-phrase appears in bold type).[2]

(14) a. Mo-kgalabje   o   nyaka   **ma:ng**?
      CL1-old man   SC1   look.for who

    b. Ké   **mang**   o   mo-kgalabje a   mo
       COP who   RPRN.CL1 CL1-old.man SC1 OC1
       'It is who that the old man is looking for?'

Subject wh interrogatives, however, must exploit the cleft strategy.

(15) a. ***Mang** o   nyaka   ngaka?
      who   SC1   look.for   CL9.doctor
      'Who is looking for the doctor?'

    b. Ké   **mang**   (yo)   a   nyaka-ng   nga:ka?
       cop   who   RPRN.CL1 SC1   look.for-REL   CL9.doctor

Similarly, in Zulu (Nguni: Bantu; Sabel and Zeller (2006)), a non-subject wh can either appear in situ or fronted, in which case it is clefted and prefixed with the auxiliary *y-*.

(16) a. U-bona   **(i)ni**?
      2ndSG-see   what9
      'What do you see?'

    b. **Y-ini**   o-yi-bona-yo?
       COP-what9   RC2ndSG-OC9-see-RS
       'What is it that you see?'

A preverbal subject *wh*-phrase, however, cannot appear in the subject position as (17) shows, for active as well as passivized subjects.

(17) a. ***Ubani** u-banga   lowo   msindo?
      who1a   SP1a-cause   DEM3 noise3
      who is making that noise?'

    b. ***Ubani** u-ya-shay-wa?
      who1a   SP1a-FOC-beat-PASS
      'Who is beaten?'

(18) illustrates that the wh ex-situ variants of both sentences are possible:

(18) a. Ng-**ubani**   o-banga   lowo   msindo?
      COP-who1a RC1a-cause   DEM3 noise3
      'Who is it that is making that noise?'

    b. Ng-**ubani** o-shay-wa-yo?
      COP-who1a RC1a-beat-PASS-Rs
      'Who is it that is beaten?'

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2 The abbreviations used in the glosses are the following:
   CL = noun class; COP = copula; DEM = demonstrative pronoun; EXPL = expletive prefix; PASS =
   passive; RC = relative concord; REL = relative tense; RPRN= relative pronoun; SC = subject concord.

Muriungi also reaches the conclusion that subjects cannot be questioned in situ, on the basis of detailed studies of Kitharaka (Muriungi 2003) and Gichuka (Muriungi, Mutegi & Karuri 2014).[3]

1.4 Wh in situ and clitic placement in European Portuguese

Moving closer to home, consider European Portuguese wh in situ in (19) (Ambar & Veloso 2001; Cheng & Rooryck 2002).

(19) a. O João   comprou que livro
    the João bought   which book

 b. Que livro   comprou O João
    which book   bought   the João
    'Which book did João buy?'

In European Portuguese, wh-movement interacts with clitic placement in the following way: object clitics appear as enclitics on the verb in (affirmative) declarative sentences but as proclitics in other contexts, among them when wh movement applies in the clause, Madeira (1993) a.o, (see e.g., Shlonsky (2004) for a general discussion of this phenomenon).

(20) a. O Pedro   encountrou-a no cinema   [*o encontrou]
    the Pedro   met-her$_{cl}$ in-the cinema
    'Pedro met her at the cinema.'

 b. Onde a encontrou o Pedro?   [*encountrou-a]
    where her$_{cl}$ met   the Pedro
    'Where did Pedro meet her?'

When wh takes the in-situ option, enclisis is manifested, as in declaratives. Madeira (1993) cites (21).

(21) O Pedro encontrou-a   onde?   [*a encontrou]
    the Pedro met-her$_{cl}$ where
    'Where did Pedro meet her?'

What happens to subject wh? Raposo & Uriagereka (2005) provide (22), which shows that subject wh are incompatible with enclisis, just like moved non-subjects. Since the canonical position of subjects in European Portuguese, as in French, is in Spec/Subj, word order considerations cannot determine whether *quem* 'who' in (22) is in situ or ex situ. The fact that proclisis is forced in the sentence strongly suggests that it must be ex situ.

(22) Quem a viu   ontem?   [*viu-a]
    who   her$_{cl}$-saw yesterday
    'Who saw her yesterday?'

1.5 Wh in situ in embedded subject position

Root interrogatives such as (4) give no indication of whether wh is in situ or ex situ. The previous paragraphs presented crosslinguistic evidence to the effect that the in situ option stands in violation of some grammatical principle, at least in some languages. Trapping wh, as it were, under the complementizer in embedded clauses, ensures that it is not in the embedded CP but in the embedded subject position, thus providing a structurally unambiguous environment to test the grammaticality of subject wh in situ.

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3 Potsdam (2006) and Sabel and Zeller (2006) account for the subject-non subject asymmetry in different terms, as a reviewer points out.

The sentences in (24), from Aoun et al. (1987:559), are quite revealing in this context as they illustrate a subject-object asymmetry: Subject *qui* in situ is degraded as compared with object *qui* in situ.

(23) a. *Jean se rappelle [que quoi m'interesse]?
          John remembers that what me-interests
          'John remembers that what interests me?'

      b. Jean se rappelle [que j'aime quoi]?
          John remembers that I like what?
          'What does john remember that I like?'

Obenauer (1994) provides almost identical judgements.[4]

(24) a. Il a dit que Marie devait parler à qui?
          he has said that M. should speak to who?
          'Who did he say that Mary should speak to?'

      b. ??Il a dit que qui devait parler à Marie?
          he said that who should speak to M.
          'Who did he say that should speak to Mary?'

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4   The data is (perhaps unsurprisingly) more complex and requires further study. Thus, F. Berthelot (pers. comm.) senses a D-linking effect with embedded in situ wh subjects. The examples in (i) feature a lexically-restricted embedded wh subject and are judged acceptable.

(i)   a. Tu penses que quel joueur gagnera le match?
          you think that which player will win the match
          'Which player do you think will win the match?'

      b. Tu penses que quel boxeur sera exclu en premier?
          you think that which boxer will be eliminated first
          'Which boxer do you think will be eliminated first?'

(ii) contrasts a lexically-nonrestricted wh subject but one which calls for an answer from a given set of possisble answers with one which doesn't.

(ii)   a. Tu voudrais que qui s'occupe de la partie administrative (Paul ou Laura)?
              you would like that who take care of the part administrative (Paul or Laura)
              'Who would you like to take care of the administrative part (Paul or Laura)

          b. ??Tu voudrais que qui nous invite à diner?
              you would like that who us invite to dinner
              'Who would you like to invite us for dinner?'

Finally, the wh in situ in B's answer in (iii) is ungrammatical since the question in A is accompanied by the presupposition that neither speaker nor hearer have any clue of the possible set of answers.

(iii)   A: Il y a eu une prise d'otages à l'UBS Cornavin.
              There has been a taking of hostages at the UBS Cornavin
              'Hostages were taken at the UBS Cornavin.'

          B: ??Ah bon! Tu penses que qui a fait le coup?
              Ah, really! You think that who made the hit
              'Ah, really! Who do you think made the hit?'

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Obenauer perceives an even sharper subject-object asymmetry with wh in situ in strong islands (op. cit, p. 297). (See Shlonsky (2012) for an analysis that applies Richards' (2000) insights on the distribution of wh in situ in Japanese to Obenauer's treatment of wh in situ in strong islands in terms of LF pied piping of the island.)

(25)   a. Il a construit une machine qui sert à (faire) quoi?
           He has built a machine that serves (to do) what

       b. *?Il a construit une machine que qui va utiliser?
           He has built a machine that who is going to use

The preceding survey demonstrates that the ban on subject wh in situ is a substantive empirical generalization. We now turn to accounting for it.

2 An account of the ban on subject wh in situ

2.1   The weakness of ECP-based accounts

The subject-object asymmetry characteristic of wh in situ in embedded subject position was discovered in English by Aoun et al. (1981) and Kayne (1981). It figured prominently in the 1980s literature on the conditions governing empty categories. English allows (non-echo) wh in situ only in multiple questions.[5] Kayne (1981) proposed that the ungrammaticality of (26a), (as compared with the near-grammaticality of (26b)) should be attributed to a violation of the ECP, which bans traces from ungoverned positions such as the subject position in (27).[6]

(26)   a. *We're trying to find out who said that who was in love with him
       b. ?We're trying to find out who said that she was in love with who.

(27)   *Who$_i$ does he think that t$_i$ is in love with him?

Kayne's proposal was that the ECP holds not only of overt movement, but also of LF representations. The proposal entails that wh in situ undergoes LF movement, leaving behind an ungoverned trace in subject position.

This proposal (or more contemporary incarnations of the ECP as a locality condition on chains, eschewing reference to empty categories as such) provides a principled explanation for the violation incurred by long subject extraction in e.g., (27) and (26a) and hence accounts for the unavailability of subject wh in situ. The proposal, as well as other ECP-based approaches, falls short of accounting for the impossibility of

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5 Chomsky's (1986) proposal that wh in subject position remains in Spec/T - a consequence of the ban against vacuous movement - is belied by much of the data presented in this contribution. See for a critical evaluation of Chomsky's hypothesis with respect to English, see Agbayani (2006), a.o.

6 Kayne's judgements in (26) (adopted also by Chomsky (1981)) are challenged by Lasnik & Saito (1992:116–117), who note a substantial difference between overt wh-movement of an embedded subject an wh in situ. They cite:

   (i)   *Who do you think that left?
   (ii)   ?Who thinks that who left?
   (iii)   ?Who wonders whether who left?

   Hegarty's (1992 §4.6) judgements accord with those of Lasnik & Saito. He argues that English wh in situ in a multiple wh question can be more easily D-linked in embedded clauses than in root clauses and, following Pesetsky (1987), does not undergo LF raising and can be unselectively-bound by a matrix Q. Kayne's examples in (26a), however, contain a lexically-restricted D-linked wh subject. The English data are clearly in need of further study.

root (as opposed to embedded) subject wh in situ. Kayne's (1983) assimilation of the violation incurred by (26a) to that of (27) does not carry over to the pair in (28): Here, overt movement is grammatical but in situ wh (LF raising, under his view) is not, yet LF raising of *qui* in (28b) renders it structurally identical to (28a).

(28)   a. [$_{CP}$ Qui$_i$ [$_{TP}$ t$_i$ flotte dans l'eau]]?

       b. *[$_{TP}$ Qui flotte dans l'eau]?
          who floats in the-water
          'Who is floating in the water?

This shortcoming led Koopman (1983) to adapt Aoun et al's (1981) 'Comp indexing rule' to these cases and encode the difference between (28a) and (28b) in terms of a restriction of this rule to apply prior to LF-movement (at S-structure, in her terms). While this device *expresses* the difference between (28a) and (28b) it does not *explain* it: Neither the specific Comp indexing rule nor the limitation of syntactic operations to intermediate levels of syntactic representation are statable in the theoretical frameworks that are generally assumed nowadays. One is led to seek an alternative explanation.
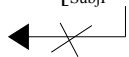
2.2   Criterial Freezing

Rizzi (2006) proposes that the preverbal subject position is a criterial position, that is, a position with a particular scope/discourse property, like the positions of peripheral wh, focus and topic. A nominal moved into that position cannot be further moved; it is subject to Criterial Freezing:

(29) **Criterial Freezing**
     A phrase meeting a *criterion* is frozen and cannot move further.

He follows Cardinaletti (2004) to the effect that preverbal subjects are specifiers of a dedicated head Subj[0], where they satisfy the Subject Criterion. (29) has the consequence of banning further movement from Spec/Subj.

(30)   [$_{SubjP}$ DP [Subj XP]]

Since there is no object criterion similar to the Subject Criterion, the subject-object asymmetry in wh-movement, illustrated in (1a) and (1b), can be expressed in the criterial approach without reference to particular constraints on empty categories.

However, since languages have ways of questioning the subject, the computational system engineers various devices to circumvent the freezing problem. Among the strategies of subject extraction discussed in Rizzi & Shlonsky (2006; 2007) and Shlonsky (2014) are the following: (a) Truncation of the embedded clause down to and including SubjP, (31), which accounts for the *that*/trace effect in (1a) and (27); (b) an expletive use of a Fin[0] with nominal features to satisfy the Subject Criterion – spelled out as *qui* in French – which absolves the subject nominal from movement to Spec/Subj and allows it to extract directly from a lower position, (32).
asymmetry.

(31) **Truncation (non-merge) of sections of the clausal anatomy (here, down to and including the embedded SubjP):**
     Who do you think [$_{CP}$ that//[$_{SubjP}$ [$_{TP}$ <who> talked to Mary]]]?

(32) **An expletive use of FIN to satisfy the Subject Criterion coupled with extraction of the subject from a post-verbal position:**
     Quel garçon crois-tu   [… FIN$_{NOM}$ SUBJ <quel garçon> gagnera ?
     which boy   think-you   qui   will win
     'Which boy do you think is going to win?'

Short wh-movement, in this approach, also exploits the expletive FIN strategy of (32) coupled with extraction of *quel garçon* 'which boy' from a lower position (Fin$_{NOM,}$ namely *qui,* is null in Standard French but is phonetically realized in various spoken varieties.) (4) is represented as (33) (see Rizzi & Shlonsky 2007 for details).

(33) ... [$_{FocP}$ Quel garçon FOC ... [$_{FinP}$ <qui> FIN$_{NOM}$ [$_{SubjP}$ SUBJ a   [$_{vP}$ <quel garçon> fait   ça]]]?
      which boy   has   done that
      'Which boy has done that?'

The criterial approach allows us to express Kayne's insight that the violation in (26b) is of the same nature as in (27). The wh subject in situ is in Spec/Subj and criterial freezing blocks further movement in LF just as it blocks overt movement of a wh subject.

A subject wh in situ can survive in situ if it is not in Spec/Subj. French makes only limited use of expletives, so movement from a lower subject position comes about when the Subj Criterion is satisfied by nominal Fin, as in (33). Zulu differs from French in making use of an overt nominal expletive. Consider Sabel & Zeller's (2006) examples in (34) (wh in situ in bold).

(34) a. *[$_{CP}$ U-cabanga [$_{CP}$ ukuthi [$_{TP}$ **ubani** u-sebenzile   [$_{vP}$___]]]]? Zulu: Sabel and Zeller (2006, ex.
         2ndSG-think   that   who1a   SP1a-worked   (13))

      b. [$_{CP}$ U-cabanga [$_{CP}$ ukuthi [$_{TP}$ ku-sebenze [$_{vP}$ **bani**]]]]?
         2ndSG-think   that   EXPL-worked who1a
         'Who do you think worked?'

European Portuguese wh in situ in embedded clauses cannot appear in a preverbal position, but only post-verbally, in either a VOS or VSO order, as Cheng and Rooryck (2002) show. Presumably, Spec/Subj here is filled with an expletive pro, an option available in null subject languages.

(35) a. *O João pensa que quem viu a Maria?
         the João thinks that who   saw the Maria

      b. O João pensa que viu a Maria   quem?
         the João thinks that saw the Maria who

      c. O João   pensa que viu quem a Maria?
         the João thinks that saw who   the Maria
         'Who does João think saw Maria?'

I have tried to show that the ban on the occurrence of wh in situ in Spec/Subj in the languages discussed in this section can be expressed as a violation of Criterial Freezing. The analysis entails that the wh in situ in these languages must undergo covert movement. In languages in which a wh in situ arguably does occupy Spec/Subj at Spellout, the criterial approach entails that it does not have to undergo covert movement.

2.3 French wh in situ: Phrasal or featural movement?

Among the numerous theoretical and empirical challenges to the idea that covert movement is covert *phrasal* movement of the wh phrase, I would like to consider the following, which has figured prominently, though not uncontroversially, in recent discussions of wh in situ in French.

Mathieu (1999), a.o, argues that the sensitivity of wh in situ arguments (e.g., direct objects,) to weak islands and intervenors resembles the sensitivity to islands and intervention of overtly moved non-arguments. The following paradigms illustrate this observation. In each of the sets in (37)-(39), wh in situ is judged on par with adjunct extraction and not with argument extraction. This is, prima facie, surprising, since the wh in

situ is itself an argument in the three sets.

(36) Tu te demandes comment aider Marie.   Base line
     you wonder how to help Marie
     'You wonder how to help Marie.'

(37) a. *Tu te demandes comment aider qui?   Argument *wh* in situ in a wh island
        you wonder how to help who(m)
        'Who(m) do you wonder how to help?'

     b. ?Qui te demandes-tu comment aider?   Overtly-moved argument out of a
        who(m) you wonder how to help   wh island
        'Who(m) do you wonder how to help?'

     c. *Comment te demandes-tu qui aider?   Overtly-moved adjunct out of a wh
        how 2refl ask-you who help   island
        'How do you wonder who to help?'

(38) a. *Seulement JEAN arrive à faire quoi?   Argument *wh* in situ under a focus
        only JOHN is able to do what
        'What is only John able to do?'

     b. *Comment seulement JEAN arrive à faire cela?   Overtly-moved adjunct over a
        how only JOHN is able to do that   focus
        'How is only John able to do that?'

     c. Qu'est-ce que seulement JEAN arrive à faire?   Overtly-moved argument over a
        What only JOHN is able to do   focus
        'What is only John able to do?'

(39) a. *Tu crois qu'elle (n')a pas rencontré qui?   Argument *wh* in situ under
        you think that she has not met who   negation
        'Who do you think she hasn't met?'

     b. *Comment crois-tu qu'elle (n')a pas réparé la voiture?   Overtly-moved adjunct over
        how think-you that she has not fixed the car   negation
        'How do you think she didn't fix the car?'

     c. Qui crois-tu qu'elle (n')a pas rencontré?   Overtly-moved argument over
        who think-you that she has not met   negation
        'Who do you think she hasn't met?'

   Mathieu's (1999) point, which builds on proposals by Watanabe (1992) and Hagstrom (1998), for other wh in situ languages, is that movement of wh in situ is not phrasal movement but movement of a phonologically-null operator which is base-generated in Spec/DP of the wh phrase in situ. This accounts for the non-argument-like behavior of wh in situ under Rizzi's (1990) characterization, since the moved operator is a sub-constituent of an argument and not an argument itself. Matters are a bit trickier in relation to Rizzi's (2001) characterization of the class of elements which are unaffected by Relativized Minimality, i.e., DPs, because it isn't obvious that the null operator diagnosed by Mathieu is or must be a non-DP.

   Chomsky (1995) argues that if movement targets features rather than categories then only features should move. Category movement is an "imperfection" imposed by (language-specific) conditions of morphological wellformedness.[7] From this perspective, Mathieu's idea can be rephrased as

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7 Or by other conditions, given the fact that category movement is obligatory in French with aggressively

(40)   Wh in situ in French involves wh feature movement.

Consideration of (29) in light of (40) points to a problem, though: Criterial freezing is formulated so as to apply to the movement of phrases, yet wh in situ does seems not to involve phrasal movement but feature movement.

3 Feature movement and Criterial Freezing

As stated, Criterial freezing of a subject correctly blocks further movement of the subject, but it does not block movement of a feature within the subject. In a criterial configuration such as (41), for example, the DP in Spec/Subj satisfies the Subject Criterion and is blocked from further movement by Criterial Freezing, (29). F, however, is a feature within the subject nominal, and is not constrained by (29).

(41)
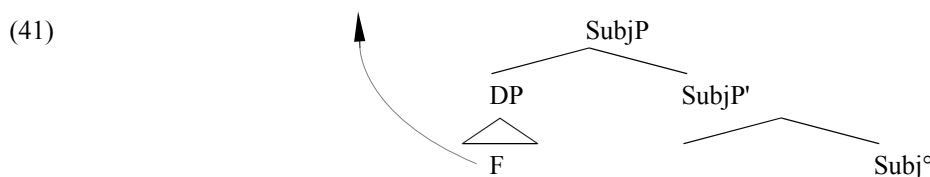
The problem of feature movement from inside a criterially-frozen subject phrase also arises in the case of (Italian) focus movement, which resembles wh movement in many respects. A well-known property of subjects in Italian is that they are compatible with *ne* cliticization (of the nominal restriction of a quantificational DP) when they occur in postverbal position, (42a), but not when they occur in preverbal position, (42b).

(42)   a. Ne sono venuti [cinque <ne>]
            of-them have arrived five
            'Five of them have arrived.'

       b. *[cinque <ne>] ne sono venuti
            five   of them have arrived

The *ne*-cliticization test was used by Rizzi (1982) as a diagnostic criterion to locate the extraction site of wh subjects. The conclusion that he drew from the grammaticality of *ne* cliticization in (43) was that the launching site of wh movement is the postverbal position (as in (42a)) and not the preverbal one (as in (42b)). Note that *ne* is obligatory in (43), which should be interpreted to mean that the subject *must* be extracted from the postverbal position.[8]

(43)   Quante ne sono venuti?
        how many of them have arrived

Bocci (2013:81) extends Rizzi's reasoning to focalization and provides the examples in (44). If the subject could be focalized in situ, then we would not expect *ne* cliticization to be obligatory. The fact that it is shows that focalization of the subject patterns like wh movement of the subject, involving obligatory movement to the left periphery from a postverbal position.

(44)   a. *No, QUATTRO sono arrivate, non dieci!
            'No, FOUR have arrived, not ten!'

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non-D-linked expressions. How to square the apparent optionality of wh-movement in French in other cases with the derivational economy of Chomsky (1995) and related work remains an open issue.

8 An outstanding problem that needs to be addressed is why *ne* cannot be extracted from a postverbal DP prior to raising of the subject from its VP-internal position. Such a derivation would incorrectly yield (42b).

b. No, QUATTRO ne sono arrivate, non dieci!
'No, FOUR of them have arrived, not ten!'

Bocci attributes the ungrammaticality of (44a) to a violation of Criterial Freezing. Note, however, that the formulation of Criterial Freezing in (29) does not, in and of itself, derive the ungrammaticality of this sentence, since leaving the focalized subject phrase in situ and moving only the focus feature within it should remain a valid option. Note that objects in Italian may be focalized either by movement to the left periphery or in situ, as in (45).[9] The fact that subjects cannot exploit the in situ option suggests that criterial freezing is at work, but the suggestion can become an explanation only if the principle of criterial freezing is sharpened so that it blocks movement of a wh or a focus *feature* from inside a phrase in a criterial position.

(45) a. No, sto leggendo il GIORNALE, non il libro!
          no, am reading the paper, not the book
          'No, I am reading the PAPER, not the book!'

      b. No, il GIORNALE sto leggendo, non il libro!
          No. the paper am reading, not the book
          'No, (it's) the paper I am reading, not the book!'

One possible sharpening consists of banning all sub-extraction from a phrase in a criterial position. This, however, is too strong, as noted by Rizzi (2007), referring to observations due to Lasnik & Saito (1992). Rizzi cites (46), which exemplifies a focalized phrase moved out of a wh constituent in a criterial position.

(46) DI GIANNI non sapevo quale libro avessi scelto, (non di Piero)
      'BY GIANNI I didn't know which book you had selected, (not by Piero)'

The same point can be illustrated by wh extraction from inside a subject, although for reasons unclear, the status of such subextraction is quite variable across speakers, languages and within these, among verb classes, a topic which has sparked lively research in recent years, see e.g. Polinsky et al. (2013) and references cited therein. Starke (2001:36–37) cites the pair in (47), noting that extraction from the subject phrase in (47b) is only very slightly degraded and, for some speakers, not at all, as compared with extraction from the object phrase in (47a).

(47) a. [De quel film]$_i$ est-ce que tu as raté [la première partie t$_i$]?
          of which film did you miss the first part of?

      b. [De quel film]$_i$ est-ce que tu crois que [la première partie t$_i$] va créer un scandale?
          of which film do you think that the first part will cause a scandal

Whatever the degree of degradation of extraction from subjects as opposed to extraction from objects, it seems to fall beyond the purview of Criterial Freezing, which actually predicts no difference between (47a) and (47b) and similar pairs in other languages.

From the perspective of criterial freezing, there is an important difference between licit cases of sub-extraction such as (46) and the cases of illicit feature sub-extraction discussed above. In the former, the subextracted element is an independent constituent within the subject phrase, whereas in the latter, it is a feature on the criterial subject phrase itself.

In order to rule out wh/focus feature movement from a phrase in a Spec/Subj – the unacceptability of which is more robustly attested cross-linguistically, notes 4 and 6 notwithstanding- we need a device that

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9 Italian lacks wh in situ and, conversely, French lacks Italian-like focus fronting. Thus, the parallel between wh in situ and focus in situ only comes to light by putting together patterns from the two languages.

ensures that the wh/focus feature is somehow bundled together with the criterial Subj feature so that criterial freezing of the latter prevents further movement of the former.

One way of achieving this is by having the wh/foc feature represented on the phrasal node. This can be implemented in the following way. Rizzi (2015a; 2015b) argues that Criterial Freezing can be derived from Chomsky's labeling algorithm – stated on Bare Phrase Structure representations - on the assumptions:

(48)   a.   that only labeled maximal objects can be moved, and
       b.   that in a criterial configuration, the criterial goal ceases to be maximal.

Under this view, only the highest occurrence of X (which corresponds to the phrasal category XP in traditional X-bar notation) is maximal and hence moveable, but not its subparts. In particular, neither the criterial goal nor the phrase it is merged with can be further moved. Thus, for example, SubjP can move, as it is maximal, but not its specifier. The criterial freezing of the subject (and that of wh phrases, focus phrases, etc.) is effectively derived from this implementation of the labeling algorithm.

(49)
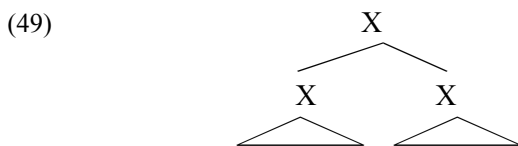
In sentences such as (46), only the highest occurrence of Q is maximal. The focalized PP *di Gianni* 'of Gianni' – labeled P in (50) - while internal to the phrase labeled Q, is also maximal, so it does not violate (48a) - the maximality constraint on movement.

(50)
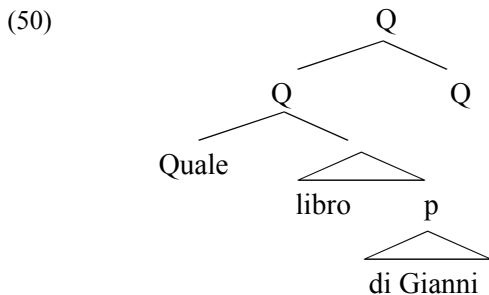
To derive the prohibition of wh feature movement from criterial freezing, let us assume that all criterial features of a maximal syntactic object are represented on the highest node. Expressed in terms of categorial features (which criterial features such as wh, Focus, Top must be, under the labeling approach), this assumption can be expressed as (51).[10]

(51)   All categorial features of a syntactic object must be maximal.

By (51), a wh in situ in Spec/Subj would have the following representation, prior to labeling of α (technically, Subj here is a feature).

(52)
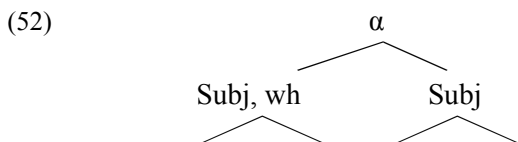
The shared feature of α's two daughter labels provides α with a label, namely Subj.

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10 The status of 'subj' as a categorial feature is, of course, questionable. I retain this label for the sake of consistency but it could very well be the case that the relevant feature is 'phi' or 'D'.

(53)

```
                    Subj
                  /      \
            Subj, wh      Subj
            /____\        /____\
```
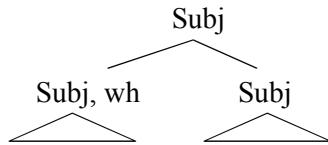
In (53), the criterial goal is not maximal as it is not the maximal node with the label Subj. Hence, it is frozen. The wh feature, which is part of its label, is correctly frozen as well.

4 Conclusion

Many languages with optional wh in situ observe a subject-non subject asymmetry whereby wh in situ is only possible in non-subject position. This asymmetry seems to also characterize multiple wh constructions in English. Adopting the view that wh in situ involves featural as opposed to phrasal movement, this paper has attempted to reduce the subject-non subject asymmetry to the workings of the Criterial Freezing constraint implemented in such a way so as to freeze features included within a criterially-frozen subject.

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