Weak wh-elements and the prosody of Italian wh-questions

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0.   Introduction

In their seminal work on wh-doubling in northern Italian dialects, Poletto & Pollock (2009) identify a new type of wh-elements, that is, 'weak' wh-forms. In particular, the Lombard dialect of Mendrisio (spoken in Switzerland) displays a tripartite distinction among wh-elements: in addition to clitic and strong wh-pronouns, which are also found in several other northern Italian dialects (see Poletto & Pollock 2004a,b, Munaro & Pollock 2005), Mendrisiotto also has weak wh-words. Indeed, in this dialect the two wh-forms *cusa* 'what' and *cuma* 'how' exhibit properties that are typical of weak elements, in the sense of Cardinaletti & Starke (1999).

In this paper, we propose that the distinction between strong and weak wh-elements is relevant not only to analyse the doubling configurations of northern Italian dialects, where the two types of wh-items are morphologically distinct, but also to understand the prosodic properties of wh-questions in a language like Italian, where the two forms are homophonous.

On the basis of experimental evidence, Bocci, Bianchi & Cruschina (2021) show that in Italian, the placement of main prosodic prominence – i.e. the *nuclear pitch accent* (NPA) and sentential stress – is sensitive to the derivational history of the wh-element and is a reflex of the cyclic nature of the syntactic derivation. In this paper, we follow Marotta's (2001) insight into the morphosyntactic distinction between strong and weak wh-elements, and propose that, in addition to the syntactic derivation, the placement of NPA is sensitive to the nature and internal structure of the wh-element itself, that is, whether it is a weak or a strong element. These two dimensions are able to account for the peculiar and distinct prosodic patterns that characterize the different types of wh-questions in Italian reported in Bocci, Cruschina & Rizzi (2021).

1.   Weak wh-elements in the dialect of Mendrisio

As shown by Poletto & Pollock (2009), the dialect of Mendrisio displays a wide range of wh-elements that can be classified into clitic, weak, and strong forms (in the sense of Cardinaletti & Starke 1999). These elements are listed in Table 1.

Table 1: Wh-elements in the dialect of Mendrisio (Poletto & Pollock 2009: §2)

strong	*quand* 'when', *cusè* 'what', *induè* 'where', *cumè* 'how'
clitic	*sa/se* 'what', *ma/me* 'how'[1]
weak	*cusa* 'what', *cuma* 'how'

Strong wh-elements can be found in situ when they are doubled by the corresponding clitic forms, as shown in (1), but also when they have a special emphatic interpretation, as illustrated in the examples in (2). Building on the work by Obenauer (2004, 2006), Poletto & Pollock (2009: 203) describe this special interpretation as 'Surprise-Disapproval' (S/D) or 'can't find the value'.

(1)   a.   Sa/se ta fet (cumè)?

            what you do how

            'How do you do it?'

    b.   Sa ta mangiat (cusè)?

            what you eat what

            'What are you eating?'

    c.   Me ta l è cüsinaa (cumè)?

            how you it have cooked how

            'How do you cook it?'

(2)   a.   T'è metüü i ciaf induè? (S/D or 'can't find the value' question)

            you have put the keys where

            'Where the hell did you put the keys?'

    b.   T'è fai cusè? (S/D or 'can't find the value' question)

            you have done what

            'What on earth have you done?'

The clitic forms *sa/se* and *ma/me* can occur neither at the right edge of the sentence, i.e. in situ (3a), nor in isolation (3b); moreover, they cannot be preceded by a preposition (3c):

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[1] Poletto & Pollock (2009: 203) clarifies that "*sa/ma* are mere phonological variants of *se/me*".

(3) a. *Ta mangiat sa?

         you eat what

     b. *Sa? Se?

         what

     c. *Da se? *Da sa?

         from what

In the absence of a clitic-doubling configuration, the strong forms can also surface in the left-periphery of the sentence, as shown in (4):

(4) a. Quand ta vet a Milan?

         when you go to Milan

         'When are you going to Milan?'

     b. Cusè ta mangiat?

         what you eat

         'What are you eating?'

     c. Da cusè ii parlàa?

         of what have-you talked

         'What are you talking about?'

     d. Cumè el va a scöla?

         how he goes at school

         'Is he a good student?'

     e. Induè tal metat?

         where you-it put

         'Where are you going to put it?'

Mendrisiotto shares the phenomenon of wh-clitic doubling, and hence the availability of wh-clitic forms, with other northern Italian dialects such as Illasi, in the province of Verona, and Monno, in the province of Brescia (see Poletto & Pollock 2009 and references therein). An interesting property of Mendrisiotto, however, is the presence of the two wh-forms *cusa* 'what' and *cuma* 'how', which Poletto & Pollock (2009) analyse as weak wh-elements.[2] As we can see in Table 1, these weak wh-elements contrast with the strong forms *cusè* and *cumè*, and with

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[2] See, however, Manzini & Savoia (2011) for a different analysis.

the clitic forms *sa/se* and *ma/me*, respectively. Following Cardinaletti & Starke (1999), Poletto & Pollock show that these forms exhibit typical properties of weak elements. First of all, they appear in a fixed position of the clause – at the left periphery of the sentence – and must be adjacent to the finite verb or to the pronominal clitics attached to it (5a,b). They cannot occur sentence-internally (cf. 5c), a position that is typically designated for strong wh-elements, and they cannot feature in a special construction in which the wh-element is immediately followed by the complementizer (the so-called *wh-che* construction).[3] Finally, just as clitic pronouns, they cannot bear focal prominence and cannot appear in isolation (cf. (3) above).

(5)   a.   Cusa ta mangiat par solit?

                what you eat for usual

                'What do you usually eat?'

        b.   Cuma ta l'è cüsinaa?

                how you it have cooked

                'How did you cook it?'

        c.   *Ta mangiat cusa?

                you eat what?

As acknowledged by Poletto & Pollock (2009: fn. 12), the other tests that Cardinaletti & Starke (1999) use to identify weak pronouns cannot be applied to Mendrisiotto weak wh-elements for independent reasons: in direct questions coordination would give rise to semantically ill-formed structures, while modification would produce complex wh-phrases, rather than bare wh-words.

The Mendrisiotto weak wh-items can enter a doubling configuration with a strong wh-form, as in shown in (6), which according to Poletto & Pollock (2009) results from the merging of a complex DP comprising the two forms [weak wh-element, strong wh-phrase] in an argument position. This is different from the doubling configuration of other dialects (e.g. Illasi, Monno), where the first element of the complex DP involved in the wh-doubling is a clitic wh-

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[3] The following wh-questions, featuring initial strong wh-elements, are examples of *wh-che* construction (Poletto & Pollock 2009: 206):
(i)   a.   Chi (che) vegn stassira?
                who that comes tonight
                'Who is coming tonight?'
        b.   Cusè (che) ta mangiat?
                what that you eat
                'What are you eating?'
        c.   Cumè (che) al sa cumpurta a scöla?
                how that he him behaves at school
                'How does he behave at school?'

element (i.e. [clitic wh-, strong wh-phrase]).

(6)   a.   Cusa t'è fai cusè?

             what you have done what

             'What have you done?'

       b.   Cuma ta l'è cüsinaa cumè?

             how you it have cooked how

             'How did you cook it?'

On the basis of the structures and derivations suggested for Mendrisiotto, Poletto & Pollock (2009) draw novel conclusions about the syntax of wh-questions in northern Italian dialects and in French, proposing a new analysis of different types of wh-questions in these languages. In this paper we exploit the category of weak wh-elements for different purposes, namely, to account for the prosodic patterns of the different types of wh-questions in Italian, expanding the typology proposed by Marotta (2001). An apparent difference between Mendrisiotto and Italian is that in the former the weak and strong wh-forms are morphologically distinct, while in the latter the two forms are homophonous. Even if more subtle, however, compelling evidence from the realm of prosody exists in support of such a distinction. In the following section this evidence is reviewed and discussed.

2.   Prosodic evidence: Bare wh-elements

In Italian wh-questions with a bare wh-phrase, main prosodic prominence (at the intonational and the metrical level) is typically assigned to the lexical verb (Calabrese 1982, Ladd 1996, Marotta 2001, Bocci, Bianchi & Cruschina 2021). Calabrese (1982) is the first scholar to observe this prosodic pattern, accounting for it as the consequence of a phonological constraint operating in Italian wh-questions, which requires the wh-phrase and the lexical verb to form a single intonational phrase. The rightmost element within this intonational phrase is then assigned the *nuclear pitch accent* (NPA), that is, the most prominent pitch accent in the structure.[4]

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[4] The previous studies cited in this paper makes reference to the notion of prominence defined either at the metrical level (i.e. main/sentential stress) or at the intonational one (e.g. NPA), or at both levels (main prosodic prominence). In this paper, we directly discuss intonational evidence and for this reason, we focus the empirical discussion on distribution of the NPA, i.e. the most prominent pitch accent within an intonational phrase constituent. At any rate, we believe that the same observations can be applied to the metrical side too, that its, to main/sentential stress, as shown in detail in Bocci, Bianchi & Cruschina (2021).

From a crosslinguistic perspective, this prosodic pattern is rather exceptional. Ladd (1996) identifies two possible positions for the NPA (the sentence stress, in his words) in wh-questions. In languages like English, the wh-word does not normally bear the NPA, which is instead assigned by default to the stressed syllable of the last constituent of the sentence – similarly to what happens in declarative clauses. There are, however, languages in which the wh-word is indeed the most prominent in the unmarked sentence stress pattern (e.g. Hungarian, Greek, Romanian). In Italian, by contrast, the NPA is not assigned to the rightmost constituent, which is the default position in Italian (as observed in broad focus declaratives or neutral polar questions), nor is it assigned to the wh-element. It rather falls on to the lexical verb, which is nevertheless not associated with a focal interpretation from a semantic viewpoint (7).

      H*   H+L* LL%

(7)   Dove l'   hai com**pra**to?
           where it   has bought
           'Where did you buy it?'
           (Ladd 1996: 227)

These observations are experimentally confirmed by Marotta (2001, 2002) on the basis of spontaneous and read speech produced by speakers of Tuscan Italian. The exceptional pattern is particularly evident in an example like (8), where the verb is not the rightmost element of the clause:

(8)   Chi **can**ta una   canzone?
           who sings a   song
           'Who is singing a song?'
           (Marotta 2001: Fig. 5)

Marotta proposes an explanation that relies on the morpho-phonological status of the wh-phrase: she argues that Italian bare wh-words are weak or clitic in the sense of Cardinaletti & Starke (1999) and, thus, cannot bear the NPA. As a consequence, the NPA is realized on to the closest non-weak element, namely, the adjacent lexical verb.

While we follow the core insight behind Marotta's proposal concerning the existence of strong and weak wh-elements in Italian, an analysis exclusively based on this contrast cannot immediately capture a crucial observation by Calabrese (1982): prominence distribution in wh-

questions may keep track of the syntactic derivation of bare wh-elements. Testing Calabrese's observation, Bocci, Bianchi & Cruschina (2021) show that when a bare wh-phrase is extracted from an embedded clause, the NPA strongly tends to be realized on the lexical verb of the embedded clause, as shown in (9):

(9) Chi   pensi   [che dovrei   presen**ta**re   <chi> al   direttore]?
     who think.2SG that should.1SG introduce.INF   who   to-the   director
     'Who do you think I should introduce to the director?'

If the exceptional prominence distribution observed in wh-questions were only due to the weak morphophonological nature of the bare wh-element, which fails to bear the NPA and thus triggers a shift of the NPA to the adjacent verb, main prominence in (9) should invariably surface on the matrix verb *pensi* 'think.2SG'. The NPA would not be expected to be assigned on the lexical verb of the embedded clause, as in fact happens in (9).

Bocci, Bianchi & Cruschina (2021) argue that the NPA assignment is sensitive to the derivational history of the wh-phrase and, more specifically, that it is invariably associated with a syntactic [focus] feature. The wh-phrase bears [wh] and [focus], and it agrees for these features with every phase head along the movement chain. At the syntax-prosody interface, the NPA is assigned to the rightmost phonologically realized phase head endowed with the [focus] feature. The NPA is thus assigned to the phase head (most typically, the lexical verb) adjacent to the intermediate position at the edge of vP through which the wh-phrase moves. In (9), an instance of [focus] on the v° head of the embedded vP can attract the NPA. Phenomena of wh-agreement are well known in the literature, from languages like Chamorro (Chung 1998) and Welsh (Willis 2000). In this sense, Italian wh-questions mirror at the prosodic level what in other languages is expressed morpho(phono)logically.

Building on our previous work and on the experimental results presented in Bocci, Cruschina & Rizzi (2021), in this paper we want to extend the analysis just sketched to account for the prosodic properties of other wh-element types. We follow Poletto & Pollock's (2009) distinction between weak and strong wh-forms, and we draw on Marotta's hypothesis that Italian bare wh-words are weak or clitic (in the sense of Cardinaletti & Starke 1999) to argue that the phenomenon of wh-agreement described in Bocci, Bianchi & Cruschina (2021) is sensitive to the internal structure and featural makeup of Italian bare wh-elements. We propose that all wh-elements in direct questions optionally agree for the [focus] feature with the head at the phase edge, but weak wh-forms must agree with a phase head at least once for the derivation

to converge at the syntax-prosody interface. This requirement is the consequence of a PF filter that bans weak elements from bearing the NPA (cf. § 3.1. below).

This analysis makes the correct predictions with respect to the distribution of the NPA in Italian direct wh-questions, but at the same time raises a number of questions. Are Italian bare wh-elements all and always weak? Which wh-phrases are strong? We address these predictions and questions in the next sections.

*2.1.   NPA distribution with short- and long-distance movement*

Bocci, Bianchi & Cruschina (2021) investigate the placement of the NPA in Italian biclausal wh-questions with bare wh-elements through the results of a dedicated production experiment. Ten native speakers of Tuscan Italian had to read 24 stimuli (12 items under two conditions), alternating unambiguous short-distance wh-movement (10a) and unambiguous long-distance wh-movement (10b), together with 24 fillers, which were presented in a pseudo-randomized order:

(10)   a.   Chi   pensa che   ti   dovrei   presentare   al   direttore?
               who   thinks that   you   should.1SG   introduce   to-the   director
               'Who thinks that I should introduce you to the director?'   (*short distance*)

         b.   Chi   pensi   che   dovrei   presentare   al   direttore?
               who   think.2SG   that   should.1SG   introduce   to-the   director
               'Who do you think that I should introduce to the director?' (*long distance*)

The results, summarized in Figure 1, show that in biclausal wh-questions consisting of a matrix and an embedded clause, the NPA is systematically assigned to the lexical verb, either to the main lexical verb or to the embedded lexical verb. In both conditions, that is, both with short- and long-distance movement, the NPA on the wh-element is very marginal (2.1% and 1.2%, respectively). Furthermore, irrespective of the extraction site of the wh-element, the NPA is never assigned to the rightmost element of the sentence (0%), which is the default position for NPA assignment in Italian declaratives. The comparison between the short-distance and long-distance condition reveals that in the case of short-distance movement (10a) – when the wh-element is extracted from the matrix clause – the NPA is almost always assigned to the lexical verb of the matrix clause (96.58%) and, crucially, is virtually never associated with the embedded lexical verb (only 1.71%). By contrast, with long-distance movement (10b), the NPA is significantly more likely to be associated with the lexical verb of the embedded clause

(61.07%), rather than the matrix lexical verb (37.30%).
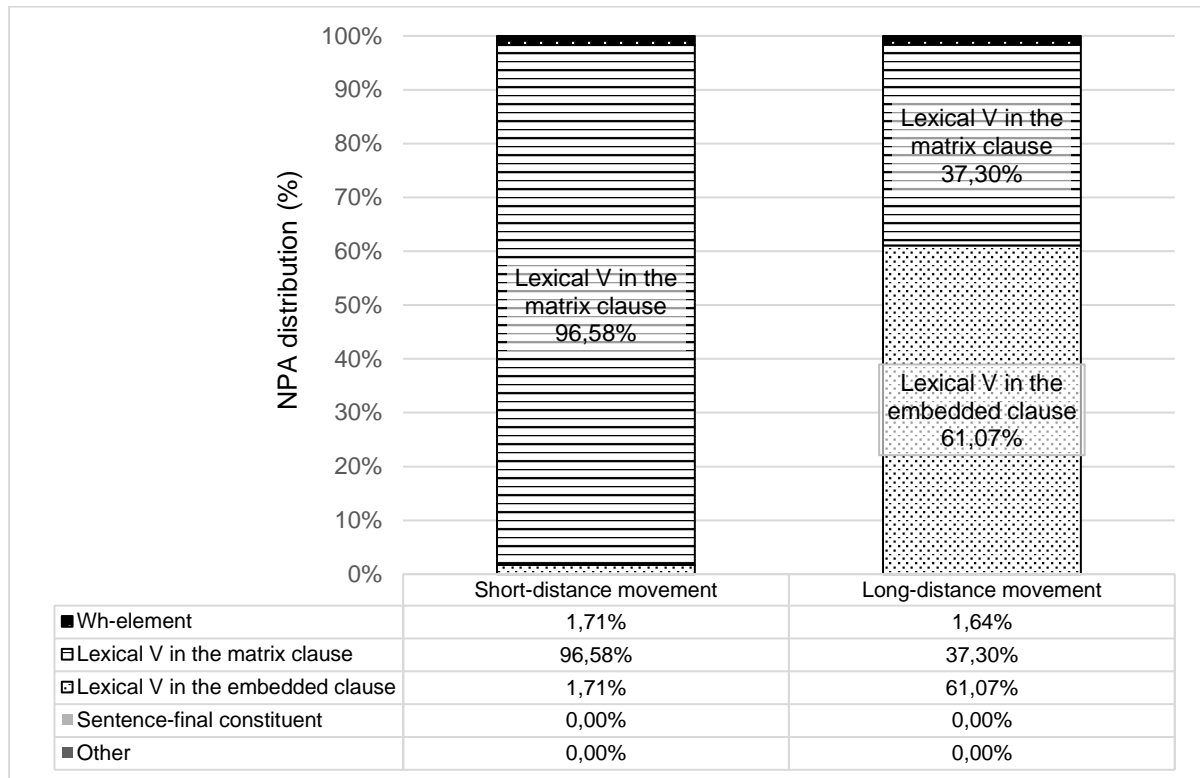
Figure 1: Distribution of NPA across type of wh-movement (short- *vs* long-distance movement). From Bocci, Bianchi & Cruschina (2021: 420).

On the basis of these experimental findings, Bocci, Bianchi & Cruschina (2021) claim that NPA association does not result from a phonological process that shifts prominence from the head of the wh-chain to the following verb, as proposed by Marotta, nor from a prosodic phrasing algorithm, as proposed by Calabrese. They rather propose an analysis in which the syntactic computation plays a central role: the distribution of the NPA in Italian wh-questions is a reflex of successive cycle movement forced by the Phase Impenetrability Condition (Chomsky 2008), according to which the wh-phrase must pass through the edge of every vP and CP phase between the External Merge position and the final landing site.

Bocci, Bianchi & Cruschina (2021) posit that an interrogative wh-phrase bears a bundle of features – {wh, focus} – and that, when it passes through the edge of a phase (v° or C°), it shares via agreement the {wh, focus} features with the relevant phase head. An algorithm responsible for the mapping between syntactic structure and prosodic structure then assigns the NPA to the rightmost occurrence of the {wh, focus} feature on a phonologically visible element.

We now propose that the agreement operation involving the {wh, focus} feature is optional at the syntactic level. Given this optionality, the syntactic computation can output structures that differ with respect to the distribution of {wh, focus} and their difference becomes relevant at the syntax-prosody interface, where the location of the NPA is computed by the algorithm. Besides the algorithm, we posit that a PF constraint applies at the syntax-prosody interface: this PF constraint rules out the prosodic structures in which a weak wh-phrase is assigned the NPA. As a result, the PF constraint eventually requires that the weak wh-form agrees *at least once* with a phase head: if the weak wh-form agrees with a phase head associated with lexical content, it is this lexical category that qualifies as the rightmost [focus]-marked element and that is thus assigned the NPA. The structure is therefore well-formed at PF. By contrast, if the weak wh-form does not agree with any phase head with lexical content, the resulting prosodic structure is ill-formed and filtered out at PF.
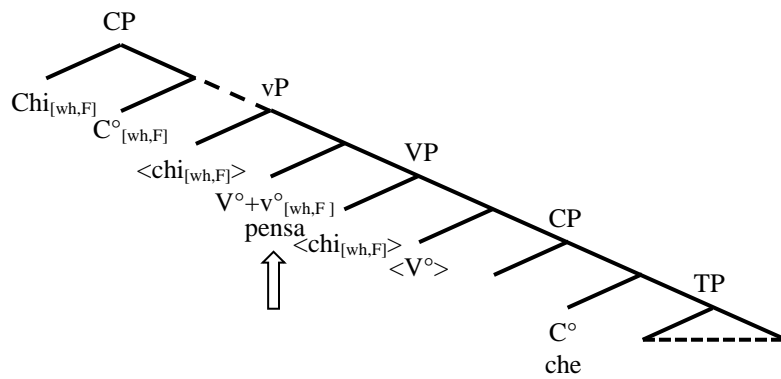
We assume that in Italian, bare wh-elements can be either strong or weak. The two forms are homophonous, but the distinction manifests itself at the prosodic level, in that weak forms never bear the NPA, while the strong forms can. Weak and strong wh-forms are not in free distribution. Weak forms are preferred whenever possible, otherwise the corresponding strong forms are used. The strong version, for example, is used when the wh-element occurs in isolation (cf. § 3.2).[5] In case of regular wh-movement as in (10), the weak form is selected.

Consider first short movement, as in (10a). The weak wh-phrase starts off from within the vP of the matrix clause and shares the {wh, focus} features with the v° head in the matrix clause, as illustrated in (11). Since v° is incorporated to the lexical verb, at the syntax-prosody interface the rightmost phonologically realized element that is specified for these features is the matrix lexical verb *pensa* 'thinks'. The NPA must therefore be associated with this element, and can never fall on the embedded verb, which lacks the {wh, focus} features:
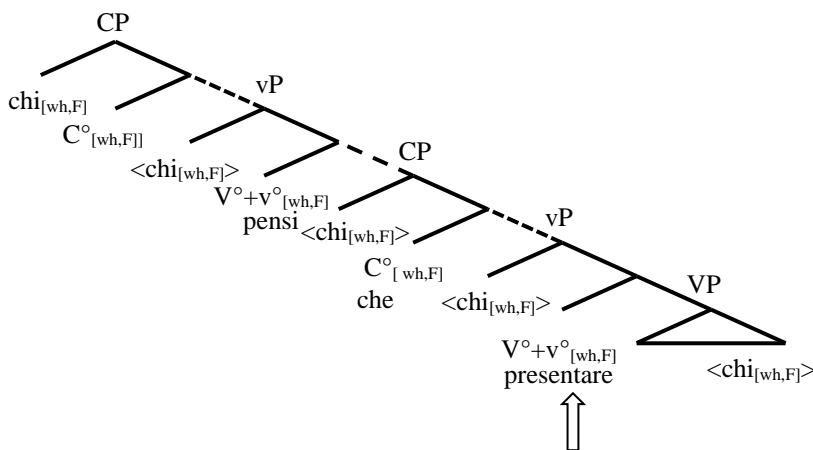
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[5] In addition, the bare wh-element *perché* 'why' is always strong (cf. § 3.2), and D-linked wh-phrases are also strong (cf. § 4).

(11)

CP

Chi[wh,F]

C°[wh,F]   vP

<chi[wh,F]>   VP

V°+v°[wh,F]   CP
pensa <chi[wh,F]>
              <V°>   TP

                    C°
                    che

By contrast, a wh-question featuring long extraction such as (10b) is analysed as shown in (12). The wh-element is extracted from the vP of the embedded clause and, on its way to its landing site in the matrix clause, feature sharing occurs already with the embedded v° head, which therefore counts as the rightmost [focus]-marked element in the structure. At the interface, the infinitive verb *presentare* 'introduce' is the rightmost [focus]-marked element that is not phonologically null; consequently, it receives the NPA.

(12)

CP

chi[wh,F]

C°[wh,F]]   vP

<chi[wh,F]>   CP

V°+v°[wh,F]   vP
pensi <chi[wh,F]>
              C°[wh,F]   VP
              che   <chi[wh,F]>

                    V°+v°[wh,F]   <chi[wh,F]>
                    presentare

Note, however, that the agreement operation is optional, in that it must occur at least once, but it need not take place with all phase heads along the cyclic movement. If agreement skips the embedded v° and only takes place in the matrix clause, it is the matrix lexical verb that qualifies as the rightmost [focus]-marked element and that is assigned the NPA.[6]

Thus, the optionality of agreement allows us to explain the co-existence of the two possible prosodic patterns with long distance movement. Recall that in this environment, the NPA is predominantly associated with the lexical verb of the embedded clause, but in a not

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[6] We further assume that complementizers are weak elements. As a consequence, the PF constraint rules out a possible derivation of (10b) in which the complementizer in C° agrees with wh-phrase and, at the same time, qualifies as the rightmost element endowed with [focus] feature in the structure, attracting thus the NPA.

irrelevant number of cases it can also be assigned to the matrix verb. According to the experimental results reported in Figure 1, the ratio is 61.70% *vs* 37.30% (cf. Figure 1).[7] The two prosodic patterns are illustrated in (13):

(13) a. Chi pensi   [che dovrei   presen**ta**re   <chi> al   direttore]?
          Who think.2SG that should.1SG introduce.INF   who   to-the   director

      b. Chi **pen**si   [che dovrei   presentare <chi> al   direttore]?
          Who think.2SG that should.1SG introduce   who to-the director

          'Who do you think I should introduce to the director?

2.2.   Beyond homophony: weak and strong bare wh-elements in Italian

According to Cardinaletti & Starke (1999), weak elements cannot occur in isolation. We therefore assume that when an Italian bare wh-element appears in such an environment (e.g. *Chi?* 'Who?', *Che cosa?* 'What?', *Quando?* 'When?', *Dove?* 'Where'), it is the homophonous strong form that is realized (cf. (16) below). Among the bare wh-elements, *perché* 'why' stands out for its special syntactic and prosodic properties (see Bocci, Cruschina & Rizzi 2021). Marotta (2001) shows that in her corpus *perché* is consistently associated with the NPA (in 100% of the utterances, cf. (14)). On the basis of this evidence, Marotta concludes that while the other bare wh-elements (*chi* 'who', *che* 'what', *come* 'how', and *dove* 'where') are weak, *perché* is always strong.

      Similar findings are reported in Bocci, Cruschina & Rizzi (2021). To explore the prosodic properties of Italian why-questions, they carried out a production experiment in which 8 native speakers of (Tuscan) Italian were tested on the basis of a reading task. The results show that in why-questions with *perché*, as in (15), the NPA is virtually always assigned to the wh-element (95.73%).

          H*   H%
(14) Perché   non è qui con noi?
      why   not is here with us
      'Why is s/he not with us?'
      (Marotta 2001: Fig. 7)

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[7] We note that there is a clear preference for the pattern in (13a), which unambiguously tracks long-distance extraction. We argue that both patterns are grammatically possible, but in production, extra-syntactic factors like phonological weight of the prosodic constituents, speech rate, etc. may favour one option over the other. We leave this issue for future investigation.

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        H*                              L-   H%
(15)  Perché    hai      lavato il    divano?
      why       have.2SG  washed the   couch
      'Why did you wash the couch?'
      (Bocci, Cruschina & Rizzi 2021: 305)
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Figure 2: Pitch contour of an utterance produced after the why-question in (15), from Bocci, Cruschina & Rizzi (2021: Fig. 3).

Both in Marotta's (2001) and Bocci, Cruschina & Rizzi's (2021) findings, *perché* bears the NPA, the rightmost fully fledged pitch accent in this case – in fact, the only PA present in both examples (14) and (15). More specifically, a H* pitch accent aligns with word-final stressed syllable of *perché*. No other pitch accent occurs in the rest of the clause. The only pitch movement we observe corresponds to the question final rise, resulting from H% in Marotta's example and from the sequence of the phrase accent L- and the boundary tone H% in Bocci, Cruschina & Rizzi's (2021: 309).

This pattern is consistent with the account proposed above. Since *perché* is directly merged in the Int projection of the left periphery (Rizzi 2001a), agreement with phase heads is not possible and the NPA is not assigned to the lexical verb. If the NPA is assigned to an element other than *perché*, it is because this element is interpreted as focal (see Bianchi, Bocci & Cruschina 2017).

47

Among Italian bare wh-elements, a morphophonological contrast exists between the form *che cosa* 'what' (lit. what thing) and the simpler form *che* 'what'. Marotta does not explicitly discuss the status of *che cosa*, but with reference to *che*, she states that it is the weakest wh-element of all, which, unlike the other bare wh-elements, never bears a pitch accent. As a matter of fact, unlike *che cosa* (16), *che* cannot occur in isolation (17b) and cannot be coordinated with another wh-element in an indirect question (17c):

(16) a. Che cosa devo   portare?
          what thing must.1SG   bring
          'What should I bring?'

      b. Che cosa?
          what thing
          'What?'

      c. Mi   chiedo   che cosa   e   quando mangiare.
          me   ask.1SG   what thing and when   eat.INF
          'I wonder what to eat when.'

(17) a. Che devo   portare?
          what must.1SG   bring.INF
          'What should I bring?'
          (Marotta 2001: Fig. 2)

      b. *Che?

      c. *Mi chiedo che e quando mangiare.

Che could be viewed as a clitic element. However, we have reasons to believe that *che* is not a clitic: first of all, contrary to clitic wh-forms, *che* can be the object of a preposition (compare (18) with (3c) above); secondly, *che* need not be adjacent to the verb, as shown in (19):

(18) a. A che   giochiamo?
          to what   play.1PL
          'What do we play?' (lit. At what do we play?)

      b. Di che   parli?
          of what   speak.2SG
          'What are you talking about?'

(19)   a.   Che   altro   gli   diremo?

              what   else   to-him   say.FUT.1PL

              'What else will we tell him?'

       b.   Che   diavolo   vuole   adesso?

              what   devil   wants   now

              'What the hell does he want now?'

The evidence in (17)–(19) shows that *che* must be analysed as a weak wh-element, whereas (16) shows that *che cosa* can behave as a strong element. This evidence supports the hypothesis that Italian has both weak and strong wh-elements, although in most cases, the two forms are homophonous (a homophony that we assume for *che cosa*, in contrast with *che*).

To sum up this section, we have shown that in Italian bare wh-phrases come in two versions: weak and strong. Most wh-phrases are ambiguous between these two forms. In wh-questions, the weak forms are generally used, determining a special prosodic pattern in which the NPA falls on a lexical verb. In isolation, by contrast, the strong forms are unambiguously employed. Among the set of bare wh-elements, however, *perché* 'why' and *che* 'what' are unambiguous: *che* 'what' is always weak, while *perché* 'why' is always strong. Let us now turn to more complex, non-bare wh-elements: D-linked wh-phrases.

3.   D-linked wh-elements

In some northern Italian dialects, D-linked wh-phrases exhibit a different distribution than bare (non-D-linked) wh-words. This is the case of Bellunese (Munaro 1999), in which bare wh-words can only occur clause-internally (in situ), as shown in (20), while D-linked wh-phrases (featuring a lexical restriction) must be fronted to the left periphery (21):[8]

(20)   a.   A-tu   parecià   *che*?

              have-you   prepared   what

              'What did you prepare?'

       b.   **Che*   à-tu   parecià?

              What   have-you   prepared

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[8] The examples in (20) and (21) are taken from Bonan (2021). We also refer to Bonan (2021) for an overview of the D-linked *vs* non-D-linked asymmetry, which is indeed present in Bellunese, but absent in other Lombard and Venetan dialects.

(21) a. *Che vestito* à-tu   sièlt?
          what dress   have-you chosen
          'Which dress did you choose?'
      b. *A-tu   sièlt   *che vestito*?
          have-you   chosen what dress

In Italian, D-linked wh-phrases tend to be strong and to bear the NPA, but this is not obligatory. Acoustic and experimental evidence comes from partitive-like D-linked wh-phrases such as *chi di loro* 'who of them' and *chi di voi* 'who of you.PL':

(22) Chi   di loro   ha   invitato la   sorella di Veronica?
      who   of them   has   invited the   sister   of Veronica
      'Who of them invited Veronica's sister?'
      (Bocci 2013: Fig. 22)

(23) Chi di voi   ha   lavato il   divano?
      who of you.PL   has   washed the   sofa
      'Who of you washed the sofa?'
      (Bocci, Cruschina & Rizzi 2021: 305)

Bocci (2013: 163–164) argues that D-linked wh-phrases like that in (22) tend to bear the NPA, but not necessarily. This observation is confirmed by the experimental results reported in Bocci, Cruschina & Rizzi (2021), which show that in the case of D-linked wh-phrases like (23) the NPA is assigned to the wh-phrase in 85% of the cases.

The evidence reviewed so far might suggest the conclusion that it is the phonological weight of the wh-phrase that matters for the association with the NPA: bare wh-phrases, being phonologically light, do not attract the NPA, while complex, D-linked wh-phrases tend to attract it because they are phonologically heavier. This hypothesis, however, is ruled out by the prosody of questions with aggressively non-D-linked wh-phrases such as *chi diavolo* 'who the hell'. Phonologically, these wh-phrases are as heavy as D-linked wh-phrases. Nevertheless, they never bear the NPA.

Bocci (2013) observes that both in D-linked wh-questions and in aggressively non-D-linked wh-questions, the NPA cannot naturally appear in its default position (i.e. in the

sentence-final position). However, while with D-linked elements, the NPA is naturally assigned to the wh-element itself, with aggressively non-D-linked wh-elements, the NPA strongly tends to be assigned to the lexical verb, as observed above in the case of bare wh-elements. Bocci (2013: fn. 138) illustrates the intuitive contrast between these two types of wh-elements with the example in (25):

(25)   Che cavolo   hai   comprato   al   mercato?
        what cabbage   have.2SG bought   at-the   market
        'What the hell have you bought at the market?'

Besides its denotational meaning, the word *cavolo* (lit. *cabbage*) can function as a 'hell' word in Italian[9] and, as such, it can be found in aggressively non-D-linked questions. When (25) is pronounced with the NPA on the lexical verb, the question is interpreted as an aggressively non-D-linked wh-question. However, if (25) is realized with the NPA on *cavolo*, that is, on the last element of wh-element itself, the question is naturally interpreted as D-linked (i.e. 'Which cabbage did you buy at the market?'): a rather odd interpretation. This intuitive judgment, reported in Bocci (2013), was tested and confirmed experimentally in Bocci, Cruschina & Rizzi (2021).

It should also be noted that the special prosodic behaviour of D-linked wh-phrases patterns together with a special syntactic behaviour: in Italian, D-linked wh-phrases differ syntactically from bare wh-elements in that they are not strictly required to be adjacent to the finite verb and can be extracted from weak islands (Rizzi 2001b).[10]

We conclude that phonological weight cannot be the crucial factor that determines NPA distribution in presence of non-bare wh-elements. We rather propose that aggressively non-D-linked elements qualify as weak elements,[11] whereas D-linked wh-phrases qualify as strong.[12]

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[9] *Cavolo* (lit. 'cabbage'), as other hell words (e.g. *diamine*) has strong phonological similarity with the word *diavolo* 'devil'.

[10] Interestingly, similar syntactic properties with respect to the adjacency to the verb characterize why-questions with *perché* (see Rizzi 2001a, Bianchi, Bocci & Cruschina 2017, Bocci & Cruschina 2018, Bocci, Cruschina & Rizzi 2021).

[11] The proposal that aggressively non-D-linked element qualify as weak elements makes the correct prediction that this type of wh-elements cannot appear in wh-fragments.

[12] We remain neutral on whether the relevant property is D-linking or, more generally, the presence of a lexical restriction.

4. Conclusions

In this paper we propose that the distinction between weak and strong wh-elements is essential to understand the distribution of the NPA in Italian wh-questions. In line with Cardinaletti & Starke (1999), this distinction is to be understood in terms of the structural composition of the elements under discussion, rather than a consequence of their phonological weight. Weak wh-elements cannot be associated with the NPA due to a PF constraint, and the derivation can only survive at PF if the wh-element agrees with a lexical phase head at least once. By contrast, strong wh-elements are not subject to the PF constraint and can bear the NPA.

The distinction between weak and strong wh-elements, therefore, provides us with a complete explanation of the placement of the NPA in Italian wh-questions. Two dimensions matter: the sensitivity to the syntactic derivation of the wh-element (Bocci, Bianchi & Cruschina 2021) and the internal structure of the wh-phrase, which corresponds to the weak *vs* strong opposition.

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