Giuliano Bocci and Silvio Cruschina

Postverbal subjects and nuclear pitch accent in Italian wh-questions

Ad Andrea, per tutto quello che ci ha insegnato,
trasmesso e cucinato

1 Introduction

In his seminal paper on the relationship between word order alternations, information structure, and phonology in Italian, Calabrese (1982) discusses two generalizations that, despite their relevance to the understanding of the derivation and prosody of wh-questions, have largely escaped the attention of the subsequent linguistic literature:[1]

(a) *Subject inversion in embedded clauses under long-distance movement*: In direct wh-questions, subjects tend to appear postverbally not only in matrix clauses in the case of short wh-movement (cf. 1b vs. 1a), but also in the embedded clauses from which the wh-element is extracted via successive cyclic movement to the matrix clause, i.e. via long wh-movement (cf. 2b vs. 2a);

(b) *Nuclear pitch accent (NPA) assignment*: In wh-questions, NPA is generally assigned to the verb (cf. 3).[2]

(1) a. * *Che cosa   Gianni   ha   portato?*
            what   Gianni   has   brought
     b.   *Che cosa   ha   portato   Gianni?*
            what   has   brought   Gianni
           'What did Gianni bring?'

(2) a. ?? *Che cosa   hai   detto   che   Gianni   ha   portato?*
            what   have.2sg   said   that   Gianni   has   brought

---

    b.   *Che cosa*   *hai*   *detto*   *che*   *ha*   *portato*   *Gianni?*
           what   have.2sg said   that   has   brought   Gianni
           'What did you say that Gianni brought?'

(3) *Chi*   *ha*   ***chiesto***   *un*   *aumento?*
     who   has   asked   a   rise
     'Who asked for a pay rise?'

While several other syntactic and phonological aspects of focus constituents in declarative sentences have later been developed by other scholars, these two generalizations have somehow been relegated to a pool of mysteries that still revolve around the grammatical properties of wh-questions. The main aim of the present paper is to provide experimental evidence in support of the first empirical generalization and to redefine this property in the light of more recent theoretical developments. The second generalization will also be discussed, especially with regard to its relevance to the understanding of real nature of embedded subject inversion. However, for this latter generalization, we will mostly rely on the findings reported and examined in Bocci, Bianchi & Cruschina (2018).

    Following Calabrese (1982), we show that subject inversion and NPA assignment in Italian wh-questions are the reflexes of the derivational history of wh-movement, and, accordingly, the result of a direct interaction between the syntactic and the phonological component. Unlike Calabrese, however, we argue that subject inversion is by nature a syntactic phenomenon, triggered by the successive cycling movement of the wh-phrase and not prosodically motivated. In particular, we claim that the very same syntactic mechanism that yields subject inversion (successive cycling movement) is also responsible for the prosodic properties characterizing Italian direct wh-questions. In other words, we defend a view on the division of labour between syntax and prosody in wh-questions whereby syntax tailors and delivers its instructions to prosody.

    The structure of this chapter is as follows. We first illustrate the phenomenon of subject inversion in Italian wh-questions (§ 2). In Section 3, we present the results of a syntactic experiment on the distribution of subjects in the embedded clause of wh-questions. Our analysis is presented in Section 4, where we directly relate the syntactic and prosodic peculiarities of Italian wh-questions to the successive cyclic nature and to the intermediate positions of wh-movement. We show that while subject inversion is a phenomenon that involves the edge of the C-phrase, the assignment of NPA additionally involves the *v*P-edge. We then attempt to capture the observed patterns and to provide further support to our analysis by comparing direct and indirect wh-questions with respect to both subject inversion and their prosodic properties (§ 5). A summary and some final remarks close the chapter.

2 Subject inversion in wh-questions

Subject inversion in interrogative environments is a syntactic property common to many languages. In Italian, however, we do not observe the same rigid subject inversion pattern as in English or in German: used in reference to the Italian facts, then, the term itself might be misleading. The essential property of Italian wh-questions is the adjacency requirement between the wh-phrase and the verb. This has direct repercussions on the other constituents in the sentence, including the subject, which cannot appear in a preverbal position.[3] It is important to note, however, that the subject in Italian does not necessarily undergo inversion: in fact, it can be omitted or dislocated to the left. In neutral contexts where the subject does not have a valid antecedent in the context and resists dislocation or omission, the subject will tend to appear in a postverbal position: this is what we mean by subject inversion in this paper.

In what follows, we will first describe the phenomenon of subject inversion in the matrix clause of wh-questions, with short-distance movement. Subject inversion in embedded clauses in combination with long-distance movement will be discussed in the next subsection.

2.1 Matrix subject inversion and short-distance movement

It is well known that, in Italian wh-questions with bare wh-elements (with the exception of *perché* 'why' and *come mai* 'how come'), neither subjects nor other constituents can intervene between the wh-phrase and the verb – the subject, for instance, must occur postverbally, as shown in (4) (see Calabrese 1982; Rizzi 1996, 2001; Bocci 2013, a.o.; see also Bianchi, Bocci & Cruschina 2017 for an account of asymmetries between *perché* 'why' and the other bare wh-elements):[4]

(4) a. *Chi   ha   visto   Mario?*
         who   has   seen   Mario
     b. * *Chi   Mario   ha   visto?*
         who   Mario   has   seen
         'Who did Mario see?'

---

3 Even if this is not essential to our analysis, we agree with Cardinaletti (2001, 2002) on the idea that postverbal subjects can stay in their base position and are not necessarily right-dislocated.
4 Cardinaletti (2007) shows that certain elements, in particular specific types of adverb, can intervene between the wh-phrase and the verb. For simplicity, we here describe the adjacency requirement in its traditional terms and refer to her work for the relevant exceptions. Note also that in Italian, subjects cannot occur between the auxiliary and the verb in analytic verb forms (see, e.g., Rizzi 1996).

Calabrese (1982) treats this restriction as a consequence of a phonological requirement for the wh-phrase and the verb to form a single intonational phrase. Focal elements, including wh-phrases, receive a [F] feature ([N] for 'new' in Calabrese's original formulation) from the verb and must be string-adjacent to it: the phonological group consisting of the verb and the [F]-marked elements forms a single and independent intonational phrase that constitutes the main intonational phrase of the sentence whose rightmost constituent is thus assigned NPA. In wh-questions, the wh-phrase in the CP inherits [F] from its trace in the base-generation position and must be adjacent to the verb. Any potential intervener must be syntactically displaced. For Calabrese, therefore, the same phonological requirement is responsible for both subject inversion and NPA assignment.

A variety of accounts – largely syntactic – have been proposed to explain the adjacency requirement in more recent years. According to Rizzi (1996 et seq.), wh-movement is driven by the Wh-Criterion,[5] which requires a wh-phrase carrying the feature [wh] to be in a Spec-Head agree-relation with a head endowed with the same feature. This criterial configuration must be satisfied in a dedicated CP-projection of the left periphery, namely, FocP. The head that carries the feature [wh] in wh-questions is T: thus, the wh-phrase ends up in Spec/FocP, while T moves to Foc⁰ and brings the [wh] feature along with it. In the criterial approach, therefore, T-to-C movement takes place in order to yield the Spec-Head configuration which, in turn, ensures adjacency between the two elements and prevents any other constituent from intervening between them (for a different technical implementation of this analysis, see Rizzi 2006). More recently, adopting the view that there are several preverbal subject positions specialized for different types of subject (see Cardinaletti 1997, 2004), the intervention restriction has been selectively limited to SubjP – that is, the projection that hosts strong and overt preverbal subjects functioning as subjects of the predication, as opposed to weak or null pronouns which occur in Spec/TP or in lower positions. More specifically, it has been proposed that T-to-C movement prevents the subject from moving to SubjP (cf. Rizzi & Shlonsky 2007): the subject must therefore either remain in a lower position or be dislocated.

Cardinaletti (2007) adopts a different position. She still assumes that Spec/SubjP is unavailable in wh-questions, but also argues against the hypothesis that the wh-phrase and the verb occur in one and the same projection. She claims that "only subjects in specSubjP are excluded from occurring between the wh-phrase

---

5 The Wh-Criterion is one of the Criteria that require a phrase with feature [α] to be in a Spec-Head configuration with a functional head carrying [α]. See Rizzi (2006) for more details.

and the verb in wh-questions, whereas subjects in specTP (or lower subject positions [...]) are permitted" (Cardinaletti 2007: 66).

Irrespective of the motivation behind the ban on intervening subjects in wh-questions (see also Bianchi, Bocci & Cruschina forthcoming), these syntactic approaches only address the issue with respect to matrix wh-questions,[6] neglecting what happens within the left periphery of a possible embedded clause from which wh-movement takes place. As observed by Calabrese (1982), in fact, subject inversion occurs both with short- and long-distance movement.[7] Moreover, the syntactic approaches do not address the issue of NPA assignment and, in fact, their explanation does not offer any means of accounting for the special prosodic contour of wh-questions.

2.2 Embedded subject inversion and long-distance movement

As already mentioned, Calabrese (1982: 39–40) makes an important empirical observation: when the wh-phrase is moved from an embedded clause, the embedded subject must appear postverbally:

(5) a. ?? *Che cosa gli   hai   detto che Carlo ha   fatto?*
            what thing him.DAT have.2SG said   that Carlo has   done

     b.   *Che cosa gli   hai   detto che ha   fatto Carlo?*
            what thing him.DAT have.2SG said   that has   done   Carlo
            'What did you say Carlo has done?'

The wh-phrase *che cosa* ('what') in (5) is extracted from the embedded clause of the direct wh-question. In combination with this long-distance movement,[8] a preverbal embedded subject proves rather marginal (cf. 5a), while subject inversion would make the sentence fully grammatical. Calabrese relates this constraint to the phonological requirement for the phonological phrase containing the verb and the phonological phrase of the constituent bearing the [F] feature to form the

---

6 Several observations about the special properties of indirect wh-questions are discussed in Rizzi (2001).

7 This observation is also discussed in Torrego (1983, 1984), where subject inversion in Spanish wh-questions with long-distance movement is investigated. Her analysis will be considered in the next section.

8 By long-distance movement, or more simply long movement, we mean extraction via successive cyclic movement from an embedded clause. As will be explained in detail below, subject inversion is more specifically triggered by the intermediate movement of the wh-phrase through the CP– or CPs– that are crossed between the extraction and the landing site.

main intonational phrase of the sentence. In the case of long-distance movement (5b), the embedded verb containing the trace of the wh-chain will be grouped within the same intonational phrase (i.e. IP) as the F-marked constituent:[9]

(5′) b. [[Che cosa]$_\Phi$ [gli hai detto]$_\Phi$ [che ha **fatto**]$_\Phi$ *t*]$_{IP}$ [Carlo]$_\Phi$?

In other words, when the wh-phrase is extracted from an embedded clause, the main intonational phrase of the sentence must include the head and the foot (i.e. the lowest trace) of the wh-chain, as well as both the embedded and the matrix verb: adjacency throughout all these elements is required, and NPA is assigned to the rightmost (phonologically non-null) element within this intonational phrase, i.e. to the embedded lexical verb. As a consequence of this phonological constraint, the embedded subject *Carlo* must be right dislocated or marginalized (cf. 5a) (see also Antinucci & Cinque 1977, Cardinaletti 2002, 2007). No content elements other than verbs can be included within this sequence.

Around the same time, the same phenomenon was observed by Torrego (1983, 1984) for Spanish. Unlike Calabrese, however, Torrego analyses embedded subject inversion in wh-questions as a syntactic phenomenon: a direct reflex of successive cyclic movement. In particular, she argues that when an operator such as the wh-phrase moves to Spec/CP, the verb must reach the head of CP in order to establish the required configuration with the wh-element. In her account, therefore, T-to-C movement also takes place in the case of long extraction:

(6) a. *¿Qué querían esos dos?*
      what wanted these two
      'What did those two want?'
  b. **Qué esos dos querían?*
      what these two wanted
      (Torrego 1984: 103)

(7) a. *¿Qué pensaba <u>Juan</u> que le había dicho <u>Pedro</u> que*
      what thought John that him had told Peter that
      había publicado <u>la revista</u> [t]?
      had published the journal
      'What did John think that Peter had told him that the journal had published?'

---

9 The relevant tone is assigned to lexical heads only (Calabrese 1982: 19), therefore excluding auxiliaries and complementizers (see also Nespor & Vogel 1986).

b. * *¿Qué* *pensaba* <u>*Juan*</u> *que* <u>*Pedro*</u> *le* *había* *dicho* *que*
    what   thought John that Peter him had told that
    <u>*la* *revista*</u> *había* *publicado?*
    the journal had   published
    (Torrego 1984: 109)

Under Torrego's analysis, T-to-C-movement applies not only in the matrix clause (6), but also in all embedded left peripheries hosting the wh-phrases in intermediate positions on its way to the final (matrix) landing site (7): subject inversion takes place along the whole movement path (see also Kayne & Pollock 1978 on stylistic inversion in French and Henry 1995 on Belfast English). In our analysis, we combine elements of both analyses, i.e. Calabrese's phonological account and Torrego's syntactic account. Before outlining our proposal in detail (cf. § 4), let us now go back to Italian and consider some empirical evidence in support of embedded subject inversion.

3 The distribution of embedded subjects: A syntactic experiment

In order to experimentally support Calabrese's observation on embedded subject inversion, we carried out a forced-choice experiment where participants had to express their preference for the pre- or postverbal placement of the subject in the complement clause of direct wh-questions. The design, methodology, and results of this experiment are discussed in this section.

3.1 Design and methodology

We carried out a web-based forced choice experiment (hosted by Ibex Farm). 59 Italian native speakers, recruited via Facebook, participated in the experiment. Two independent binary factors in a 2*2 factorial design were tested:
a) type of wh-dependency: long extraction (from an embedded clause) vs. short extraction (from the matrix clause);
b) type of verb in the embedded clause: transitive vs. intransitive.[10]

Factor (a) is directly related to the issue of subject inversion in wh-questions, while factor (b) was included in order to verify whether, especially in the case of

---

10 We deliberately avoided testing unaccusative verbs since they license subject inversion more freely and independently of the presence of a syntactic trigger such as wh-movement (see Belletti & Bianchi 2016 for an overview and relevant references).

long extraction from an embedded clause, the type of verb has any influence on the position of the embedded subject.

We tested 24 items. Type of wh-dependency was manipulated between items, while verb-type was manipulated within items. In other words, we tested 12 items with intransitive verbs and 12 items with transitive verbs. Each item included the variants with the long- and short-distance movement. For the resulting 48 experimental sentences (12 items * 2 verb types * 2 dependency types), we then created the two alternative versions that minimally differed with respect to the position of the subject in the embedded clause: either preverbal or postverbal. This amounts to a total of 96 stimuli.

The two independent factors were manipulated within participants and the experimental sentences were arranged in a Latin-square design. We divided the experimental sentences into 4 lists so that each list included one experimental sentence per item. Each list consisted of 24 experimental sentences (for each of them we presented the two alternatives) and 24 fillers.

Each trial started with a brief description of a hypothetical context. The subject of the target sentences was never mentioned in this introductory context in order to avoid the postverbal, sentence-final subject being interpreted as given and, hence, as syntactically right-dislocated. The matrix verb was always the verb of saying *dire*. The stimuli were presented in a pseudo-randomized order.

In each trial, two alternative sentences which varied only with respect to the position of the subject were presented and the participants were asked to express their preference for either version. The participants had to express their preference for either version by clicking on the preferred alternative. It is important to emphasize that the target sentences were also controlled with respect to the type of wh-dependency: they were nearly identical in the long- and short-movement condition, except for the position of a dative clitic pronoun which forced one interpretation against the other. For example, the clitic pronoun *ti* 'to you' in sentence (9) was necessary to avoid the wh-phrase being interpreted as the dative argument of the matrix verb *dire* 'say/tell'.

Moreover, for each item the short- and the long-distance sentences were introduced by the same context. Let us look at some examples. In (8) and in (9), we have an intransitive verb (*disobbedire* 'disobey') in combination with short (8) and long movement (9), respectively. The two sentences in (8) and (9) only differ with respect to the position of the embedded subject: the a-sentences contain a preverbal subject, while the b-sentences include a postverbal subject.

(8)   SHORT MOVEMENT, INTRANSITIVE V

Ad un consiglio dei docenti, si tirano le somme e si decidono i voti in condotta. Ma ci sono alcuni disaccordi tra colleghi, e la direttrice, per assicurarsi di aver capito bene, chiede a Lucia, l'insegnante di ginnastica:

'At a meeting, teachers take stock and decide the grades for behaviour. There are some disagreements among colleagues, and the principal, to make sure that she understood correctly, asks Lucia, the physical education teacher:'

a. *A chi   hanno   detto   che Giulio ti   ha   disobbedito?* (SV)
   to who   have.3PL said   that Giulio you   has   disobeyed

b. *A chi   hanno   detto   che ti   ha   disobbedito Giulio?* (VS)
   to who   have.3PL said   that you   has   disobeyed   Giulio
   'Who did they tell that Giulio disobeyed you?'

(9) LONG MOVEMENT, INTRANSITIVE V

Ad un consiglio dei docenti, si tirano le somme e si decidono i voti in condotta. Ma ci sono alcuni disaccordi tra colleghi, e la direttrice, per assicurarsi di aver capito bene, chiede a Lucia, l'insegnante di ginnastica:

'At a meeting, teachers take stock and decide the grades for behaviour. There are some disagreements among colleagues, and the principal, to make sure that she understood correctly, asks Lucia, the physical education teacher:'

a. *A chi   ti   hanno   detto   che Giulio ha   disobbedito?* (SV)
   to who   you   have.3PL said   that Giulio has   disobeyed

b. *A chi   ti   hanno   detto   che ha   disobbedito Giulio?* (VS)
   to who   you   have.3PL said   that has   disobeyed   Giulio
   'Who did they tell you that Giulio disobeyed?'

The same design and structure was maintained for the 12 items involving a transitive embedded verb, such as *insultare* 'insult' in (10) and in (11):

(10) SHORT MOVEMENT, TRANSITIVE V

Francesco è il nuovo insegnante di filosofia di un liceo. Durante il primo giorno di lavoro, un collega gli racconta un episodio spiacevole sul quale non è ancora stato preso nessun provvedimento. Francesco, un po' perplesso, gli chiede:

'Francesco is the new philosophy teacher in a high school. During his first day at work, a colleague tells him about an unpleasant incident, for which no disciplinary action has yet been taken. Francesco, a bit puzzled, asks him:'

a. *A chi   hai   detto che gli studenti ti   hanno   insultato?* (SV)
   to who have.2SG said that the students you   have.3PL insulted

b. *A chi   hai   detto che ti   hanno   insultato gli studenti?* (VS)
   to who have.2SG said that you   have.3PL insulted the students
   'Who did you tell that the students insulted you?

(11) LONG MOVEMENT, TRANSITIVE V

Francesco è il nuovo insegnante di filosofia di un liceo. Durante il primo giorno di lavoro, un collega gli racconta un episodio spiacevole sul quale non è ancora stato preso nessun provvedimento. Francesco, un po' perplesso, gli chiede:

'Francesco is the new philosophy teacher in a high school. During his first day at work, a colleague tells him about an unpleasant incident, for which no disciplinary action has yet been taken. Francesco, a bit puzzled, asks him:'

a. *Chi   hai   detto che   gli studenti hanno   insultato?* (SV)
   who   have.2SG said   that the students have.3PL insulted

b. *Chi   hai   detto che   hanno   insultato gli   studenti?* (VS)
   who   have.2SG said   that have.3PL insulted   the   students
   'Who did you say that the students insulted?'

In short-movement contexts, the wh-phrase is an argument of the matrix verb and thus undergoes short-distance movement, while in long-distance contexts the wh-phrase is an argument of the embedded verb and therefore gives rise to a long-distance dependency.

3.2 The results

As mentioned earlier, the results of this syntactic experiment confirm Calabrese's observation: the embedded subjects of wh-questions tend to appear postverbally when the wh-phrase is extracted from the embedded clause. The results are illustrated in Figure 1 with respect to the first factor, namely, type of wh-dependency. Crucially, this tendency only emerges with long-movement contexts, i.e. when the wh-phrase is extracted from within the embedded clause, where postverbal subjects are preferred in 79% of cases. In short-movement contexts, by contrast, subjects of the embedded clause are preferred in preverbal position (67%).

If we integrate the second factor into this picture, very little changes. See Figure 2.

We carried out statistical analyses based on multi-level mixed effects regressions with log odds of a postverbal subject response as the dependent variable, type of movement (short vs. long wh-movement), and type of VP (transitive vs. intransitive) as fixed effects. The best random structure justified by the data included random intercepts for subjects and items, as well as by-subject and
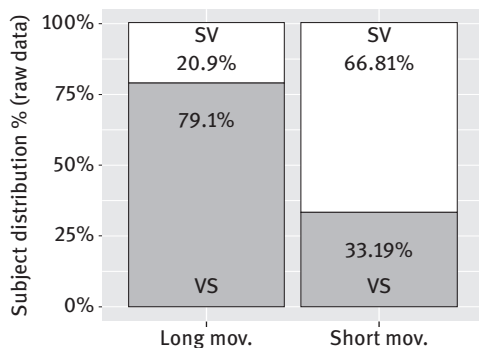
Figure 1: First syntactic experiment: preferences for SV vs. VS in direct wh-questions across dependency type
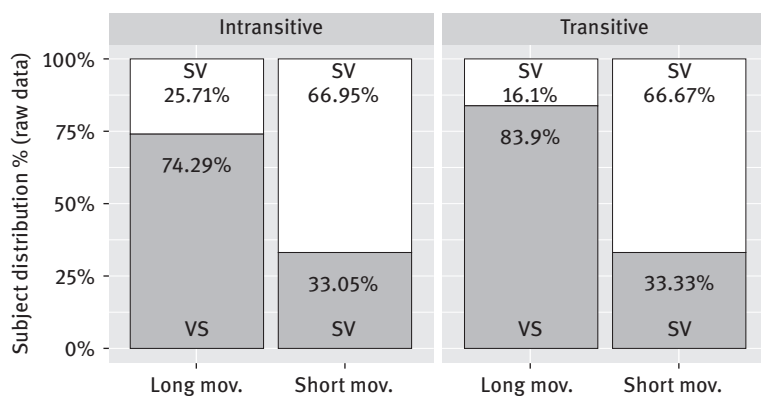
Figure 2: First syntactic experiment: preferences for SV vs. VS in direct wh-questions across dependency type and verb type

by-item random slopes for the effect of movement type and by-subject random slopes for the type of verb. For both fixed factors, we specified the contrasts with a deviation coding scheme.

The type of wh-movement (short vs. long) has a significant impact on the preference for the position of the embedded subject: under the long wh-movement condition the probability of postverbal subject is significantly higher than under the short wh-movement condition (*Estimate* = 2.63, SE = .228, p < .001). The main effect of VP type is not significant (*Estimate* = .40, SE = .270, p > .1). However, the interaction between type of movement and type of verb approaches the significance threshold (*Estimate* = 0.632, SE = .354, p = .074), indicating that the probability for postverbal subjects is higher for transitive verbs than intransitives
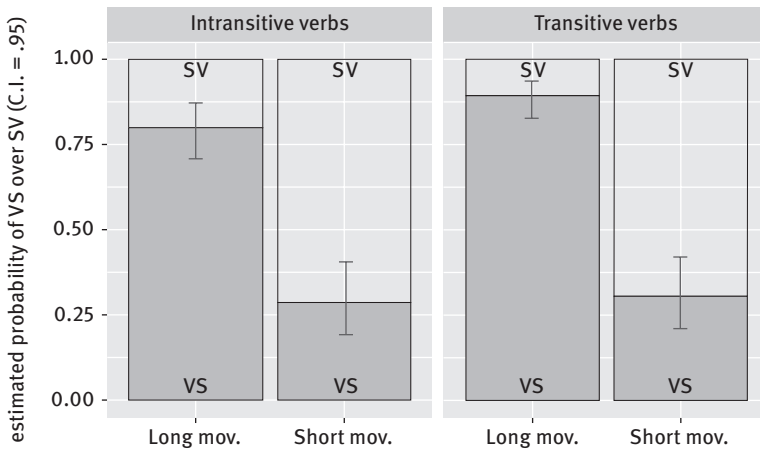
Figure 3: Estimated probabilities of VS over SV across dependency type and verb type

in the case of long-distance movement.[11] We extracted the coefficients and the confidence intervals (calculated at 0.95) from the model, and converted them to estimated probabilities, plotted in in Figure 3.

3.3 Lack of ceiling effect: some remarks

While the results of the syntactic experiment confirm subject inversion with long extraction, the lack of ceiling effect is evident and raises important questions: why is SV still chosen in 21% of long-movement cases? Two possible answers come to mind. It could be that the deviant pattern is simply the consequence of the structural complexity of wh-question with long extraction: this would imply that our participants fail to interpret correctly the relevant experimental stimuli in the corresponding number of cases (i.e. 21%). Alternatively, it could well be that the preference for SV is not to be attributed to a processing difficulty, but rather to a different interpretation of the preverbal subject that would still be compatible with the long-distance interpretation. Even if we specifically tried to control for (and prevent) such an interpretation (by avoiding any mention of the subject in the introductory context and, hence, that it could be interpreted as a given), it could be that, in this smaller percentage of the cases, the preverbal

---

[11] Given that it does not reach the significance threshold, for the time being we leave this tendency aside and simply report it for completeness.

subject was perceived as left-dislocated, namely, in a TopP position. Given that order Topic>wh>verb is always possible, a topical subject in TopP would not intervene between the wh-trace in the embedded CP and the lower verb. As an alternative, we tentatively suggest that the adjacency requirement is somewhat weaker when the (intermediate) movement to CP is triggered by a formal rather than a criterial feature (see Rizzi 2006 for the distinction between formal and criterial features).

A similar lack of floor effect can be observed with short extraction: even when the wh-phrase is not extracted from the embedded clause, VS is preferred in the 33% of cases. Again, we unfortunately do not have a sound explanation for this issue. More experimental evidence is needed before a more solid analysis of both deviant patterns can be pursued. For the time being, we leave this task for future work.

4 Moving through the edges: A phase-based analysis

Building on Calabrese's original insights, we offer an analysis that simultaneously accounts for both embedded subject inversion and the placement of NPA. In fact, we propose that both phenomena are the reflexes of successive cycle movement and, more specifically, under current minimalist theory, of the Phase Impenetrability Condition (Chomsky 2008), according to which wh-movement must pass through the edge of every vP and CP phase between the base-generation position and the final landing site. We additionally assume that, in direct wh-questions, an interrogative wh-phrase bears a wh/focal feature and that, when it passes through the edge of a phase ($v°$ or $C°$), the wh-phrase shares a wh/focal feature with the relevant phase head. At the syntax-prosody interface, the NPA is assigned to the rightmost element in the sentence that is endowed with the wh/focal feature and is not phonologically null. Crucially, the prosodic computation does not differentiate between interpretable and uninterpretable instances of the wh/focal feature. See Bocci, Bianchi & Cruschina (2018).

A question featuring long extraction such as (12a) is thus analysed as illustrated in (12b). The wh-element is cyclically extracted from the vP of the embedded clause and, on its way to the CP of the matrix clause, it shares its wh-focal feature (shortened as [wh] in the illustrations below) with the head of each phase it passes through. As a result, in the syntactic structure visible to the phonological component, the past participle *rubato* 'stolen' counts as the rightmost element endowed with the wh/focal feature that is not phonologically null. It is therefore associated with the NPA.

(12) a. *A chi   ti   ha   detto che hanno   rubato la   macchina?*
           to who you.CL has said that have.3PL stolen the car
           'Who did he tell you that they stole the car from?'

    b.
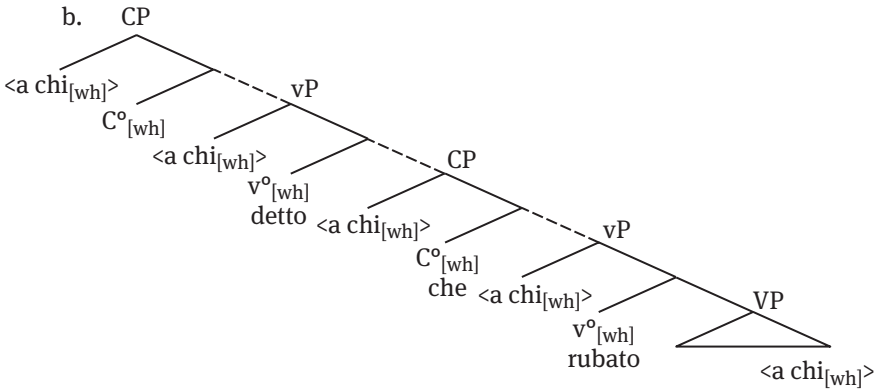
By contrast, in the case of short movement, as in (13a), the wh-phrase starts off from within the vP of the matrix clause and only shares its wh/focal feature with the phase heads in the matrix clause (cf. 13b). Consequently, the rightmost phonologically-realized element that is specified for the wh/focal feature is the matrix lexical verb *detto* 'said'. The NPA must be associated with this element and can never fall on the embedded verb which lacks the wh/focal feature.

(13) a. *A chi   hai   detto che ti   hanno   rubato la   macchina?*
           to who have.2SG said that you.cl have.3PL stolen the car
           'Who did you tell that they stole your car?'

    b.
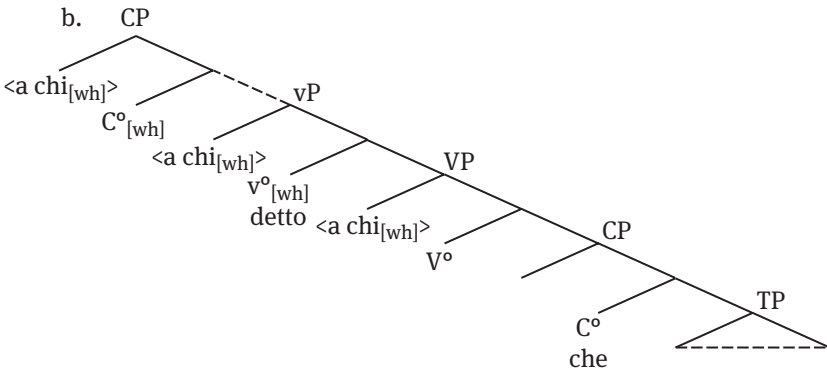
This analysis correctly predicts that an embedded verb is visible to phonology for the assignment of NPA only in the case of long-distance movement, given that the wh-phrase must move through the edge of the *v* phase head. By contrast, only

the matrix verb is a possible candidate for NPA assignment because no feature sharing occurs in the embedded clause.

If the intermediate movement through the edge of each phase is responsible for the distribution of NPA, we argue that intermediate movement through the edge of the CP triggers subject inversion. Irrespective of whether or not this is to be related to the Wh-Criterion and to T-to-C movement (we leave this question open for future research), the intermediate passage of the wh-phrase through the edge of the C-phase prevents subjects from moving to their regular preverbal position in the TP domain (i.e. SubjP). Embedded subjects must therefore occur in a lower position, that is, in a subject-inversion configuration.

5 Further observations and experimental evidence

As mentioned in the previous section, along the lines of Calabrese (1982) and Torrego (1983, 1984) (cf. § 2.2), we claim that subject inversion (VS) in the main and in the embedded clauses from which wh-extraction takes place is determined by successive cyclic movement, i.e. the (transitory or final) movement of the wh-phrase to the left periphery (the edge of the C°). Our analysis, more specifically, puts together elements from both Calabrese's phonological account and Torrego's syntactic proposal. We do subscribe to the idea that the NPA is associated with the (lexical) verb in case of long wh-movement. Unlike Calabrese, however, and following Torrego's insight more closely, we argue that embedded subject inversion is a direct reflex of the syntactic derivation, i.e. successive cyclic movement, rather than prosodic well-formedness requirements as in Calabrese's analysis. In particular, we propose that the same mechanism that triggers subject inversion in matrix clauses and that makes SubjP unavailable to (preverbal) subjects (cf. § 2.1) also operates in embedded clauses. Our analysis relies on three empirical observations, each supported by the relevant experimental data:

(i)   in direct wh-questions with bare wh-elements (other than *perché* 'why' and *come mai* 'how come'), NPA is by default assigned to the lexical verb; it is assigned to the embedded lexical verb only with long-distance movement;

(ii)   in indirect wh-questions, as in declarative sentences, NPA is assigned by default to the rightmost constituent of the sentence, unless a constituent that qualifies as narrow focus attracts NPA;

(iii)   subject inversion also occurs in indirect wh-questions.

A direct and close comparison between the syntax and the prosody of direct and indirect wh-questions shows that embedded subject inversion in direct wh-questions with long extraction cannot be triggered by a prosodic requirement on focussed elements because inversion also takes place in indirect questions where a different prosodic pattern is observed (see also Bocci & Pozzan 2014). We devote the rest of this section to the three observations mentioned above, the discussion of which will lead us to a more precise definition of the phenomena in support of our proposal based on successive cyclic movement and feature sharing in intermediate positions.

5.1 NPA assignment in direct wh-questions

The assignment of NPA in wh-questions is a phenomenon that has not yet been fully understood or accounted for. In line with a widespread view (e.g. Horvath 1981/1986, É. Kiss 1995; see Haida 2007: §7.2 for an overview), Calabrese (1982) argues that the wh-element in wh-questions is endowed with a focus feature on a par with the focus constituent of declaratives. However, while in assertions the focus constituent must be assigned NPA, in wh-questions with bare wh-phrases NPA falls on to the lexical verb. This implies that the verb carries NPA even when it is not interpreted as focus. To account for this syntax-prosody mismatch, Calabrese proposes an analysis based on two assumptions (cf. §2.2): (i) the focus feature is assigned to the wh-phrase in its base-generated position, connected to the surface position by means of an A'-chain and thus guaranteeing the correct interpretation; (ii) the main pitch accent of the sentence is then assigned to the last phonological phrase within the main intonational phrase, i.e. the prosodic unit made up by the wh-phrase and the adjacent verb.

Bocci, Bianchi & Cruschina (2018) substantiate this observation through the results of a dedicated production experiment aimed at investigating the placement of NPA in wh-questions. Ten native speakers of Tuscan Italian had to read 24 stimuli (12 items), alternating short-distance wh-movement (14a) and long-distance wh-movement (14b), together with 24 fillers, which were presented in a pseudo-randomized order:

(14) 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?'
     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?'

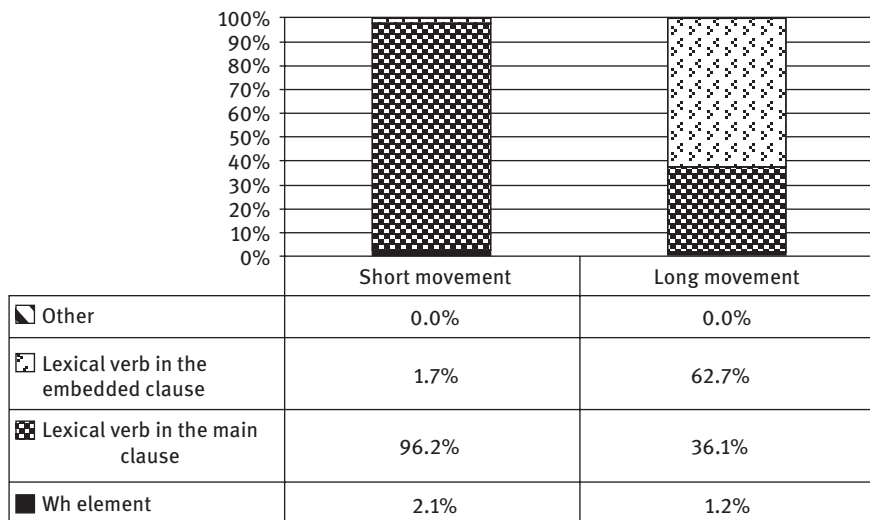|	Short movement	Long movement
◣ Other	0.0%	0.0%
⬚ Lexical verb in the embedded clause	1.7%	62.7%
▨ Lexical verb in the main clause	96.2%	36.1%
■ Wh element	2.1%	1.2%

Figure 4: Distribution of NPA across type of wh-movement

The results, summarized in Figure 4, show that in complex wh-questions consisting of a matrix and an embedded clause NPA is assigned to the verb, either to the main lexical verb or to the embedded lexical verb. NPA on the wh-element is very marginal. In particular, the experimental findings demonstrate that when the wh-element is extracted from the matrix clause, via short-distance movement (14a), NPA is assigned to the lexical verb of the matrix clause. Figure 5 illustrates a pitch contour of a sentence produced with this pattern. Crucially, as shown in Figure 4, NPA is virtually never assigned to the embedded lexical verb (only 1.7%). By contrast, with long-distance movement (14b), NPA is much more likely to be associated with the lexical verb of the embedded clause, rather than the matrix lexical verb. Figure 6 illustrates an example of this prosodic pattern.

It is worth noting that in both conditions (short and long) NPA is never (0%) assigned to the rightmost element of the sentence, which is the default position for NPA assignment in Italian. We refer to Bocci, Bianchi & Cruschina (2018) for more details relating to the experiments and their results.[12]

---

12 See Bocci, Bianchi & Cruschina (2018) also for arguments and evidence against Calabrese's proposal that the phonological computation directly refers to the wh-trace in its base-generation position.
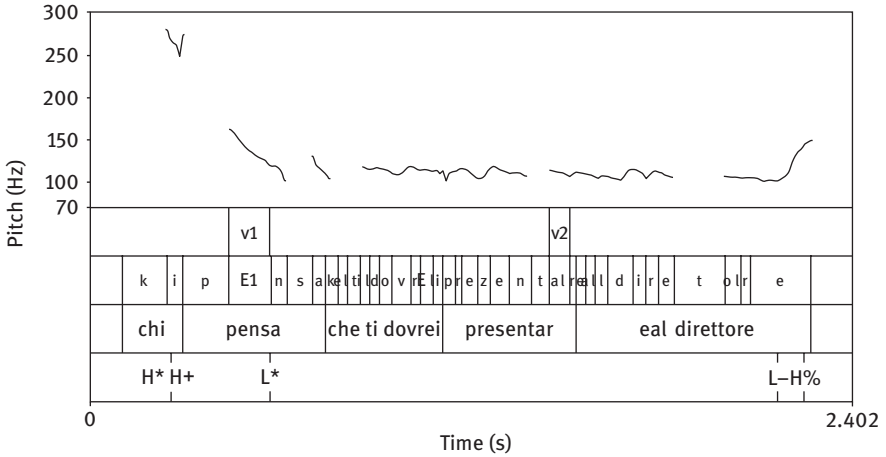
Figure 5: Pitch contour of an utterance produced after (14a): wh-question with short movement
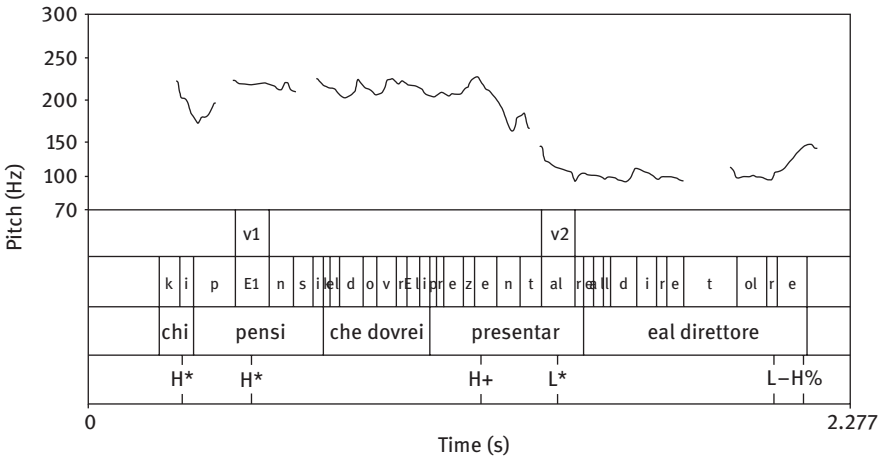

Figure 6: Pitch contour of an utterance produced after (14b): wh-question with long movement

5.2 NPA assignment in indirect wh-questions: the prosodic experiment

Since Calabrese's account connects subject inversion in wh-questions with the special prosodic properties of wh-questions, we tested the same two properties in indirect wh-questions. In this section, we discuss the prosodic properties of indirect wh-questions on the basis of the results of a production experiment, while in

the next section we report the results of forced-choice experiment on the distribution of the subject in indirect wh-questions.

We carried out a production experiment to investigate the prosodic properties of indirect questions. The stimuli of this experiment were included in the experiment described in Bianchi, Bocci & Cruschina (2017) and discussed in Section 5.1. The 10 native speakers of Tuscan Italian (8 women, 2 men) who took part in the experiment had to read short scripts. Each script consisted of a description of a fictional context followed by a target indirect question. The contexts were set up in order to prevent the speaker from assigning a narrow focus interpretation to any constituent of the target sentences. Moreover, the referents present in the target sentences were not mentioned in the contexts. This was done in order to disfavour a right-dislocation interpretation of the postverbal constituents in the target sentences.

The experiment comprised of 24 stimuli divided into three groups on the basis of the wh-phrase being tested: 8 stimuli with direct object *chi* 'whom', 8 with indirect object *a chi* 'to whom', and 8 with locative *dove* 'where'. For each wh-type group, we manipulated the type of matrix clause selecting the indirect question: 2 stimuli with *mi domando* 'I ask myself', 2 stimuli with *mi chiedo* 'I ask myself', 2 stimuli with *non so* 'I don't know', and 2 stimuli with *vorrei sapere* 'I would like to know'). This design allowed us to evaluate and compare the extent to which the type of bare wh-element and the type of matrix clause have an impact on NPA placement in indirect questions produced in neutral contexts. The 24 experimental stimuli were pseudo-randomized along with an equal number of fillers, ensuring a rigid alternation between the two types of stimuli.

We collected 4 repetitions for each trial. From the sentences produced we randomly picked 2 disfluency free repetitions, whenever available, for the prosodic analysis, and discarded the sentences that included segmental disfluency (and false starts). The overall corpus analysed consisted thus of 470 indirect wh-questions: 10 speakers * 24 stimuli * 2 disfluency-free repetitions.[13]

We downsampled the sentences from 48kHz to 16kHz, and automatically segmented them into phonemes by means of the WebMAUS aligner (Schiel 1999, Kisler et al. 2016) – the segmentation was then carefully corrected manually. We transcribed the sentences intonationally. In particular, the NPA label was assigned to the rightmost PA after which the pitch contour is completely compressed and

---

13 The two disfluency-free repetitions per speaker were always available except in 10 cases. This is why we had a total of 470 sentences to analyse rather than the expected 480.
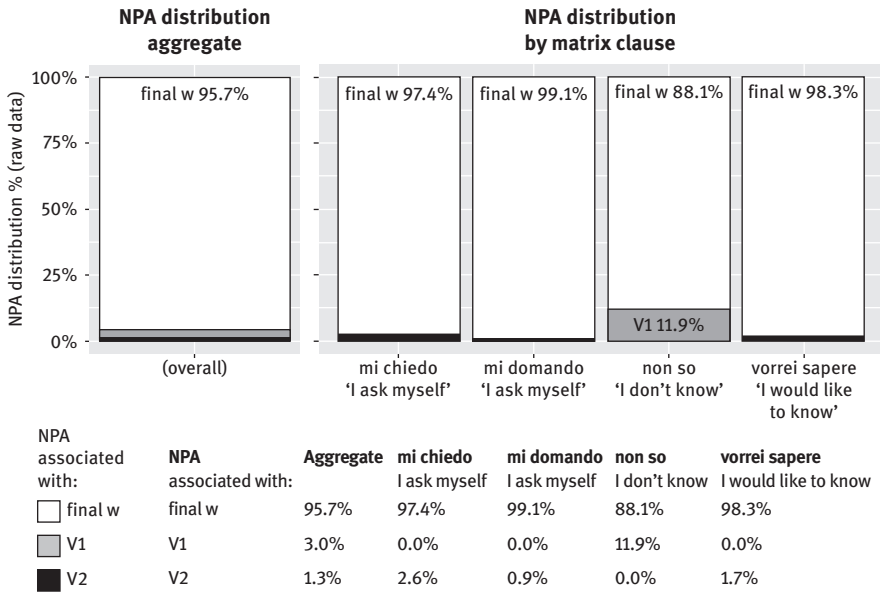
NPA associated with:	NPA associated with:	Aggregate	mi chiedo I ask myself	mi domando I ask myself	non so I don't know	vorrei sapere I would like to know
final w	final w	95.7%	97.4%	99.1%	88.1%	98.3%
V1	V1	3.0%	0.0%	0.0%	11.9%	0.0%
V2	V2	1.3%	2.6%	0.9%	0.0%	1.7%

Figure 7: The prosodic experiment: NPA distribution in indirect wh-questions

no fully-fledged PA is observable (Gili Fivela et al. 2016). The NPA placement results are shown in Figure 7.[14]

In our data, the NPA was overwhelmingly assigned to the rightmost constituent of the sentence, indicated as 'final w(ord)' in Figure 7. Overall, this pattern is observed in 95.7% of the data.[15] In the remaining cases, the NPA falls either on the lexical verb of the matrix clause (V1) or on the lexical verb of the embedded wh-question (V2), in 3% and 1.3% of cases, respectively.

An example of the most common prosodic pattern observed in our data is illustrated in Figure 8, which shows the contour produced after the experimental sentence in (15) (an indirect wh-question with *a chi* 'to whom'). As the reader can

---

14 It is worth mentioning that only 1 sentence out of 470 was realized with a final rise (i.e. L-H%). All the other sentences were characterized by a low final boundary tone (i.e. L-L%). Together with the use of the subjunctive mood for the embedded verb, this consistent prosodic pattern rules out any possibility that participants might have interpreted the embedded clause as a direct, rather than indirect, question.

15 Given these results, we could not statistically test the distribution with a mixed model analysis: the distribution is too extreme and there is no variability in several conditions. However, this clearly does not undermine our findings.
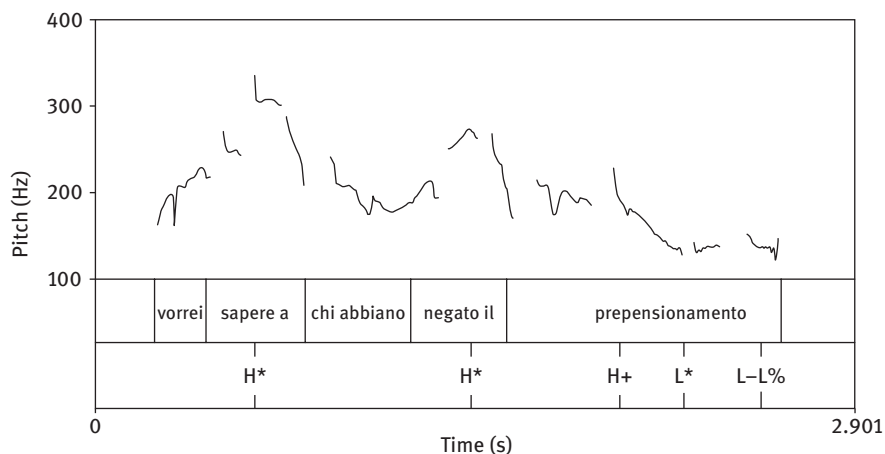
Figure 8: Pitch contour of an utterance produced after the indirect wh-question in (15)

observe, the H+L* NPA is associated with the stressed syllable of the rightmost constituent of the sentence.

(15) CONTEXT: *In ufficio è appena arrivato il piano delle mansioni per l'anno prossimo. Amalia e Rosa discutono il documento inviato dalle risorse umane e Rosa commenta così*:

'The work schedule for next year has just arrived in the office. Amalia and Rosa discuss the document sent by Human Resources and Rosa comments:'

Vorrei	sapere	a	chi	abbiano	negato
want.COND.1SG	know.INF	to	whom	have.SBJV.3PL	denied

il	prepensionamento.
the	early-retirement

'I'd like to know whom they deny an early retirement to.'

While the type of wh-element did not appear to have an impact on the distribution of NPA, the nature of the matrix verb showed a limited effect on the NPA placement. In fact, the NPA was assigned to the matrix verb only in sentences introduced by *non so* 'I don't know'. With this type of matrix clause, the NPA is assigned to the matrix verb in 11.9% of cases. We hypothesize that this prosodic pattern is due to the presence of negation in the matrix clause. We propose that when the NPA was assigned to the matrix verb *so* 'know', the speakers interpreted the matrix verb as a narrow focus associated with the negation, which frequently functions as a focus sensitive element (cf., e.g., Rooth 1996). This may explain why it is only with this matrix clause that the NPA is – albeit in a limited number

of cases – on the matrix verb. In the majority of cases, however, the contexts provided disfavoured such an interpretation and, as a result, the NPA was assigned on the rightmost constituent.

Finally, it is worth emphasizing that, in contrast to direct wh-questions (see Bianchi, Bocci & Cruschina 2017), NPA in indirect wh-questions was assigned to the verb of the clause from which the wh-element is extracted only in a marginal number of cases (1.3%).

In conclusion, the results of the prosodic experiment show that under a neutral context, NPA is assigned to the rightmost constituent of the sentence. Crucially, this corresponds to the default prominence placement for Italian declaratives and contrasts with the prominence placement observed in direct wh-questions (cf. § 5.2). Our findings, therefore, lead us to the generalization that the prosody of indirect wh-questions patterns with that of declarative sentence rather than with the prosody of direct wh-questions.

5.3 Subject inversion in indirect wh-questions: second syntactic experiment

In the previous section, we saw that in indirect wh-questions, NPA is not necessarily assigned to the verb or to the wh-element: in other words, in this environment, Calabrese's phonological requirement is not at play. Subject inversion, nevertheless, systematically occurs in indirect wh-questions. Bocci & Pozzan (2014) investigated the distribution of subjects in direct and indirect questions. On the basis of three experimental studies, Bocci & Pozzan (2014) show that, when the discourse conditions disallow a topic or narrow focus interpretation of the subject, postverbal subjects are preferred and rated more highly than preverbal subjects in questions with *dove* 'where', while the reverse pattern is found in wh-questions with *perché* 'why' and yes-no questions. These patterns were observed both in direct and indirect questions.

The distinct behaviour of *perché* 'why' as opposed to the other wh-phrases is expected in light of the existing literature. *Perché* is base-generated in the left periphery and does not undergo wh-movement (Rizzi 2001), while *dove* 'where', which we chose as representative of the class of bare wh-phrases that also include 'who', 'what', 'how', undergoes wh-movement to the embedded left periphery and thus triggers subject inversion (for discussion and experimental evidence see Bianchi, Bocci & Cruschina 2017). Similarly, indirect yes/no-questions introduced by *se* 'if' do not involve wh-movement and do not induce subject inversion. In conclusion, since subject inversion is observed in indirect wh-questions and since the indirect questions are not characterized by the same special prosodic

properties of direct wh-questions, subject inversion cannot be triggered by a prosodic requirement.

The indirect questions tested in Bocci & Pozzan's (2014) experiment included an embedded verb in the indicative mood. Even if the indicative is not the favourite option for most speakers in this context, it is generally accepted at the colloquial level. Prescriptively, however, the subjunctive is required in Italian indirect questions, and this option is often preferred by native speakers, although there is a strong variability across speakers. The mood of the embedded verb is not immaterial with respect to the issue under investigation here, namely, the distribution of subjects. It has been reported that it has a direct impact on the subject position, as observed by Calabrese (1982: 66–67) himself, and that it plays a relevant role in the licensing of preverbal subjects (see Rizzi 1996, 2001, Giorgi & Pianesi 1997, Poletto 2000). For this reason, we wanted to assess the different impact of the subjunctive mood and carried out a web-based forced choice experiment with two alternatives using similar materials as in Bocci and Pozzan's (2014) experiment and taking the mood of the embedded verb as a factor. Unlike in Bocci and Pozzan, we only considered indirect questions in this study.

The two experimental factors were: (i) 'embedded mood' with two levels, i.e. indicative vs. subjunctive, and (ii) 'question type' with three levels: wh-question with *dove* 'where', wh-questions with *perché* 'why', and yes/no-questions introduced by *se* 'if'.[16] The two factors were manipulated within items in a fully crossed design. We tested 30 items under 6 conditions (=3*2), leading to a total of 180 target sentences. For each target sentence, we had two versions: with the subject of the embedded clause either in preverbal or in postverbal position. All target sentences consisted of indirect questions in which the embedded clause contained only a subject (full DP) and an unergative verb in present (syncretic) tense. Below are examples for each condition:

(16) A: *Perché non metti un po' di musica?*   [*dove*, **indicative**]
         'Why don't you put some music on?'
     B: *Meglio   di   no. Non   so   dove   Claudia   studia.*   (SV)
     B'. *Meglio   di   no. Non   so   dove   studia   Claudia.*   (VS)
         better   of   not not   know where Claudia studies Claudia
         'Better if I don't. I don't know where Claudia is studying.'

(17) A: *Perché non metti un po' di musica?*   [*dove*, **subjunctive**]
         'Why don't you put some music on?'

---

16 We added this latter type of question, namely *if*-questions, to see which positions subjects occupy within indirect yes/no-questions. Since this article deals with wh-questions, we will not comment on the results and on their theoretical implications. See Bocci & Pozzan (2014) for discussion.

B: Meglio di no. Non so dove Claudia studi. (SV)
B'. Meglio di no. Non so dove studi Claudia. (VS)
    better of not not know where Claudia studies Claudia
    'Better if I don't. I don't know where Claudia is studying.'

(18) A: *Ma gli esami non sono stati rinviati?* [*perché*, **indicative**]
     'Haven't the exams been postponed?'
     B: Sì, di due mesi. Non so perché Claudia studia. (SV)
     B'. Sì, di due mesi. Non so perché studia Claudia. (VS)
         yes of two months not know why Claudia studies Claudia
         'Yes, by two months. I don't know why Claudia is studying.'

(19) A: *Ma gli esami non sono stati rinviati?* [*perché*, **subjunctive**]
     'Haven't the exams been postponed?'
     B: Sì, di due mesi. Non so perché Claudia studi. (SV)
     B'. Sì, di due mesi. Non so perché studi Claudia. (VS)
         yes of two months not know why Claudia studies Claudia
         'Yes, by two months. I don't know why Claudia is studying.'

(20) A: *Perché non metti un po' di musica?* [*se*, **indicative**]
     'Why don't you put some music on?'
     B: Meglio di no. Non so se Claudia studia. (SV)
     B'. Meglio di no. Non so se studia Claudia. (VS)
         better of not not know if Claudia studies Claudia
         'Better if I don't. I don't know if Claudia is studying.'

(21) A: *Perché non metti un po' di musica?* [*se*, **subjunctive**]
     'Why don't you put some music on?'
     B: *Meglio di no. Non so se Claudia studi.* (SV)
     B'. *Meglio di no. Non so se studi Claudia.* (VS)
         better of not not know if Claudia studies Claudia
         'Better if I don't. I don't know if Claudia is studying.'

The target sentences were divided into 6 lists following a Latin square design. The two factors 'embedded mood' and 'question type' were manipulated within participants, so that each list consisted of 30 experimental item. Each participant was thus presented with the experimental stimuli of a certain item only under one condition. 30 fillers were added to the trials, and the order of the trials was pseudo-randomized. The experimental trials and the fillers alternated.

The sentence pairs were presented as parts of brief written exchanges between two speakers (A and B) (cf. 16–21). The contexts were designed in order to disfavour as much as possible a focus or topic interpretation of the subject
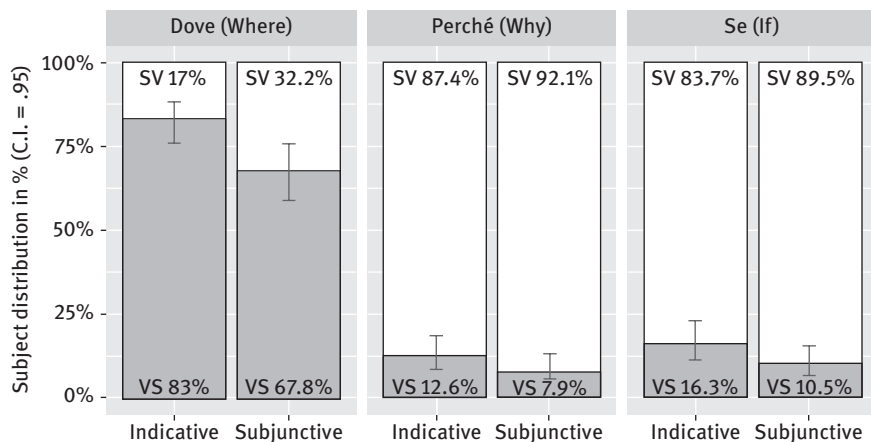
Figure 9: Second syntactic experiment: preferences for SV or VS in the three types of indirect question, with indicative or subjunctive mood

in the embedded clause. For each item, *se*-questions and *dove*-questions were presented within the same dialogue, while *perché*-questions were introduced by different dialogues. Participants were asked to choose between the two alternative orders (SV vs. VS); 60 native speakers of Italian residing in Italy participated in the experiment. Figure 9 shows the results.

Statistical analyses were based on multi-level mixed effects regressions with log odds of a postverbal subject response as the dependent variable, mood (subjunctive vs. indicative), question-type (*se*-, *perché*-, and *dove*-questions) as fixed effects. The random structure included by-subject and by-item random intercepts, and by-subject and by-item slopes for question-type.

A first statistical model, with question-type specified with backward difference schema, showed that subject distribution in *se-* and *perché*-questions is not significantly different (*Estimate* = −.560, *SE* = .36, p > .1), while *perché*-questions significantly differ from *dove*-questions (*Estimate* = 4.043, SE = .438, p < .001). The main effect of mood was extremely significant (*Estimate* = .009, SE = .2, p < .001). To understand the role of mood with respect to *perché*-questions and *dove*-questions, we fitted a second model that included only *perché-* and *dove*-questions. This model revealed that *dove*-questions with subjunctive mood (the baseline) significantly differ from *dove*-questions with indicative mood (*Estimate* = 1.112, SE = .271, p < .001) since in the latter condition the preference for postverbal subjects increases. Notably, *dove*-questions with subjunctive mood also significantly differ from *perché*-questions with subjunctive mood (*Estimate* = −3.724, SE = .488, p < .001) since the probability of VS in the latter condition is much lower. There

is no marginal interaction for *perché*-questions with indicative mood (*Estimate*= −.595, SE = . 0.444, p > .1) indicating that the type of mood does not affect the distribution of subjects in *perché*-questions.

These results show that, in the absence of contextual conditions that could favour a focus or topic interpretation, postverbal subjects are clearly preferred in *dove*-questions, but dispreferred with *perché*- and *se*-questions. The pattern observed with the indicative is also present with the subjunctive: although the inverting effect of *dove* is slightly reduced with the subjunctive, VS is still the prevailing pattern in *dove*-questions with the subjunctive. This contrasts with the preference for SV observed for *perché*-questions with the same mood (cf. Figure 9) (see Bianchi, Bocci & Cruschina 2017 for an account for this asymmetry).

In sum, we have experimental evidence showing that the subjunctive slightly diminishes the preference for postverbal subjects in indirect questions. However, even if less compelling, exactly the same preference patterns observed with the indicative are reproduced with the subjunctive, showing that the factor that ultimately counts is the question type.

6 Conclusion

The derivational history of the wh-phrase, i.e. its successive cyclic movement, is essential to understand the constraints on the subject position and on the placement of NPA in wh-questions, both with short and long movement. Our first experiment shows that subject inversion in the embedded clause of a complex wh-question is strongly preferred only when the wh-phrase originates from within that clause and has moved to the main clause. Further experimental data (see in particular Bocci, Bianchi & Cruschina 2018) add prosodic evidence in favour of the essential role of the successive cyclic movement in the determination of the syntactic and prosodic properties of wh-questions. Our results confirm that in complex wh-questions the placement of NPA is sensitive to the extraction process of the wh-element. The differences and similarities between direct and indirect wh-questions are crucial in this respect. On the one hand, the adjacency requirement between the wh-element and the verb is active in direct wh-questions as well as in indirect wh-questions, both with the subjunctive and the indicative mood. On the other, with respect to their prosodic properties, indirect wh-questions pattern with declarative sentences rather than with direct wh-questions, insofar as NPA is placed by default on the rightmost element of the sentence.

We thus conclude that subject inversion in wh-questions does not result from a prosodic requirement, but is instead syntactic in nature. While there is

no direct causal relation between NPA placement and subject inversion, both phenomena are independently rooted in the syntactic computation. Subject inversion in both direct and indirect questions is a syntactic phenomenon and is sensitive to successive cyclic movement. Similarly, the prosodic mechanism originally observed by Calabrese that leads to the NPA placement in direct wh-questions is syntactically determined and must also be viewed as a reflex of successive cyclic movement.

References

Antinucci, Francesco & Guglielmo Cinque. 1977. Sull'ordine delle parole in Italiano. L'emarginazione. *Studi di Grammatica Italiana* 6. 121–146.

Belletti, Adriana. 2004. Aspects of the low IP area. In Luigi Rizzi (ed.), *The structure of IP and CP. The cartography of syntactic structures, Vol. 2*, 16–51. Oxford & New York: Oxford University Press.

Belletti, Adriana & Valentina Bianchi. 2016. Definiteness effect and unaccusative subjects: An overview and some new thoughts. In Susann Fischer, Tanja Kupisch & Esther Rinke (eds.), *Definiteness effects: bilingual, typological and diachronic variation*, 14–65. Cambridge: Cambridge Scholars Publishing.

Bianchi, Valentina, Giuliano Bocci & Silvio Cruschina. 2017. Two types of subject inversion in Italian wh-questions. *Revue roumaine de linguistique* 62(3): 233–252.

Bianchi, Valentina, Giuliano Bocci & Silvio Cruschina. forthcoming. The syntactic and prosodic effects of long-distance wh-movement in Italian. *Italian Journal of Linguistics*.

Bocci, Giuliano & Lucia Pozzan. 2014. Questions (and experimental answers) about Italian subjects. Subject positions in main and indirect question in L1 and attrition. In Carla Contemori & Lena Dal Pozzo (eds.), *Inquiries into linguistic theory and language acquisition. Papers offered to Adriana Belletti*, 28–44. Siena: CISCL Press.

Bocci, Giuliano. 2013. *The Syntax–Prosody Interface: a cartographic perspective with evidence from Italian*. Amsterdam: John Benjamins.

Bocci, Giuliano, Valentina Bianchi & Silvio Cruschina. 2018. The syntactic role of focus: Evidence from Italian wh-questions. Manuscript.

Calabrese, Andrea. 1982. Alcune ipotesi sulla struttura informazionale della frase in Italiano e sul suo rapporto con la struttura fonologica. *Rivista di Grammatica Generativa* 13. 489–526.

Cardinaletti, Anna. 2001. A second thought on *emarginazione*: Destressing vs 'Right Dislocation'. In Guglielmo Cinque & Giampaolo Salvi (eds.), *Current studies in Italian syntax. Essays offered to Lorenzo Renzi*, 117–135. Amsterdam: Elsevier.

Cardinaletti, Anna. 2002. Against optional and null clitics. Right dislocation vs. marginalization. *Studia Linguistica* 56(1). 29–57.

Cardinaletti, Anna. 2007. Subjects and wh-questions. Some new generalizations. In Jose Camacho et al. (eds.), *Romance linguistics 2006: Selected papers from the 36th Linguistic Symposium on Romance Languages (LSRL)*, 57–79. Amsterdam & Philadelphia: John Benjamins.

Chomsky, Noam. 2008. On phases. In Robert Freidin, Carlos P. Otero, and Maria Luisa Zubizarreta (eds.), *Foundational issues in linguistic theory*: *Essays in honor of Jean-Roger Vergnaud*. Cambridge, MA: MIT Press.

É. Kiss, Katalin. 1995. Introduction. In Katalin É. Kiss (ed.), *Discourse configurational languages*, 3–27. Oxford & New York: Oxford University Press.

Giorgi, Alessandra & Fabio Pianesi. 1997. *Tense and aspect. From semantics to morphosyntax*. Oxford & New York: Oxford University Press.

Haida, Andreas. 2007. *The indefiniteness and focusing of wh-words*. Berlin: Humboldt-Universität PhD dissertation.

Henry, Alison. 1995. *Belfast English and Standard English: dialect variation and parameter setting*. Oxford & New York: Oxford University Press.

Horvath, Julia. 1981. *Aspects of Hungarian syntax and the theory of grammar*. Los Angeles: UCLA PhD dissertation.

Horvath, Julia. 1986. *FOCUS in the theory of grammar and the syntax of Hungarian*. Dordrecht: Foris.

Kayne, Richard S. & Jean-Yves Pollock. 1978. Stylistic inversion, successive cyclicity and move NP in French. *Linguistic Inquiry* 9. 595–621.

Kisler Thomas, Uwe D. Reichel, Florian Schiel, Christoph Draxler, Bernhard Jackl & Nina Pörner. 2016. BAS Speech Science Web Services – an update of current developments. In *Proceedings of the 10th International Conference on Language Resources and Evaluation (LREC 2016)*, Portorož, Slovenia, 3880–3885.

Munaro, Nicola. 2010. La frase interrogativa. In Lorenzo Renzi & Giampaolo Salvi (eds.), *Grammatica dell'italiano antico*, 1147–1185. Bologna: Il Mulino.

Nespor, Marina & Irene Vogel. 1986. *Prosodic phonology*. Dordrecht: Foris.

Poletto, Cecilia. 2000. *The higher functional field: evidence from Northern Italian dialects*. Oxford & New York: Oxford University Press.

Rizzi, Luigi & Ur Shlonsky. 2007. Strategies of subject extraction. In H.-M. Gärtner & U. Sauerland (eds.), *Interfaces + recursion = language? Chomsky's minimalism and the view from syntax-semantics*, 115–160. Berlin: Mouton de Gruyter.

Rizzi, Luigi. 1996. Residual verb-second and the wh-criterion. In Adriana Belletti & Luigi Rizzi (eds.), *Parameters and functional heads. Essays in comparative syntax*, 63–90 Oxford & New York: Oxford University Press.

Rizzi, Luigi. 2001. On the position Int(errogative) in the left periphery of the clause. In Guglielmo Cinque & Giampaolo Salvi (eds.), *Current studies in Italian syntax. Essays offered to Lorenzo Renzi*, 287–296. Amsterdam: Elsevier.

Rizzi, Luigi. 2006. On the form of chains: Criterial positions and ECP effects. In Lisa Lai-Shen Cheng & Norbert Corver (eds.), *Wh-movement. moving on*, 97–133. Cambridge, MA: MIT Press.

Rooth, Mats. 1996. Focus. In Shalom Lappin (ed.), *The handbook of contemporary semantic theory*, 271–297. Oxford: Blackwell.

Schiel, Florian. 1999. Automatic phonetic transcription of non-prompted speech. *Proceedings of the International Congress of Phonetic Sciences* 1999. 607–610.

Torrego, Esther. 1983. More effects of successive cyclic movement. *Linguistic Inquiry* 14. 561–565.

Torrego, Esther. 1984. On inversion in Spanish and some of its effects. *Linguistic Inquiry* 15. 103–129.