

Syntactic and prosodic effects of long-distance *wh*-movement in Italian

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In this paper we discuss postverbal subjects in Italian direct *wh*-questions. We show that, in this context, subject inversion is not determined by the information-structural, semantic, or pragmatic conditions that rule ‘free’ subject inversion in declarative clauses: it is rather the consequence of a purely syntactic mechanism, namely, successive cyclic *wh*-movement, which directly affects the syntactic position of the subject, as well as the prosody of the sentence (in particular, the distribution of the nuclear pitch accent). We propose that the movement of the *wh*-element to the local CP inhibits the position SubjP, which hosts preverbal subjects in Italian. This syntactic restriction, we argue, is due to a case of relativized minimality: given that the preverbal subject would count as an intervener that blocks *wh*-movement, SubjP is not projected in the syntactic structure of *wh*-questions and the subject must obligatorily occur postverbally.

1. Introduction

In Italian direct *wh*-questions with bare *wh*-elements, subjects cannot intervene between the *wh*-phrase and the inflected verb (1b), but must occur postverbally (1a) (see Calabrese 1982, Rizzi 1996, 2001):

- (1) a. **Che cosa Mario ha visto?*
 what thing Mario has seen
 b. *Che cosa ha visto Mario?*
 what thing has seen Mario
 ‘What did Mario see?’

Even though this phenomenon has received different analyses over the years, there is general consensus that this type of obligatory subject inversion radically differs from the so-called ‘free’ subject inversion in declarative clauses. While the former exclusively appears to depend on a syntactic mechanism, the latter is known to be related to information-structure requirements that impose a postverbal subject in order to signal either narrow focus on the subject itself (Belletti 2004) or broad

focus over the whole sentence in a presentational construction (see, among others, Lambrecht 1994, Pinto 1997).¹

In this paper we investigate the unavailability of preverbal subjects in Italian direct *wh*-questions. In line with previous accounts (Rizzi 1996, Cardinaletti 2007), we maintain that the impossibility of having a preverbal subject is due to successive cyclic movement of the *wh*-element. We assume that Italian preverbal subjects occupy SubjP, a position designated for the subject of predication of a categorical LF structure (following Cardinaletti 1997, 2004), and we propose that an interrogative clause cannot contain a quantificational probe in Subj°, inasmuch as the phrase attracted to SubjP would act as an intervener for *wh*-movement.

The empirical basis for this study will be provided by experimental data on direct *wh*-questions including an embedded clause. In this configuration, we were able to investigate the syntactic and prosodic effects of long-distance *wh*-movement with respect to the distribution of the embedded subject and the assignment of the NUCLEAR PITCH ACCENT (NPA), namely, the main intonational prominence within the sentence. We will show that successive cyclic movement is the essential mechanism that determines both subject inversion and the distribution of the NPA.

The paper is organized as follows: after a presentation of subject inversion in embedded clauses (§1.1) and of NPA assignment in *wh*-questions (§1.2), in section 2 we review the results of a syntactic experiment on the distribution of subjects in the case of long-distance *wh*-movement as opposed to short-distance movement. In section 3, we report the results of a prosodic experiment concerned with the assignment of the NPA under the same syntactic conditions (short-distance vs long-distance movement). Having established the relevance of successive cyclic movement, we then outline our proposal on the unavailability of preverbal subjects (§4). The paper will finally close with a concise summary of the main findings and conclusions (§5).

1.1. Subject inversion in root and embedded clauses

Before we introduce our theoretical assumptions, two clarifications are in order in regard to our use of the term ‘subject inversion’. Firstly, in the present paper we are not concerned with the question of whether a strict adjacency requirement holds between the *wh*-phrase and the inflected verb in Italian. On the one hand, Rizzi (1996) claimed that adjacency is the consequence of a Spec-Head configuration between the *wh*-phrase and the inflected verb, thus preventing any element from interposing between them. On the other, Cardinaletti (2007) showed

that specific types of adverb can in fact intervene between the *wh*-phrase and the verb. Here, we only take subjects and subject positions into account.

Secondly, note that in Italian direct *wh*-questions, subjects do not necessarily undergo inversion: they can simply be omitted or dislocated to the left of the *wh*-phrase or to the right of the clause. By subject inversion, therefore, we mean the typical postverbal position that overt subjects occupy in neutral contexts, where the subject does not have a salient antecedent in the context and resists dislocation or omission. The exact nature of this postverbal position is not immediately relevant to our discussion; for the sake of argument, we will assume, following Cardinaletti (2001, 2002, 2007), that in these cases, the subject stays in its base-generated position within the vP.

Most of the relevant literature has focused on subject inversion in simple direct *wh*-questions, as exemplified in (1) above (see, among others, Calabrese 1982, Rizzi 1996, 2001, Cardinaletti 2007). By contrast, not so much attention has been paid to subject inversion in case of long-distance movement. Calabrese (1982) for Italian and Torrego (1984) for Spanish have shown that in direct questions with long-distance *wh*-movement, subjects appear postverbally not only in the matrix, but also in the embedded clause from which the *wh*-element is extracted. This is illustrated in example (2), from Calabrese (1982: 39-40):

- (2) 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 that Carlo has done?'

In (2a-b) the *wh*-phrase is extracted from the embedded declarative clause under long-distance movement: while the preverbal position of the subject *Carlo* in the embedded clause makes the sentence rather marginal (2a), subject inversion is perfectly grammatical (2b).

According to Calabrese (1982), in direct *wh*-questions the *wh*-phrase and the verb must form an independent intonational phrase. This is because focal elements – including *wh*-phrases – receive a focal [F] feature from the verb and must be string-adjacent to it: thus, any potential intervener must be syntactically displaced. Subject inversion is thus the mere consequence of this phonological requirement.

By contrast, Torrego (1984) analyses embedded subject inversion in *wh*-questions as a direct reflex of the syntactic process of successive cyclic movement. In particular, she argues that when 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 takes place not only in the matrix clause, but also in the case of long extraction from an embedded clause, leading to subject inversion in both clauses. As will become clear, our analysis significantly diverges from Calabrese's phonological solution and is rather inspired, albeit with important differences, by Torrego's syntactic account.

1.2. Nuclear Pitch Accent (NPA) in *wh*-questions

In the same paper, Calabrese (1982) observed another property of *wh*-questions in Italian: the main prosodic prominence of the sentence, namely, the Nuclear Pitch Accent is generally assigned to the lexical verb, both with short-distance movement as in the simple *wh*-question in (3a) and with long-distance movement as in (3b) (the stressed syllable of the verb is marked with capitals in the examples). As a consequence, the postverbal subject occurs in a postfocal context and displays the prosodic properties that in general characterize post-focal constituents: it is metrically subordinated with respect to the element bearing the NPA (i.e. the lexical verb) and fails to associate with fully-fledged pitch accents. In this respect, the postverbal subjects in *wh*-questions like those in (3) pattern with marginalized subjects in declarative clauses with narrow focus (see Antinucci & Cinque 1997, Cardinaletti 2001, 2002).

- (3) a. *Che cosa ha VISto Mario?*
what thing has seen Mario
'What did Mario see?'
- b. *Che cosa gli hai detto che ha FATto Carlo?*
what thinghim.DAT have.2SG said that has done Carlo
'What did you tell him Carlo has done?'

The prosodic pattern that characterizes direct *wh*-questions is rather unexpected and seems to be typical of Italian: crucially, the NPA is neither assigned to the *wh*-phrase (which is generally considered to be the focus of the sentence),² nor to the rightmost element of the sentence, as in neutral (broad focus) declarative sentences (see Ladd 1996, Marotta 2000, Bocci, Bianchi & Cruschina 2018).

According to Calabrese, the very same phonological requirement that is considered responsible for subject inversion (i.e. the adjacency between the *wh*-phrase and the inflected verb) is also the trigger of the special NPA assignment. The main intonational phrase of the sentence must exhaustively include the verb and the [F]-marked elements; within

this prosodic constituent, NPA is assigned to the rightmost element. In *wh*-questions, the *wh*-phrase in CP inherits [F] from its trace in the base-generation position and must therefore be adjacent to the verb: the latter surfaces as the rightmost element endowed with [F] and is hence assigned the NPA. Subjects, lacking [F], cannot appear in preverbal position because they would otherwise prevent the transmission of [F] from the trace to the CP, the formation of the main intonational phrase, and hence the assignment of NPA to the lexical verb.

In this paper, we do not adopt Calabrese's proposal because it is not general enough to deliver a unified account of subject inversion in both DIRECT and INDIRECT *wh*-questions. On the basis of experimental evidence, Bocci & Pozzan (2014) demonstrate that subject inversion is not restricted to direct *wh*-questions, but also takes place in indirect *wh*-questions. However, as reported in Bocci & Cruschina (2018), the prosodic properties of direct and indirect *wh*-questions are crucially different. In particular, indirect *wh*-questions pattern with declarative sentences, in that the NPA is assigned to the rightmost element in the sentence, unless a constituent that qualifies as narrow focus attracts it. Since subject inversion in indirect *wh*-questions does not correlate with special prosodic properties, we conclude that subject inversion does not result from a specific prosodic requirement, as proposed by Calabrese.³

On the other hand, we will retain Calabrese's insight that the special NPA assignment observed in (3) is due to an [F] feature associated with the lexical verb. However, we will tie this feature specification to the derivational history of the *wh*-phrase.

In order to give empirical substance to the previous observations on subject inversion with long-distance movement and on the NPA distribution, in the next sections we report the results of two experiments in which we directly compared short-distance movement with long-distance movement.

2. Subject inversion and long-distance movement: the syntactic experiment

In order to examine the distribution of embedded subjects in Italian *wh*-questions, we conducted a web-based two-alternative forced choice experiment, hosted on *IbexFarm* (Drummond 2017). The participants, 59 Italian native speakers, were recruited via Facebook. The experimental design comprised of two crossing binary independent factors (2x2):

- i. type of *wh*-movement: short vs long movement;
- ii. type of verb in the embedded clause (intransitive vs transitive)

The dependent factor was the position of the subject (preverbal vs postverbal) in the embedded clause. A forced-choice task was used. Participants had to choose between two versions of the same target sentence, which only differed with respect to the position of the embedded clause subject (preverbal vs postverbal). We tested 24 items under the 4 conditions for a total of 96 experimental stimuli (24 items \times 2 movement types \times 2 subject positions). On the basis of a Latin square design, the stimuli were divided into 4 lists. Each participant was presented with 48 trials: 24 experimental trials and 24 fillers. Each trial started with a brief description of a hypothetical scenario as an introductory context for the target sentence. The trials were presented in a pseudo-randomized order, alternating experimental stimuli and fillers.

In the target sentences, the matrix clause verb was always the verb *dire* 'say', and the embedded subject was never mentioned in the introductory context. The latter precaution measure was specifically taken to avoid a given interpretation of the subject and, hence, the possibility of it being right-dislocated. Examples of stimuli with intransitive and transitive verbs, both in the short and in the long movement condition, are given in (5-8):

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

(6) 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:

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

(7) 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 whom have.2SG said that the students you have.3PLinsulted
- b. *A chi hai detto che ti hanno insultato gli studenti?* (VS)
 to whom have.2SG said thatyou have.3PLinsulted the students
 ‘Who did you tell that the students insulted you?’

(8) LONG MOVEMENT, TRANSITIVE V

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- a. *Chi hai detto che gli studenti hanno insultato?* (SV)
 whom have.2SG said that the students have.3PL insulted
- b. *Chi hai detto che hanno insultato gli studenti?* (VS)
 whom have.2SG said that have.3PL insulted the students
 ‘Who did you say the students insulted?’

In (5) and in (7), the *wh*-phrase is the dative argument of the matrix verb *dire* ‘say’, so it originates in the root clause and undergoes short movement. In (6) and (8), by contrast, the *wh*-phrase is an argument of the embedded verbs *disobbedire* ‘disobey’ and *insultare* ‘insult’, respectively, and undergoes long-distance movement to the left periphery of the root clause. In all examples the (a)-sentences feature a preverbal subject (SV), while the (b)-sentences feature subject inversion (VS).

The results of this syntactic experiment illustrate the preferences for SV vs VS in direct *wh*-questions across movement type, cf. Figure 1. While the inversion of the embedded-clause subject is preferred in almost 80% of the cases under long-distance movement, subject inversion only shows a preference rate of 33% in the case of short-distance movement.

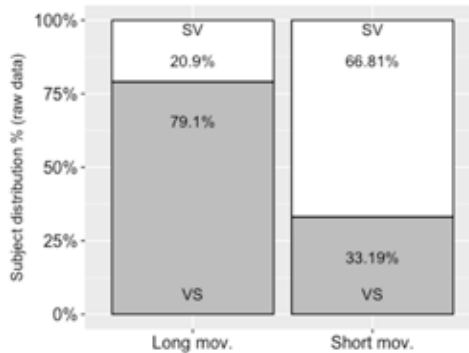


Figure 1. Preferences for SV vs VS in direct *wh*-questions across movement type

The data were tested with multilevel mixed-effect regressions with log odds of a postverbal subject response as the dependent variable, and type of movement (short vs long *wh*-movement) and type of VP (transitive vs intransitive) as fixed effects. The type of *wh*-movement (whether long or short) had a significant impact on the preference for the position of the embedded subject: in the long *wh*-movement condition the preference for postverbal over preverbal subjects was significantly higher than in the short *wh*-movement condition (*Estimate* = 2.63, *SE* = .228, $p < .001$). By contrast, the second factor (the main effect of the verb type) did not prove to be statistically significant (*Estimate* = .40, *SE* = .270, $p > .1$). (We refer the reader to Bocci & Cruschina 2018 for more details and, in particular, for the possible reasons for the lack of ceiling effects in this syntactic experiment).

These results highlight the clear interrelatedness between subject inversion in the embedded clause and long-distance movement: only when the *wh*-phrase originates from within the embedded clause is subject inversion in the embedded clause strongly preferred. Any analysis of subject inversion in *wh*-questions must therefore take this finding into account.

3. Nuclear pitch accent (NPA) assignment: The prosodic experiment

Let us now consider the intonational properties of direct *wh*-questions. In order to test the distribution of NPA, we carried out a production experiment that consisted of a reading task, in which 10 native speakers of Tuscan Italian read a number of short dialogues.⁴ The target sentences were *wh*-questions featuring, again, either short-distance or long-distance *wh*-movement, as exemplified in (9a) and (9b), respectively. To control for information structure effects, the short and long version of each pair were inserted in the same dialogue. A total of 478 sentences was segmented and analysed (see Bocci, Bianchi & Cruschina 2018 for further details):

- (9) 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 I should introduce to the director?’

The results of the experiment are illustrated in Figure 2. In the short-movement condition, represented in the first bar, the NPA was virtually always assigned to the lexical verb of the matrix clause.⁵ The picture is clearly different in the long distance condition (cf. the second bar in Figure 2): when the *wh*-element is extracted from the embedded clause, the NPA is assigned to the verb of the embedded clause in nearly 61% of cases.

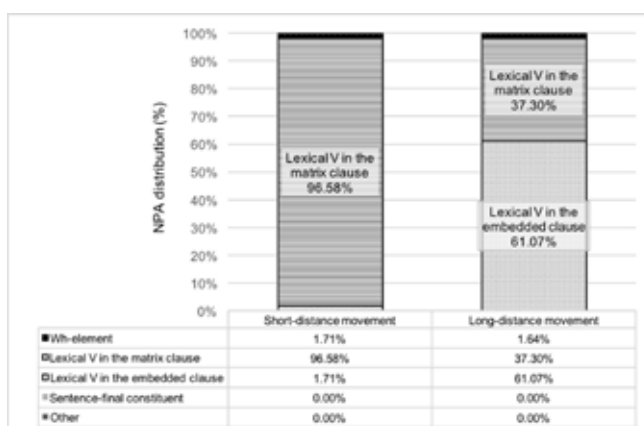


Figure 2. Distribution of NPA in direct *wh*-questions across type of *wh*-movement

Taken at face value, these results show that NPA-distribution is sensitive to the derivational history of the *wh*-element. In particular, our statistical analyses show that the NPA is significantly more likely ($p < .001$) to fall on the embedded verb in case of long-distance movement than in short-distance movement. We should also note that, in these data, the NPA was literally never (0%) assigned to the rightmost element of the sentence, which is the default position for NPA assignment in Italian (see Gili Fivela *et al.* 2015, among others).

Examples of the predominant pitch contours produced in the two experimental conditions are shown in Figure 3 and Figure 4 for short and long movement, respectively.

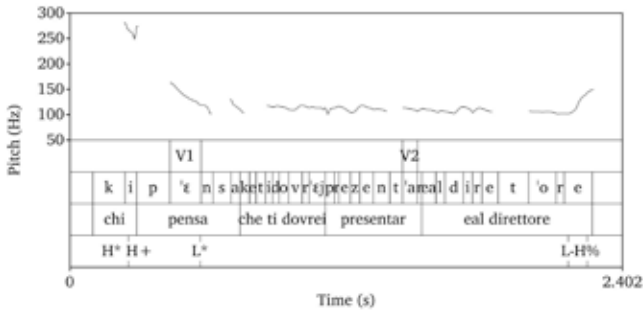


Figure 3. Pitch contour of an utterance produced after (9a): *wh*-question with short movement

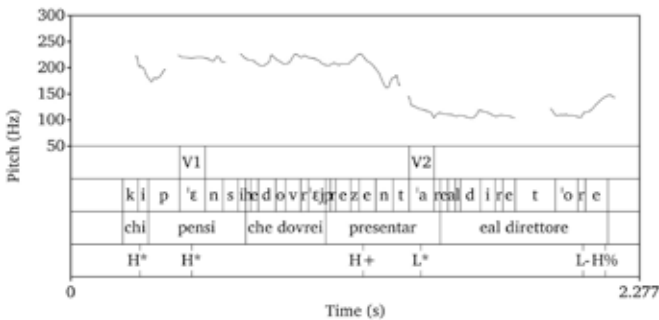


Figure 4. Pitch contour of an utterance produced after (9b): *wh*-question with long movement

4. Analysis

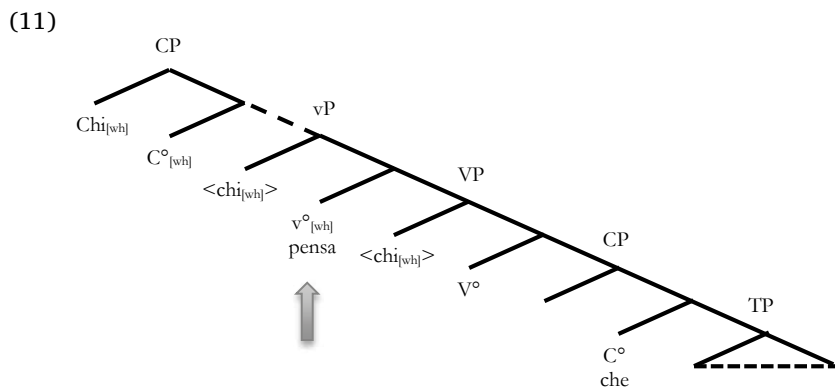
Our analysis of the experimental results introduced above relies on the successive cyclic nature of *wh*-movement. In particular, following Phase Theory (Chomsky 2000, 2008), we assume that successive cyclic movement must proceed through the edge of all the intervening phases to ensure that the *wh*-expression remains accessible to further syntactic operations once the domain of the phase head has been sent to Spellout. This requirement is stated as the ‘Phase Impenetrability Condition’ in (10):

- (10) PHASE IMPENETRABILITY CONDITION:
 In phase α with Head H, the domain of H is not accessible to operations outside α , but only H and its edge. (Chomsky 2000: 108)

Secondly, we assume that an interrogative *wh*-phrase bears a *wh*/focal feature and shares it with the head of every phase it passes through. Finally, with regard to the syntax-prosody interface, we assume that the NPA is assigned to the rightmost phonologically non-null element that is endowed with the *wh*/focal feature.

4.1. NPA assignment in direct *wh*-questions

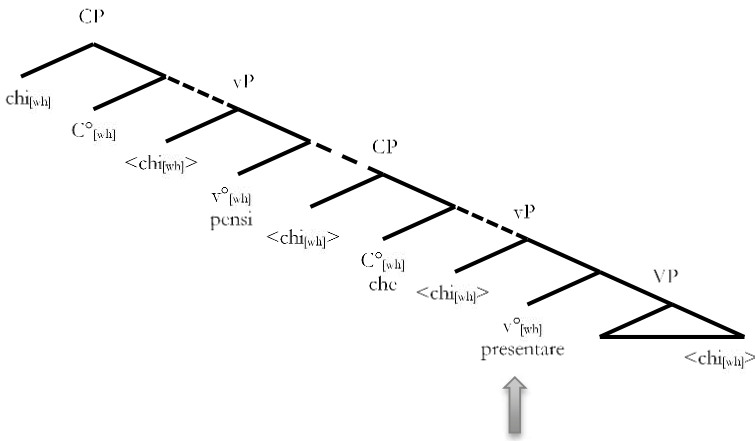
Let us consider first NPA assignment. In the case of a sentence with short movement like (9a), the *wh*-phrase is extracted from the little *v*P of the matrix clause and moved to the matrix CP. Thus, the matrix little *v* head and the C head, as well as the *wh*-phrase, are endowed with the *wh*/focal features. Among these elements, the rightmost non-null element is the lexical verb of the matrix clause, which is therefore assigned the NPA:



Since the *wh*-element is extracted from the matrix clause, there are no trails of *wh*-movement in the embedded clause: hence, the little *v* head in the embedded clause is not endowed with the *wh*/focal feature, and it does not qualify for NPA assignment.

In the case of long distance *wh*-movement, exemplified in (9b), the mechanisms that lead to the assignment of the NPA are illustrated in (12):

(12)



In this case, the *wh*-phrase is extracted from the little vP of the embedded clause and it crosses the embedded CP and the little vP phases of the embedded and matrix clause to reach the matrix left periphery. All the phase heads between the extraction and the landing site of the *wh*-phrase are thus endowed with the *wh*/focal feature. Among them, the rightmost element that is non-phonologically null is the lexical verb of the embedded clause. As such, it attracts the NPA.⁶

The analysis we have sketched thus attributes a crucial role to the syntactic derivation of the *wh*-chain, and in particular, to the *wh*/focal feature, which is shared by the phase heads with the intermediate links of the chain.

4.2. The preverbal subject position

The question that we still need to address is why the preverbal subject position is unavailable in *wh*-questions. As discussed in section 1.2, we do not follow Calabrese (1982) in reducing this unavailability to a prosodic requirement of adjacency between the *wh*-phrase and the verb.

In the relevant literature, two syntactic approaches have been proposed. Building on Torrego (1984), Rizzi (1996) proposes that, in *wh*-questions, T-to-C movement takes place in order to satisfy the *wh*-Criterion: the *wh*-feature is generated on T, which must move to C in order to create a Spec-head relation with the *wh*-phrase. This prevents the subject from being licensed in the preverbal position.

A different analysis is proposed by Cardinaletti (2007), who relies on the distinction between two preverbal subject positions. Strong preverbal subjects (i.e. lexical DPs and emphatic pronouns) are in Spec,SubjP, the syntactic position reserved for the ‘subject of predication’ (see also Cardinaletti 1997, 2004); on the other hand, null and weak pronominal subjects are hosted in a lower projection. In her account, T-to-C movement does not take place in *wh*-questions, but the presence of a subject in SubjP gives rise to a selective intervention effect, as illustrated in (13).

- (13) * [_{CP} *dove*_F [C° [_{SubjP} Gianni_{Subj} [_{TP} *va* < *dove*_F >]]]
 where Gianni goes where

While we remain agnostic on T-to-C movement, we follow Cardinaletti in assuming that strong preverbal subjects occupy SubjP. We propose that in direct *wh*-questions (cf. (5-8) above), as well as in indirect *wh*-questions (see Bocci & Pozzan 2014), the SubjP projection is unavailable because it would create an intervention effect for the movement of a (bare) *wh*-phrase. This proposal is explained in more detail below.

As a first step, we interpret the SubjP projection in terms of a categorical LF structure in the sense of Ladusaw (1994). Building on Diesing (1992), Ladusaw argues that stage-level predicates, such as *available* in (14a), allow a weak DP subject to be interpreted inside the predicative nucleus and undergo Existential Closure: thus, (14a) allows for an interpretation that is essentially equivalent to that of (14c):

- (14) a. *Two firemen are available.*
 b. LF: [_{TP} e [_{VP} ∃ *two firemen available*]]
 c. *There are two firemen available.*

On the other hand, individual-level predicates such as *brave* in (15) force the subject to be interpreted outside the predicative nucleus. The subject therefore receives a quantificational interpretation, establishing a relation between its restrictive term (a set which is presupposed to be non-empty) and the property denoted by the predicative nucleus. Following Bianchi & Chesi (2014), we assume that the categorical

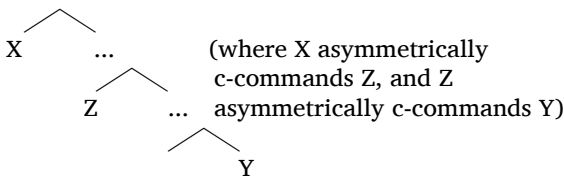
structure in Ladusaw’s sense is implemented by the SubjP projection, as shown in (15b). (The categorical structure is also an option, but not mandatory, with stage-level predicates.)

- (15) a. *Two firemen are brave.*
 b. LF: [_{SubjP} [*Two firemen*] [_{TP} *are brave*]].
 c. [$\lambda P: P \neq \emptyset. |\{x: \text{fireman}'(\times) \cap P| \geq 2\}(\{y: \text{brave}'(y)\})$]

Crucially, the subject DP is ‘frozen’ in Spec,SubjP (cf. Rizzi’s 2004 *Criterial Freezing*), and at the interface it is interpreted outside the predicative nucleus, as a presuppositional quantifier.⁷ Since SubjP essentially implements a tripartite quantificational structure, we assume that the probe that attracts a subject DP to Spec,SubjP is a quantificational feature.

As a second step, we assume the locality principle of featural Relativized Minimality as outlined in Rizzi (2011):

- (16) FEATURAL RELATIVIZED MINIMALITY
 In the configuration:



a local relation cannot connect X and Y if Z intervenes and Z fully matches the specification of X and Y in terms of the relevant features.

(Adapted from ex. (24) in Rizzi 2011)

The notion of ‘matching specification’ clearly has to be defined. Rizzi argues that matching cannot be reduced to identity of features: for one thing, movement of a bare *wh*-phrase can be blocked by an intervening negation, as exemplified in (17a). On the other hand, movement of a subject crossing negation is unproblematic, as exemplified in (17b):

- (17) a. How did he (*not) solve the problem <how> ?
 b. Many of the students did not <many of the students> solve the problem.

In order to account for this difference, Rizzi divides syntactically-relevant features into classes, and proposes that any feature belonging to a given class qualifies as an intervener for elements bearing any fea-

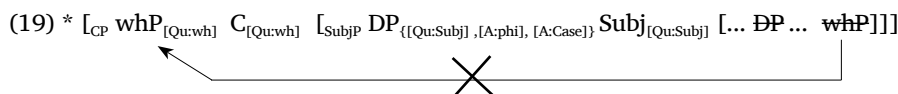
ture in the same class. The intervention effect in (17a) follows from the hypothesis that the [negative] feature and the *wh*-feature belong to the same class of Quantificational features. On the other hand, the lack of a parallel intervention effect in the case of subject movement is explained by the hypothesis that the subject bears Argumental features (Person, Number, Gender, and Case), which belong to a distinct class from Quantificational features.

In addition, Rizzi argues that Z counts as an intervener whenever it is equally specified, or more highly specified, than X.

We wish to propose a revision of Rizzi's feature classes, which implies that a categorical subject can move across negation, as in (17b), but it in turn qualifies as an intervener for an interrogative *wh*-phrase. To this aim, we hypothesize that the class of Quantificational features includes {[Qu:negative], [Qu:wh] and [Qu:Subj]}; the latter feature attracts a quantificational DP to Spec,SubjP. We then assume the following feature specifications:

- (18) a. *non* 'not': {[Qu:negative]}
 b. bare *wh*-phrase: {[Qu: wh]}
 c. categorical subject: {[Qu:Subj], [Arg: f], [Arg: Case]}

This typology predicts that a bare *wh*-phrase cannot move across negation (17a), since both are endowed with exactly one Qu-feature. On the other hand, the subject can move across negation, because its feature specification is a superset of that of the intervening negation (17b). Finally, and crucially for our argument, a bare *wh*-phrase cannot move across a categorical subject, because the feature specification of the former is a subset of the specification of the latter:



We hypothesize that, since the cooccurrence of the two quantificational probes [Qu:wh] and [Qu:Subj] leads to a non-convergent derivation, the grammar itself disallows the projection of SubjP in the domain of a C head specified for the [Qu:wh] probe.^{8,9}

This line of reasoning leads us to hypothesize that in languages such as English, where *wh*-questions feature a preverbal subject, the latter does not qualify as a categorical subject of predication (see É. Kiss 1996). As for Italian, we assume that preverbal subjects are always categorical (except for subjects under narrow focus): we refer to Bianchi &

Chesi (2014) for relevant discussion.

The ban against the configuration in (19) implies that in Italian, the subject in a *wh*-question must be realized in a position different from Spec,SubjP. When the subject is not discourse-given, as in our experimental data, it remains in the thematic position, i.e. the ‘canonical’ post-verbal position. On the other hand, when it is topical and/or discourse-given, it can be realized in a left-dislocated position (preceding the *wh*-phrase), or in a ‘non-canonical’ right-dislocated position.

5. Conclusions

In this paper we have provided experimental evidence that movement of *wh*-phrases in Italian *wh*-questions gives rise to two successive cyclicity effects: the obligatory inversion of the subject, and the assignment of the NPA to the lexical verb of the clause that hosts the foot of the *wh*-chain. These two phenomena were tied to a single prosodic requirement in Calabrese’s (1982) approach. Departing from his proposal, we have argued that NPA assignment is triggered by the *wh*/focal feature that the *wh*-phrase shares with the *v* phase heads when it moves through their edges on its way to the final CP landing site.

As for subject inversion, we have hypothesized that a preverbal subject hosted in SubjP qualifies as an intervener blocking *wh*-movement under featural Relativized Minimality, and therefore, SubjP is not projected in *wh*-questions, leading to obligatory postverbal subjects in Italian. Thus, even when the subject has no information-structure import, licensing left- or right-dislocation, inversion is the obligatory effect of the syntactic mechanisms operating in *wh*-questions.

Notes

¹ For the different behaviour of *perché* ‘why’, see Rizzi (2001) and Bianchi, Bocci & Cruschina (2017).

² On the alleged focal status of *wh*-elements and for an explanation of the hybrid behaviour, see Bianchi, Bocci & Cruschina (2017) and Bocci, Bianchi & Cruschina (2018).

³ For discussion and experimental evidence, see Bocci & Cruschina (2018).

⁴ For the sake of consistency, we tested speakers from the same regional area, since there might be regional variation in the relevant prosodic patterns (see Gili Fivela *et al.* 2015). Notice, however, that our results are fully compatible with the findings reported in Del Puppo (2016), where short-distance *wh*-questions in the regional variety of Italian spoken in Veneto were tested.

⁵ In half of the short-distance items the *wh*-phrase was the subject, in the other half it was the indirect object. This did not affect the placement of the NPA.

⁶ As shown in Figure 2, under long-distance *wh*-movement the NPA falls on the lexical verb of the matrix clause in 37% of cases. This is not surprising: the NPA assignment observed in (9b) is, in our account, a successive cyclicity effect, and it is well known since Torrego (1984) that cyclicity effects can be suspended in the embedded clause. This point exceeds the limits of this discussion; we refer the interested reader to Bocci, Bianchi & Cruschina (2018).

⁷ For definite DPs and proper names, which are normally taken to denote an entity, we assume that they are lifted to the generalized quantifier type, thus denoting (the characteristic function of) a family of sets, namely the principal ultrafilter generated by the relevant entity. See Partee (1987) for general discussion.

⁸ On the other hand, yes-no questions allow for preverbal subjects in Italian because, following Bianchi & Cruschina (2016), they do not involve *wh*-movement in their derivation.

⁹ We leave open the status of the feature triggering movement of relativized phrases, namely, the question of whether it also belongs to the quantificational class. Friedmann, Belletti & Rizzi (2009) discuss a subject intervention effect that arises in relative clauses in language acquisition, which, in their view, is due to a partial overlapping in the feature specification of the preverbal subject and the relativized phrase. However, in adults relative clauses allow for preverbal subjects. We leave this issue for further investigation

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