Clause Structure Folding and the ''*Wh*-in-Situ Effect''

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Why must a coordinative head show up before an adverbial *wh*-phrase in situ in Italian? In this article, I explore this rather neglected fact, showing that it reveals an otherwise hidden structure. More specifically, I propose that the coordinative head does not directly merge with the *wh*-phrase it precedes; rather, it takes a full clausal complement, inducing remnant movement and stranding of the highest *wh*-phrase. This configuration yields the observed word order and explains many properties of these constructions by means of independent locality conditions. I argue that it is a rescue strategy languages may adopt to meet a structural property of the left periphery, and I address some questions that the comparative perspective raises.

Keywords: clause structure, *wh*-in-situ, left periphery, coordination, sluicing, ellipsis

The aim of this article is to explore certain aspects of interrogative sentences in Italian—in particular, the ''*wh*-in-situ'' constructions, where at least two distinct *wh*-phrases cooccur in a clausal structure and only one appears to be overtly dislocated to the left periphery. Descriptively, Universal Grammar (UG) allows three distinct types of strategies for multiple *wh*-questions: languages like Bulgarian and Polish, where all *wh*-elements move to the front (1a); languages like Japanese and Chinese, where all *wh*-elements stay in situ (1b); languages like Italian and English, which combine these two opposite strategies and move only one *wh*-element to the front while leaving the other in situ (1c).[1]

(1) a. $[_{CP}$ *wh*-phrase C *wh*-phrase C $[_{TP}$ . . . t . . . t . . .]]   (Bulgarian, Polish, . . .)
    b. $[_{CP}[_{TP}$ *wh*-phrase . . . *wh*-phrase]]   (Chinese, Japanese, . . .)
    c. $[_{CP}$ *wh*-phrase C $[_{TP}$ . . . t . . . *wh*-phrase]]   (English, Italian, . . .)

The literature in the field is vast. Among others, see the seminal works by Richards (1993) and Bošković (1999); see also Boeckx and Grohmann 2003 and Cheng and Corver 2006 for papers

[1] In this article, I will not discuss the hypothesis of *wh*-movement at LF as suggested in the seminal work by Pesetsky (1987); for an interesting discussion of this hypothesis and the empirical phenomena that support it, see Cheng and Rooryck 2001 and references cited there. For a critical discussion of the existence of covert movement, see also Kayne 1998.

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on this issue and related ones, and Bayer 2005 for an updated critical review of the *wh*-in-situ literature. In this article, I will concentrate on the third class of languages only and limit my observations to Italian syntax. I will propose that this language is actually included in the first class, (1a)—that is to say, all *wh*-phrases move to the left periphery, although the final linear order is altered by a syntactic mechanism to be illustrated here. It is generally assumed that UG provides the possibility of checking the *wh*-features of multiple *wh*-phrases in two ways, thus splitting all languages into three categories: the *wh*-features of the phrase within the CP field are locally checked by a head endowed with *wh*-features in the left periphery; those of the phrase within the TP field are instead checked in situ.[2] The three-way partition comes from the fact that there are languages where the two strategies are mixed. The central proposal of this article is that the analysis given for Italian is not correct. Both *wh*-phrases undergo movement, and *wh*-feature checking is performed in the same portion of the left periphery. There is no *wh*-in-situ in this language; rather, the ''*wh*-in-situ effect'' (WISE) is due to a movement operation that rearranges the phrases, yielding the observed linear order.

This article is organized as follows. In section 1, I will explore the interaction of multiple adverbial *wh*-phrases with a coordinative head. In section 2, I will generalize the analysis given in section 1 to a broader class of phenomena involving argumental *wh*-phrases. Finally, in section 3, I will address the comparative issue, following the lines of reasoning that this analysis leads to when combined with a cartographic approach to the structure of the left periphery.

1 The ''*Wh*-in-Situ Effect'' with Adverbial *Wh*-Phrases: The Role of *e* 'and'

There is a sharp and quite neglected contrast in Italian: a causative adverbial like *per quale ragione* 'for what reason' must be immediately preceded by a coordinative head *e* 'and' when it occurs in situ (2a); on the other hand, this coordinative head is banned with the noninterrogative counterpart of the same adverbial, *per questa ragione* 'for this reason' (2b).

(2) a. Mi   chiedo   dove sono   andati *(e) [per quale ragione].
       to.me wonder.1SG where are.3PL gone   and for what reason
       'I wonder where they have gone and for what reason.'
    b. Mi   chiedo   dove sono   andati (*e) [per questa ragione].
       to.me wonder.1SG where are.3PL gone   and for this   reason
       'I wonder where they have gone for this reason.'

Besides this contrast, sentence (2a) raises an immediate and simple question: what are the two phrases that are conjoined by *e* 'and'? Let us start with the observation that *per quale ragione* 'for what reason' is a PP and assume that *e* 'and' merges with it: what do we expect to be the other member of the coordination? A well-established property of coordinative heads is that they can only coordinate two (or more) categorially homogeneous phrases. Consider for example the following contrasts:

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[2] The mechanism of long-distance feature checking will not be discussed here.

(3) a.   Gianni legge [[$_{DP}$ romanzi] [e   [$_{DP}$ poesie]]].
      Gianni reads   novels   and   poems
    b.   Gianni legge [[$_{PP}$ al   mare] [e   [$_{PP}$ alla   stazione]]].
      Gianni reads   at.the seaside and   at.the station
    c. *Gianni legge [[$_{DP}$ romanzi] [e   [$_{PP}$ alla   stazione]]].
      Gianni reads   novels   and   at.the station
    d. *Gianni legge [[$_{PP}$ al   mare] [e   [$_{DP}$ poesie]]].
      Gianni reads   at.the seaside and   poems

In sum, we are facing two conceptually and empirically separate questions: Why is there a contrast between (2a) and (2b)? And what is *e* 'and' coordinating, since there is no obvious candidate to play the role of first member of the coordination in (2a)?

Notice, furthermore, that the appearance of *e* 'and' is not specifically restricted to *per quale ragione* 'for what reason'. For example, paralleling the contrast in (2), the minimal pairs in (4) can be devised, using four different single-word *wh*-adverbials: *perché* 'why', *come* 'how', *quando* 'when', and *dove* 'where'.[3]

(4) a.   Mi   chiedo   dove sono andati   *(e) perché.
      to.me wonder.1SG where are gone.3PL   and why
      'I wonder where they have gone and why.'
    b. *Mi   chiedo   perché sono andati (e) dove.
      to.me wonder.1SG why   are gone.3PL and why
    c.   Mi   chiedo   quando sono partiti *(e) perché.
      to.me wonder.1SG when are left.3PL   and why
      'I wonder when they have left and why.'
    d. *Mi   chiedo   perché sono partiti (e) quando.
      to.me wonder.1SG why   are left.3PL and when
    e.   Mi   chiedo   come sono arrivati   *(e) perché.
      to.me wonder.1SG how are arrived.3PL   and why
      'I wonder how they have arrived and why.'
    f. *Mi   chiedo   perché sono arrivati   (e) come.
      to.me wonder.1SG why   are arrived.3PL and how

These contrasts not only indicate that *e* 'and' must obligatorily precede the postverbal *wh*-phrase—they also indicate that *perché* 'why' preferentially occurs *after* the other *wh*-adverbial in a postverbal position. This is rather unexpected, considering that *perché* 'why' is generated high in the left periphery—in fact, higher than any other *wh*-phrase—rather than being moved from a lower position, as Rizzi (1996) proved by comparing *perché* 'why' with other interrogative adverbials like *come* 'how'. The fact that *perché* 'why'—unlike all other *wh*-adverbials—does

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[3] Grammaticality judgments for the sentences in this section were given by a group of 87 native speakers (mean age 22; 77 females, 10 males; college students). On average, only 1.5% gave judgments different from the ones indicated here.

not induce verb-second phenomena could only be explained by assuming that this specific *wh*-adverbial is generated in the position where it occurs rather than being moved there from a lower one. The following sentences reproduce the basic contrasts:[4]

(5) a. Perché Gianni parla?
         why   Gianni speaks
         'Why does Gianni speak?'
    b. *Come Gianni parla?
         how   Gianni speaks
    c. Come parla   Gianni?
         how   speaks Gianni
         'How does Gianni speak?'

Notice that this contrast cannot be traced to any idiosyncratic phonological property of *perché* 'why' as opposed to *come* 'why', because when *come* 'how' is followed by *mai* 'ever' the string *come mai* is interpreted exactly as 'why' and the subject can stay in situ, paralleling the case with *perché* 'why': *Come mai Gianni parla?* (Lit. how ever Gianni speaks, 'Why does Gianni speak?'). On the other hand, when two interrogative adverbials other than *perché* 'why' cooccur in the same sentence (e.g., *quando* 'when' and *come* 'how'), their relative order is free, as in (6a–b)—paralleling the free ordering of adverbials in the corresponding affirmative sentences, (6c–d)—although the presence of the coordinative head *e* 'and' is still obligatory in the interrogative sentences.

(6) a. Mi   chiedo   quando sono partiti *(e) come.
         to.me wonder.1SG when   are left.3PL   and how
         'I wonder when they have left and how.'
    b. Mi   chiedo   come sono partiti *(e)   quando.
         to.me wonder.1SG how are left.3PL   and when
         'I wonder how they have left and when.'
    c. I   ragazzi sono partiti [ieri]   [in macchina].
         the boys   are left   yesterday in car
         'The boys have left yesterday by car.'
    d. I   ragazzi sono partiti [in macchina] [ieri].
         the boys   are left   in car   yesterday
         'The boys have left by car yesterday.'

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[4] The following contrast, found in the Italian variety Marchigiano spoken in Fano (Marche, Italy), provides further evidence that *perché* 'why' occupies a different position with respect to other interrogative adverbs like *come* 'how' with a special rhetorical effect expressed in the translation:

(i) Sei andato   là,   perché/*come?
    are gone.2SG there why/how
    'Is it because you have gone there?'

Only with *perché* 'why' can the lower portion of the clause be moved to a higher specifier position. For a critical reflection on the order of *wh*-elements, see also Cinque and Krapova 2008.

The most conservative hypothesis is to admit that *e* 'and' is merged with the adverbial *wh*-phrase it immediately precedes. However, if this were so, it would be very hard to explain both the contrasts in (2) and the presence of the coordinative head itself. What could the interrogative adverbial possibly be coordinated with? Why is one order preferred? Another possible line of reasoning would be to reproduce a sluicing-like analysis following Merchant's seminal work (see Merchant 2001, 2005 and references cited there; see also Fox 2002 for the interaction of trace theory and the copy theory of movement). In this case, one could admit that *e* 'and' coordinates two clauses: the full clause on its left and a clausal structure on its right where everything but the topmost *wh*-phrase has undergone ellipsis. Unfortunately, this appealing solution is unable to explain the contrasts in (3), since there is no principled reason not to generate a sentence like (7c) along with (7a) and then delete the portion of the clause that is lower than the *wh*-phrase, yielding the ungrammatical structure (7d) (cf. (7b)).

(7) a. Mi   chiedo   [dove sono andati]   e   [perché sono andati].
         to.me wonder.1SG where are   gone.3PL and why   are   gone.3PL
         'I wonder where they have gone and why they have gone.'

    b. Mi   chiedo   [dove sono andati]   e   [perché ~~sono andati~~].
         to.me wonder.1SG where are   gone.3PL and why   are   gone.3PL
         'I wonder where they have gone and why they have gone.'

    c. Mi   chiedo   [perché sono andati]   e   [dove sono andati].
         to.me wonder.1SG why   are   gone.3PL and where are   gone.3PL
         'I wonder why they have gone and where they have gone.'

    d. *Mi   chiedo   [perché sono andati] e   [dove ~~sono andati~~].
         to.me wonder.1SG why   are   left.3PL and where are   gone.3PL

Other facts also show that a sluicing-like analysis does not seem to be appropriate in the cases we are focusing on here. Consider these contrasts, for example:

(8) a. Mi   chiedo   [com'è che è partito] e   [quand'è che è partito].
         to.me wonder.1SG how is that is left   and when is that is left
         'I wonder how it was that he left and when it was that he left.'

    b. *Mi   chiedo   [com'è che è partito] e   [quand'è ~~che è partito~~].
         to.me wonder.1SG how is that is left   and when is that is left

    c. So   che Gianni è partito un certo   giorno ma non so   [quand'è
         know.1SG that Gianni is left   a   certain day   but not know.1SG when is
         ~~che è partito~~].
         that is left
         'I know that Gianni left on a certain day but I don't know when it was.'

In Italian, especially in the northern varieties spoken in Lombardy, *wh*-movement is normally manifested via a pseudocleft construction (on pseudoclefts, see Den Dikken 2005 and references cited there). For example, a simple sentence like *Chi parla?* 'Who speaks?' would be rendered as *Chi è che parla?* (Lit. who is that speaks, 'Who is it that speaks?'). Now, (8a) is a genuine case of coordination of two full clauses, whereas (8c) is a prototypical case of sluicing. Crucially,

deletion of the lower portion of the clausal constituent in the second member of the coordinate structure (8a) yields the sharply ungrammatical sentence (8b). With the genuine sluicing construction, instead, the occurrence of the very same *wh*-element is perfectly grammatical after ellipsis (8c).

I would like to propose a new analysis that, on the one hand, shares with sluicing the idea that the coordinative head is merged with a clausal constituent rather than the interrogative phrase it precedes but that, on the other hand, does not involve ellipsis. Focusing on the relevant fragment, this proposal can be formally captured with the following derivational steps:

(9) a. . . . [dove C [pro sono andati   t]]
           where   pro are   gone.3PL

   b. . . . [perché C [dove C [pro sono andati   t]]]
           why   where   pro are   gone.3PL

   c. . . . [___ e   [perché C [dove C [pro sono andati   t]]]]
               and why   where   pro are   gone.3PL

   d. . . . [[dove C [pro sono andati   t]] [e   [perché C t]]]
              where   pro are   gone.3PL   and why
       ' . . . where they have gone and why'

First, *dove* 'where' is raised from the postverbal position to the specifier of a suitable head in the Comp field (indicated here with a series of C heads), as in (9a). Second, *perché* 'why' is generated in a high portion of the Comp field, as in (9b). Third, the coordinative head is merged to this complex clausal structure, as in (9c). Fourth, the lower portion of the clausal constituent (a segment of the complex CP structure) is raised to the specifier of the coordinative head, yielding the observed word order where the coordinative head precedes the highest *wh*-element, as in (9d). In other words, I would like to suggest that there is no *wh*-in-situ in these cases: the appearance of a *wh*-phrase in its base-generated position is just the effect of a complex mechanism involving CP-splitting that I will label *clause structure folding*.[5] Notice that the derivation proposed here

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[5] The alternative of raising *perché* 'why' in (9c) as opposed to the CP segment—yielding (i)—is not viable, since it would go against the basic requirement that the two elements to be coordinated belong to the same category. We will come back to this property of the coordinative head in section 2.

   (i) [[PP perché] e   [CP t come sono arrivati]]
           why   and   how are   arrived.3PL
       'why and how they have arrived'

The fact that sentence (iia) is grammatical is instead due to the fact that *perché* 'why' and *come* 'how' can indeed be coordinated; this simply means that *perché* 'why' can be locally merged with another adverbial, yielding (iib).

   (ii) a. perché e   come sono arrivati
            why   and how are   arrived.3PL
            'why and how they have arrived'
       b. [[perché [e   come]] pro sono arrivati
            why   and how   pro are   arrived.3PL
            'why and how they have arrived'

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requires no stipulation: rather, it could only be *blocked* by stipulation, since the null hypothesis is that the conjunction *e* 'and' can be merged in the relevant position, and if there, it provides a landing site.[6]

This analysis offers several empirical advantages besides the immediate one of indicating the two phrases that are coordinated by *e* 'and', namely, CPs. Consider first the following sentences:

(10) a. [DP Chi è arrivato per questa ragione] è stupido.
          who is arrived for this   reason   is foolish
       '(He) who has arrived for this reason is foolish.'
   b. [CP Chi è arrivato per questa ragione] è ovvio.
          who is arrived for this   reason   is obvious
       'Who has arrived for this reason is obvious.'

The free relative occurring in subject position can be the subject of semantically different types of predicates: a predicate like *stupido* 'foolish' that takes an individual as a subject (10a) and a predicate like *ovvio* 'obvious' that instead takes a proposition as a subject (10b). This could be captured by labeling the two preverbal constituents differently (as DP and CP, respectively), assuming that the *wh*-DP projects in the former case and the CP in the latter, along the lines suggested by Donati (2006). The crucial point here is that if the causative adverbial *per questa ragione* 'for this reason' is turned into the interrogative adverbial *per quale ragione* 'for what reason' obligatorily involving the coordinative head, the following sharp contrast results:

(11) a. *[CP Chi è arrivato e   per quale ragione] è stupido.
            who is arrived and for what reason   is foolish
        ('(He) who has arrived and for what reason is foolish.')
   b. [CP Chi è arrivato e   per quale ragione] è ovvio.
           who is arrived and for what reason   is obvious
        'Who has arrived and for what reason is obvious.'

If the causative adverbial *per quale ragione* 'for what reason' were in situ, this contrast would remain unexplained. However, it follows straightforwardly from the clause-structure-folding analysis. The occurrence of the conjunction and the (remnant) movement of a clausal constituent are not compatible with assigning a DP label to the clausal structure, for *chi* 'who' is too deeply embedded in the first member of the coordinative structure because of the folding process. The only reasonable label for *chi è arrivato e per quale ragione* 'who has arrived and for what reason' is CP, yielding the incompatibility of this sentence with a nonpropositional predicate like *stupido* 'foolish' in (11a).

The following sentence provides further independent evidence for the clause-structure-folding analysis:

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[6] I am very grateful to an anonymous reviewer for pointing out this important theoretical aspect of the analysis suggested here, which would have otherwise escaped my attention.

(12) Mi   chiedo   [quando negheranno che i   ragazzi sono arrivati e   perché].
     to.me wonder.1SG when   deny.FUT.3PL that the boys   are   arrived and why
     'I wonder when they will deny that the boys have arrived and why.'

Potentially, *perché* 'why' can be interpreted as referring to either the denial or the arrival. In fact, the only available interpretation here is the one where *perché* 'why' refers to the denial. The fact that a verb like *negare* 'deny' can restrict the interpretation of a causative interrogative adverbial is not new. Rizzi's (1990) theory of relativized minimality, for example, accounts for the following contrasts:

(13) a.   Mi   chiedo   perché dicono [t che i   ragazzi sono arrivati].
          to.me wonder.1SG why   say.3PL that the boys   are   arrived
          'I wonder why they say that the boys have arrived.'
     b. *Mi   chiedo   perché non dicono [t che i   ragazzi sono arrivati].
          to.me wonder.1SG why   not say.3PL that the boys   are   arrived
          'I wonder why they don't say that the boys have arrived.' (*why* refers to the arrival)
     c. *Mi   chiedo   perché negano [t che i   ragazzi sono arrivati].
          to.me wonder.1SG why   deny.3PL that the boys   are   arrived
          'I wonder why they deny that the boys have arrived.' (*why* refers to the arrival)

A negative operator (whether it is independently realized as *non* 'not' or inherently licensed by a verb like *negare* 'deny') is able to block the lower reading of *perché* 'why' intervening between the antecedent (*perché* 'why') and its trace. More explicitly, (13a) is ambiguous: it can question either the reason for the arrival or the affirmation. (13b–c) can only be interpreted as questioning the affirmation or the denial, not the arrival. This contrast, however, cannot be immediately exploited to explain the lack of ambiguity in (12): the verb *negare* 'deny' is in fact higher than *arrivare* 'arrive' and thus should not interfere with the antecedent-trace relation. But if *negare* 'deny' stood between *perché* 'why' and *arrivare* 'arrive' at some point in the derivation, we could immediately explain the selected reading for (12) by applying the same principles that explain (13a–c). And in fact this configuration is immediately available if we adopt the clause-structure-folding analysis, as in the following simplified representation:

(14) Mi   chiedo   [[quando negheranno che i   ragazzi sono arrivati]$_i$
     to.me wonder.1SG when   deny.FUT.3PL that the boys   are   arrived
     e   [perché t$_i$]].
     and why
     'I wonder when they will deny that the boys have arrived and why.'

Before the whole constituent *quando negheranno che i ragazzi sono arrivati* 'when they will deny that the boys have arrived' is raised to the specifier position of the coordinative head, *negare* 'deny' would stand between *perché* 'why' and *arrivare* 'arrive', blocking the unwanted reading. In other words, (12) (and its associated structure in (14)) can only question the timing and the reason for the denial because *perché* 'why' can refer only to *negare* 'deny', not to *arrivare* 'arrive'. This conclusion can be indirectly supported by analyzing the distribution of the negative variant of the coordinative head *e* 'and', namely, *né* 'nor'. This head can occur only if the first

member of the coordination contains a negative word (e.g., *non* 'not'). The following contrast thus reinforces the hypothesis that *perché* 'why' cannot be in situ:

(15) a. Gianni *non* sa   quando diranno   che hanno telefonato *né* perché.
         Gianni not knows when   say.FUT.3PL that have   telephoned nor why
         'Gianni doesn't know when they will say that they have phoned nor why.'
      b. *Gianni sa   quando *non* diranno   che hanno telefonato *né* perché.
         Gianni knows when   not say.FUT.3PL that have   telephoned nor why
         (cf. *Gianni knows when they will not say that they have phoned nor why.)

In conclusion, besides offering an analysis of the structural role of *e* 'and', the clause-structure-folding hypothesis for adverbial *wh*-phrases explains the fact that *perché* 'why' must follow all other adverbial *wh*-phrases, the fact that free relatives containing a postverbal adverbial *wh*-phrase cannot be the subjects of individual predicates, and some surprising selective interpretations of negation. If there were no structure folding, it would be very hard to capture all these data (in a unified theory). On the other hand, structure folding says nothing about why *e* 'and' must occur. I will propose an explanation in section 3. First, though, I will explore the possibility of extending the analysis given here for adverbial *wh*-phrases to argumental ones.

2 The ''*Wh*-in-Situ Effect'' with Argumental Phrases

In this section, I would like to suggest that the analysis given for interrogative adverbials ''in situ'' can be extended to all other cases involving *wh*-movement. More specifically, I will suggest that all the apparent instances of *wh*-in-situ in Italian are just the effect of clause structure folding or, equivalently, that there is no *wh*-in-situ in Italian.

A problem immediately arises. The distribution of *e* 'and' with argumental *wh*-phrases is not as sharp as in the case of adverbials. A simple statistical analysis of grammaticality judgments indicates that there are at least three varieties of Italian speakers when it comes to *wh*-in-situ with argumental phrases: those who do not accept *wh*-in-situ at all, those who accept it only without the occurrence of the coordinative head, and those who accept it both with and without a coordinative head. However, all the native speakers of Italian that I tested who fall into the latter two groups gave the same judgments concerning the distribution of multiple *wh*-phrases. The hypothesis I will pursue here, then, is that whether or not it is overtly realized, a coordinative head is involved in apparent *wh*-in-situ constructions in Italian, paralleling the cases illustrated in section 1. I will show that this proposal explains some crucial facts characterizing these constructions and raises new questions as well. As for why the coordinative head is not always obligatorily overt, the only generalization that emerges is that for all speakers it is obligatory for *wh*-PPs only, disregarding whether or not the PP is an adverbial, an argument of the verb, or the complement of a nominal head. This implies that the phonological realization of the coordinative head is related to morphological requirements rather than to other structural factors. In a sense, the possibility of having an overt or null coordinative head (*e* 'and' vs. an empty coordinative head [e]) parallels the possibility of having an overt or null complementizer (*that* vs. an empty C head [e]) in Rizzi's (1990) analysis of locality restrictions on *wh*-movement. Rizzi considers the possibility of having an overt complementizer or a phonologically null one as a morphosyntactic phenomenon, relying

on the assumption that the null variant is the one endowed with agreement features. Here, I will not attempt to derive the reasons requiring the coordinative head to be overt or null: whether or not they are amenable to the morphological requirements of PPs versus DPs is a matter that exceeds the goals of this article and my present understanding of this issue. Instead, I will explore the empirical consequences of assuming that a coordinative head *always* occurs in Italian in cases of *wh*-in-situ yielding clause structure folding; in other words, I will extend the clause-structure-folding analysis proposed for *wh*-adjuncts to *wh*-arguments.

Let us start with a case involving subject and object *wh*-movement. From an abstract point of view, the relevant part of the derivation that involves clause structure folding is shown in (16), where *[(e)]* represents the coordinative head, which may be overt or null.

(16) a. . . . $[wh_2$ C $[wh_1$ C $[t_1 \ldots t_2]]]$
     b. . . . $[(e)]$ $[wh_2$ C $[wh_1$ C $[t_1 \ldots t_2]]]$
     c. . . . $[[wh_1$ C $[t_1 \ldots t_2]]_j$ $[[(e)]$ $[wh_2$ C $t_j]]]$

Both *wh*-phrases—the subject (wh_1) and the object (wh_2)—are moved to the left periphery to reach a local configuration with the proper functional head, as in (16a) (see Richards 1999 for a critical and detailed account of this proposal in a comparative perspective, also the works cited in the introduction to this article). Then the coordinative head is merged, as in (16b). Finally, the lower portion of the clausal constituent is moved to the specifier position of the coordinative head, stranding the highest *wh*-phrase and yielding the WISE as in (16c).

A crucial property is embodied in this derivation. As the abstract representation in (16) indicates, the derivation involves nested rather than crossing movement paths, which would have given . . . $[wh_1$ C $[wh_2$ C $[t_1 \ldots t_2]]]$. This restriction is independently found in contrasts like the following—involving either D-linked (17a–b) or non-D-linked (17c–d) phrases—along the lines suggested by the seminal work of Pesetsky (1982) and many subsequent works including in particular Rizzi 1985:

(17) a. ?$[Cosa_2$ C si   chiedono $[chi_1$ C persuadere $[t_1$ a comprare $t_2]]]$?
         what   to.themselves wonder.3PL who   persuade   to buy
         'What do they wonder who to persuade to buy?'
     b. *$[Chi_1$ C si   chiedono $[cosa_2$ C persuadere $[t_1$ a comprare $t_2]]]$?
         who   to.themselves wonder.3PL what   persuade   to buy
         (cf. *Who do they wonder what to persuade to buy?)
     c. ?$[Quale libro_2$ C si   chiedono $[quale ragazzo_1$ C persuadere
         which book   to.themselves wonder.3PL which boy   persuade
         $[t_1$ a comprare $t_2]]]$?
            to buy
         'Which book do they wonder which boy to persuade to buy?'
     d. *$[Quale ragazzo_1$ C si   chiedono $[quale libro_2$ C persuadere
         which boy   to.themselves wonder.3PL   which book   persuade
         $[t_1$ a comprare $t_2]]]$?
            to buy

Assuming this condition, one of the immediate predictions of the clause-structure-folding analysis is that only *wh*-objects can appear after the verb, as opposed to subjects—possibly occurring with the overt coordinative head *e* 'and'. This is because, as indicated in (16), before remnant movement takes place the highest *wh*-phrase must be the object, owing to the nesting condition on chain formation. This can be illustrated by means of several contrasts between the subject and *wh*-objects as well as between the subject and several types of argumental *wh*-phrases. Let us start with a subject/object asymmetry involving a transitive verb that obligatorily requires an object, *esprimere* 'express'.

(18) a. Mi   chiedo   chi ha espresso (e) cosa.
         to.me wonder.1SG who has expressed and what
         'I wonder who has expressed and what.'
     b. *Mi   chiedo   cosa ha espresso (e) chi.
         to.me wonder.1SG what has expressed and who
     c. Gianni ha espresso   *(un'opinione).
         Gianni has expressed   an opinion

In this example, only the *wh*-object can appear postverbally; the subject is always banned from this position. The fact that D-linked expressions are used here is irrelevant; witness the following contrast, where non-D-linked expressions occur:

(19) a. Mi   chiedo   quale uomo ha espresso (e) quale opinione.
         to.me wonder.1SG which man has expressed and which opinion
         'I wonder which man has expressed and which opinion.'
     b. *Mi   chiedo   quale opinione ha espresso (e) quale uomo.
         to.me wonder.1SG which opinion has expressed and which man

The very fact that the subject cannot appear in a postverbal position is particularly surprising in a *pro*-drop language like Italian. Although both (20a) and (20b) are acceptable, these two examples have only one interrogative counterpart—namely, one where the subject is preverbal, (20c). In other words, although in Italian a subject can normally be postverbal, if the subject is endowed with a *wh*-feature it can only precede the verb—hence the ungrammaticality of (20d). Notice that (20d) is ungrammatical even though the complementizer *se* 'if' is endowed with a *wh*-feature (cf. *Mi chiedo se pro è arrivato qualcuno*; Lit. to.me wonder.1SG if pro is arrived anyone, 'I wonder if anyone has arrived').

(20) a. Mi   chiedo   se Gianni è arrivato.
         to.me wonder.1SG if Gianni is arrived
         'I wonder if Gianni has arrived.'
     b. Mi   chiedo   se pro è arrivato Gianni.
         to.me wonder.1SG if pro is arrived Gianni
         'I wonder if Gianni has arrived.'
     c. Mi   chiedo   chi è arrivato.
         to.me wonder.1SG who is arrived
         'I wonder who has arrived.'

    d. *Mi   chiedo   (se) pro è arrivato chi.
       to.me wonder.1sG if   pro is arrived who

This contrast immediately suggests that in Italian there is no long-distance *wh*-feature checking (possibly via Agree; see Chomsky 2008): checking can only be performed in a local configuration, by activating the proper head in the Comp field via movement.

    Similar contrasts can be detected by testing the occurrence of a *wh*-subject with a predicative noun phrase such as *cosa* 'what' using a verb like *diventare* 'become', which requires an obligatory predicative element.

(21) a. Mi   chiedo   chi è diventato (e) cosa.
         to.me wonder.1sG who is become   and what
         'I wonder who has become what.'
    b. *Mi   chiedo   cosa è diventato (e) chi.
         to.me wonder.1sG what is become   and who
    c. Gianni è diventato *(un professore).
       Gianni is become   a professor
       'Gianni has become a professor.'

Another similar contrast is provided by testing subject *wh*-movement with *wh*-movement of an interrogative adverbial using a verb such as *comportarsi* 'behave', which requires a manner adverbial expression.

(22) a. Mi   chiedo   chi si   è comportato (e) come.
         to.me wonder.1sG who himself is behaved   and how
         'I wonder who has behaved how.'
    b. *Mi   chiedo   come si   è comportato (e) chi.
         to.me wonder.1sG how himself is behaved   and who
    c. Gianni si   è comportato *(bene).
       Gianni himself is behaved   well
       'Gianni behaved himself.'

All these cases, mutatis mutandis, can be explained by the derivation in (16). Both the *wh*-subject and the other *wh*-phrase first move to the left periphery, creating a nested dependency. The lower segment of the clausal constituent then moves to the specifier position of the (abstract) coordinative head, stranding the *wh*-phrase that has been raised to the highest position and yielding the WISE.[7]

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[7] Marcel den Dikken (pers. comm.) points out that this analysis based on the impossibility of crossing paths in fact competes with another one that does not refer to crossing. The alternative analysis is based on a long-standing principle originally observed by George (1980) and elaborated by Chomsky (1986), the Vacuous Movement Hypothesis (VMH). According to this principle—whose nature and consequences are not yet entirely clear (see for example the discussion in Moro 2000 and references cited there)—movement does not take place if it is so local that it cannot be detected by an overt change in word order. Thus, assuming the VMH amounts to saying that *wh*-subjects never move in languages like English. For example, in a simple sentence like *(I wonder) who left*, *who* would never reach the left periphery (unless

Before proceeding, I would like to address a potential objection to the complex analysis given in (16). Consider a simple sentence like (23), where, for the sake of the argument, I will first give the gloss only.

(23) Mi   chiedo   cosa e   chi adori.
     to.me wonder.1SG what and who adores

This sentence has two potential meanings (related to the fact that the subject in Italian can be expressed by *pro*): 'I wonder who adores what' or 'I wonder what and who he or she adores'. These two potential interpretations correspond to two different structures. In one structure, *chi* 'who' is a DP object coordinated with another DP object, *cosa* 'what'—*pro* being the subject of *adori* 'adores' as in (24a). In the other, the DP object *cosa* 'what' is coordinated with the CP *chi adori* (Lit. who pro adores, 'who he or she adores'), as in (24b).

(24) a.   Mi   chiedo   [cosa e   chi] pro adori t.
          to.me wonder.1SG what and who pro adores
          'I wonder what and who he or she adores.'
     b. *Mi   chiedo   [cosa e   [chi t adori t]].
          to.me wonder.1SG what and who adores

The question is, what rules out the structure in (24b) and the corresponding interpretation (i.e., 'I wonder who adored what')? This puzzling case is explained by taking seriously the property of the conjunction *e* 'and' that it must coordinate items of the same category. The basic contrast in (3) is reproduced here for convenience:

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it does so at LF, an issue that cannot be approached here). Now, suppose that the VMH holds: the ungrammaticality of a sentence like (18b), repeated (details apart) in (i), could be derived without referring to the crossing condition.

(i) *Mi   chiedo   cosa pro ha espresso chi.
     to.me wonder.1SG what pro has expressed who

After the *wh*-object has moved to the left periphery and the conjunction has been merged, the only option would be to move the full TP, yielding the correct word order, shown in (ii).

(ii) Mi   chiedo   chi pro ha espresso cosa.
     to.me wonder.1SG who pro has expressed what
     'I wonder who has expressed what.'

But this alternative analysis based on the VMH would predict that the impossibility of having a postverbal *wh*-subject would hold only for the highest subject. In other words, if there were no constraints on crossing paths—that is, if multiple *wh*-dependencies could form freely—then in the case of the nonhighest subject we should be able to produce (iii) at the relevant stage of derivation.

(iii) . . . e   [chi [cosa [pro credi   che [t ha espresso t]]]]
          and who what pro think.2SG that   has expressed

Nothing would then prevent the subject from stranding, yielding (iv).

(iv) *Cosa credi   che pro ha espresso chi?
       what think.2SG that pro has expressed who

The ungrammaticality of this sentence reinforces the analysis based on the prohibition against crossing *wh*-paths and rules out the alternative based on the VMH.

(25) a.   Gianni legge [[$_{DP}$ romanzi] [e   [$_{DP}$ poesie]]].
          Gianni reads   novels   and   poems
     b.   Gianni legge [[$_{PP}$ al   mare] [e [$_{PP}$ alla   stazione]]].
          Gianni reads   at.the seaside and   at.the station
     c.   *Gianni legge [[$_{DP}$ romanzi] [e   [$_{PP}$ alla   stazione]]].
          Gianni reads   novels   and   at.the station
     d.   *Gianni legge [[$_{PP}$ al   mare] [e [$_{DP}$ poesie]]].
          Gianni reads   at.the seaside and   poems

Thus, (24b) is not the proper structure for (23) because of the independent, well-established property of conjunctions requiring that the items they coordinate belong to the same category. The only possible structure is the one where *cosa* 'what' and *chi* 'who' are both objects; the structure where *e* 'and' coordinates a DP and a CP does not meet this requirement. Equivalently, *chi* 'who' cannot be the subject of *adori* 'adores' in (23).

    To add indirect pieces of evidence in favor of this hypothesis, notice that in fact the order of *cosa* 'what' and *chi* 'who' can be permuted in (23), yielding a perfectly well-formed sentence.

(26) Mi   chiedo   [chi e   cosa] adori.
     to.me wonder.1SG who and what adores
     'I wonder who and what he or she adores.'

Notice that the analysis of this case has a nontrivial effect on the theory presented here. Consider (18a) again, details apart.

(27) Mi   chiedo   chi ha espresso cosa.
     to.me wonder.1SG who has expressed what
     'I wonder who has expressed what.'

By adopting the idea that a silent coordinative head intervenes in the derivation, one could justify why that head could not coordinate the DP *chi* 'who' with the TP *abbia espresso cosa* 'has expressed what' or, equivalently, claim that *cosa* 'what' is after all really in situ while only the *wh*-subject has been raised to the specifier position made available by the phonologically null coordinative head. Now, if that were so, the structure would violate the basic property of conjunction we just examined and the sentence would not be grammatical.

    Summarizing, when a *wh*-subject cooccurs with another *wh*-element—be it an object, a predicative noun phrase, or an obligatory adverbial—the derivation involves clause structure folding, where two segments (CPs) of the same clause structure are coordinated by a conjunction. The obvious question that arises now is why this process is required. I will propose an explanation in section 3. Before concluding this section, I would like to show some more complex cases involving three or more *wh*-elements. Offering a comprehensive analysis involving all types of *wh*-phrases is not feasible since for combinatorial reasons the number of cases immediately becomes too large. Nevertheless, I am confident that the crucial cases are included here.

    In fact, contrasts similar to those observed in (18)–(22) can be devised relatively easily to the extent that *wh*-movement builds up an ordered, fixed hierarchy in the left periphery. Again,

I will focus here on some prototypical cases, leaving a full taxonomy for future research. One such contrast occurs when a *wh*-element like *di chi* 'of who' is extracted out of an object noun phrase like *alcune foto di chi* 'some pictures of who' in a sentence that contains a *wh*-subject.

(28) a. Mi   chiedo   chi ha acquistato alcune foto   (e) di chi.
         to.me wonder.1SG who has purchased some   pictures and of who
         'I wonder who has purchased some pictures of who.'
     b. *Mi   chiedo   di chi ha acquistato alcune foto   (e) chi.
         to.me wonder.1SG of who has purchased some   pictures and who

Instead, if the sentence contains a *wh*-object such as *quali foto* 'which pictures', which in turn contains a *wh*-complement such as *di chi* 'of who', the following contrast results:

(29) a. Mi   chiedo   quali foto   ha acquistato (e) di chi.
         to.me wonder.1SG which pictures has purchased and of who
         'I wonder which pictures he or she has purchased from who.'
     b. *Mi   chiedo   di chi ha acquistato (e) quali foto.
         to.me wonder.1SG of who has purchased and which pictures

Notice that this contrast can be explained only if one assumes that movement of the object as a whole takes place before extraction from the object, as follows:

(30) a. . . . [[quali foto   di chi] C . . . t . . .
                 which pictures of who
     b. . . . [[di chi] C [[quali foto   t] C . . . t . . .
                 of who   which pictures

If extraction from the object could take place before movement of the object, the contrast in (29) would be reversed.[8] Again, we could take it to be the consequence of the requirement that *wh*-chains do not intersect but instead proceed by nested dependencies.

Now, what happens when three rather than two *wh*-elements occur in the same sentence? For example, let us take the case where a *wh*-subject and a *wh*-object containing a *wh*-complement cooccur. This gives rise to the following contrast (for the sake of simplicity, I will omit the case with a postverbal *wh*-subject, which is unexpectedly ungrammatical as in the other cases):

(31) a. Mi   chiedo   chi ha acquistato quali foto   (e) di chi.
         to.me wonder.1SG who has purchased which photos and of whom
         'I wonder who has purchased which photos of whom.'
     b. *Mi   chiedo   chi ha acquistato di chi   (e) quali foto.
         to.me wonder.1SG who has purchased of whom and which photos

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[8] Example (30b) shows that there is no freezing effect on the first *wh*-phrase (Clemens Mayr, pers. comm.); that is, this doesn't count as a crossing violation. If this effect is related to phases, though, one could argue that it is the highest phasal head that counts.

The contrast in (31) is consistent with (and in fact predicted by) the clause-structure-folding analysis. The derivation proceeds as follows:

(32) a. . . . [[quali foto   di chi]   C [chi C t abbia acquistato t]]
            which photos of whom   who   has   purchased
     b. . . . [[di chi]   C [[quali   foto   t] C [chi   C t abbia acquistato t]]]
            of whom   which photos   who   has   purchased
     c. . . . [[quali   foto   t] C [chi C t abbia acquistato t] [e]   [di chi   t . . .
            which photos   who   has   purchased   and of whom
     d. . . . [chi C abbia acquistato] [(e)] [[quali   foto   t] C t [e]   [di chi . . .
            who has   purchased   which photos   and of whom

First, the *wh*-subject and the *wh*-object are moved to the left periphery (32a); then, *di chi* 'of whom' is extracted from the object (32b); as a last step, the inner clausal constituent is moved to the specifier of a second coordinative head (32d) (exactly as in the simple case involving a *wh*-subject and a *wh*-object only). Notice also that merging of a coordinative head in (32a) with successive movement of *di chi* 'of whom' to the specifier position of that coordinative head is correctly excluded, for it would amount to coordinating two categorially different constituents (a PP and a CP).

Another case involving three *wh*-elements is provided by verbs that take three arguments, such as *consegnare* 'deliver'.

(33) a. Gianni consegnò un libro a Maria.
        Gianni delivered a   book to Maria
     b. Gianni consegnò a Maria un libro.
        Gianni delivered to Maria a   book
        'Gianni delivered Maria a book.'

In this case, the subject can never be postverbal, as expected (34a–d). By contrast, there seems to be no relative ordering preference for the other two *wh*-arguments (either when they cooccur with a *wh*-subject or when they do not), as a consequence of the fact that virtually all speakers have no ordering preference in the affirmative case either (34e–h), with no strong ordering preference for stranding of the PP argument.

(34) a.   Mi   chiedo   chi ha consegnato a Gianni (e) cosa.
           to.me wonder.1SG who has delivered   to Gianni and what
           'I wonder who has delivered Gianni what.'
     b.   *Mi   chiedo   cosa ha consegnato a Gianni (e) chi.
           to.me wonder.1SG what has delivered   to Gianni and who
     c.   Mi   chiedo   chi abbia consegnato un libro (e) a chi.
           to.me wonder.1SG who has   delivered   a book and to whom
           'I wonder who delivered a book to whom.'
     d.   *Mi   chiedo   a chi   ha consegnato un libro (e) chi.
           to.me wonder.1SG to whom has delivered   a   book and who

   e.   Mi   chiedo   chi ha consegnato cosa (e) a chi.
       to.me wonder.1sɢ who has delivered   what and to whom
       'I wonder who has delivered what to whom.'
   f.   Mi   chiedo   chi ha consegnato a chi   (e)   cosa.
       to.me wonder.1sɢ who has delivered   to whom and what
       'I wonder who delivered whom what.'
   g.   Mi   chiedo   cosa pro ha consegnato (e) a chi.
       to.me wonder.1sɢ what pro has delivered   and to whom
       'I wonder what he or she has delivered to whom.'
   h. (?)Mi   chiedo   a chi   pro ha consegnato (e) cosa.
       to.me wonder.1sɢ to whom pro has delivered   and what
       'I wonder to whom he or she has delivered what.'

Finally, having tested multiple adverbial *wh*-phrases in section 1 and multiple argumental ones here, we are left with the case of an adverbial *wh*-phrase cooccurring with an argumental one—that is, with a subject, as in (35a–d), or an object, as in (35e–h).

 (35) a. Mi   chiedo   chi sia partito *(e) perché.
       to.me wonder.1sɢ who is left   and why
       'I wonder who has left and why.'
   b.   Mi   chiedo   chi sia partito *(e) come.
       to.me wonder.1sɢ who is left   and how
       'I wonder who has left and how.'
   c. *Mi   chiedo   perché sia partito (e)   chi.
       to.me wonder.1sɢ why   is left   and who
   d. *Mi   chiedo   come sia partito (e)   chi.
       to.me wonder.1sɢ how is left   and who
   e.   Mi   chiedo   cosa ha espresso *(e) perché.
       to.me wonder.1sɢ what has expressed   and why
       'I wonder what has expressed and why.'
   f.   Mi   chiedo   cosa ha espresso *(e) come.
       to.me wonder.1sɢ what has expressed   and how
       'I wonder what he or she has expressed and how.'
   g. *Mi   chiedo   perché ha espresso (e) cosa.
       to.me wonder.1sɢ why   has expressed and what
   h. *Mi   chiedo   come abbia espresso (e) cosa.
       to.me wonder.1sɢ how has   expressed and what

These mixed cases do not present any surprising fact: the occurrence of an overt coordinative head is still required for stranded adverbials, and the relative order of the *wh*-phrases is the one predicted by assuming clause structure folding (i.e., the adverbial must follow).

    Summarizing, in this section I have taken the analysis of the ''*wh*-in-situ effect'' adopted for interrogative adverbials and extended it to interrogative argumental phrases, including direct

and indirect objects and subextraction from (interrogative) noun phrases, showing that those *wh*-phrases that appear to be in situ are in fact stranded after having been moved to the left periphery. In this case, the WISE is also due to remnant movement of a subpart of the clausal constituent to the specifier position of a coordinative head, which can be silent or overtly realized as *e* 'and' for some speakers.

In section 3, I will address two conceptually related issues quite synthetically. First, I will explain why a coordinative head must show up when two *wh*-phrases occur in the same sentence (or more than one coordinative head when more than two *wh*-phrases occur). Then, I will suggest some predictions that this theory leads to on the comparative side.

3 Clause Structure Folding and the Structure of the Left Periphery: Prolegomenon to a Case Study in Comparative Syntax

The analysis illustrated in the previous sections for Italian multiple *wh*-phrases—arguing that there is no *wh*-in-situ in this language—is based on the idea that when more than one *wh*-phrase occurs in a sentence, a coordinative head intervenes in the left periphery, inducing clause structure folding and providing a landing site for a subpart of the clausal constituent. Assuming that this analysis of *how* lexical items are composed proves correct, it is still natural to ask *why* UG requires coordination. For the sake of clarity, let us recall the core steps of the derivation by considering two *wh*-phrases—say, a subject cooccurring with an object or any adverbial other than *perché* 'why'.

(36) a. . . . $[_{TP}$ *wh*-phrase$_1$ . . . *wh*-phrase$_2$]

 b. . . . [*wh*-phrase$_2$ C [*wh*-phrase$_1$ C [$_{TP}$ . . . t$_1$ . . . t$_2$ . . .]]]

 c. . . . [____ [(e)] [*wh*-phrase$_2$ C [*wh*-phrase$_1$ C [$_{TP}$ . . . t$_1$ . . . t$_2$ . . .]]]]

 d. . . . [[*wh*-phrase$_1$ C [$_{TP}$ . . . t$_1$ . . . t$_2$ . . .]]$_j$ [[(e)] [*wh*-phrase$_2$ C t$_j$]]]]

To understand why this mechanism is required, let us consider it from the point of view of feature checking. First, the two *wh*-phrases move for checking reasons to the specifier position of a proper head (36b). Then, a coordinative head, overt or null, is inserted in the derivation (36c). Finally, the recursive CP structure undergoes a splitting process and the lower CP segment is raised to the specifier position made available by the coordinative head, stranding the higher *wh*-phrase (36d).

Why isn't (36b) sufficient for the derivation to converge? That is, why is a coordinative head required to allow the folding process to take place? The explanation relies on the fact that in a language like Italian, the left periphery of the clause structure contains only *one* position for *wh*-elements; this conflicts with the presence of *two wh*-phrases. Formally, following Rizzi's (1997) seminal analysis of the left periphery, the Comp field in Italian has the following abstract representation:[9]

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[9] This is orthogonal with respect to the idea that there may be focal positions in other portions of the clause structure lower than the left periphery (see Belletti 2001, Longobardi 2000). Regarding the existence of further clausal heads in Italian higher than Force, such as those pertaining to vocative, see Moro 2003.

(37) ... Force > (Top) > *Foc* > (Top) > Fin > TP

Crucially, the head that is endowed with *wh*-features is Foc, which, unlike Top, cannot occur more than once in the structure.

(38) *... Force > (Top) > *Foc* > *Foc* > (Top) > Fin > TP

This makes (36b) an impossible structure for Italian without further assumptions: a sequence of two heads endowed with *wh*-features in the split-Comp field is simply not an option in this language. The intuition I would like to pursue here is that CP-splitting and coordination—that is, clause structure folding—is a strategy for rescuing a single sentence containing two *wh*-phrases to avoid the language-specific restriction in (38) requiring that there be just one Foc head in the left periphery.[10]

(39) ... Force > [[*wh* C ...]$_j$ [[(e)]$_{+Foc}$ [*wh* C t$_j$

The role of the coordinative head here is to ''absorb'' the *wh*-features of the two Foc heads into whose specifier position either *wh*-phrase has been moved by providing the left periphery with a proper structure to allow folding.[11]

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[10] Of course, the residual part of the left periphery will be contained in the segment of the CP that has been moved. The following representation gives the full structure in a more detailed fashion:

(i) ... Force > (Top) > [[*wh* C > (Top) > Fin > TP]$_j$ [[(e)]$_{+Foc}$ [*wh* C t$_j$

In other words, the portion of the split-Comp field containing Top and Fin heads does not follow the last *wh*-phrase.

[11] A natural question arises here: why is *e* 'and' exploited in this operation of clause structure folding—rather than, say, *o* 'or'?

(i) *Mi　chiedo　　chi arriva o perché.
　　to.me wonder.1sG who arrives or why
　　'I wonder who arrives or why.'

I do not have clear answers at the moment, although the ungrammaticality of *o* 'or' in (i) is a reflex of a much broader incompatibility of *o* 'or' with interrogative sentence coordination, as illustrated in (ii).

(ii) *Mi　chiedo　　chi arriva o perché arriva.
　　 to.me wonder.1sG who arrives or why　arrives
　　 'I wonder who arrives or why he or she arrives.'

Interestingly, though, (ii) is nearly fully acceptable if we choose a matrix verb that does not have an inherent interrogative meaning, such as *dire* 'tell'.

(iii) Ditemi　　　　chi arriva o perché arriva.
　　 tell.IMPER to.me who arrives or why　arrives
　　 'Tell me who arrives or why he or she arrives.'

Another way to explain why a sequence of two *wh*-phrases in the left periphery leads to clause structure folding in Italian is to consider a fragment of (38) to be too symmetrical in the sense of Moro 2000, 2009. That is, (38) is ruled out because it contains a structure of type [XP YP]. This structure is unstable for the computation since both X and Y are potential goals for the same probe, which makes the process of labeling impossible (for the existence of such structures in other domains besides *wh*-phrases, see Moro 1997). Such an alternative would imply that the two *wh*-phrases symmetrically c-command each other in the sense of Kayne 1994, or equivalently that *wh*-movement creates a multiple adjunct structure, much in the sense that Quantifier Raising was assumed to create multiple IPs in the standard models. I will not pursue this line of reasoning here.

Synthetically, clause structure folding in Italian results from the conspiracy of these two independent facts:

(40) a. *Wh*-phrases occupy the specifier of a Foc head.
     b. There is only one Foc head per CP field.

The hypothesis that the functional head that checks the feature of *wh*-phrases in Italian is unique is not ad hoc, in the sense that (40b) is not stipulated by observing the distribution of *wh*-phrases only. In fact, it is also indirectly supported by sentences like the following, first observed by Rizzi (1997):

(41) a.   Mi   chiedo   [a chi   *Foc* [pro abbiano detto   questo]].
          to.me wonder.1sG to whom   pro have   said.3PL this
          'I wonder to whom they have said this.'
     b.   Mi   chiedo   se [QUESTO *Foc* [pro abbiano detto
          to.me wonder.1sG if THIS   pro have   said.3PL
          (non qualcos'altro)]].
           not something else
          'I wonder if they have said THIS (not something else).'
     c. *?Mi   chiedo   [a chi   *Foc* [QUESTO *Foc* [abbiano detto
          to.me wonder.1sG to whom   THIS   have   said.3PL
          (non qualcos'altro)]]].
           not something else

The ungrammaticality of (41c) shows that both *wh*-phrases (like *a chi* 'to whom') and Foc phrases (like *QUESTO* 'THIS') compete for the same functional head within the Comp field and, obviously, that there is only one such head.

Of course, this way of rescuing the sentence by folding the clause structure is not unrestricted; in particular, it must meet the morphological requirements related to the coordinative head. For example, as we saw in section 1 (see in particular the comment regarding (17)), the category of the two elements that the coordinative head is merged with must be the same; in the case under discussion here, the coordinative head takes two CP segments of the same clause structure, producing folding. This is what makes CP-splitting the only way to rescue the structure: given the lexical elements available, it is the only way the coordinative head can have two items of the same category as specifier and complement, namely, two CPs. It also explains why the same strategy cannot rescue a sentence like (41c): since the Foc phrase does not contain the *same* set of morphological features as a *wh*-phrase—arguably, it contains only a *subset* of them—a rescue strategy based on the clause-structure-folding process yielding something like **Mi domando se QUESTO abbiano detto e a chi* (Lit. to.me wonder.1sG if THIS have said and to whom) is not allowed.

Obviously, a language-specific assumption plays a crucial role in this explanation—namely, that there is only one Foc head in the left periphery. If this is true for languages like Italian, and possibly others, it is also true that things may well differ in other languages. In fact, as far as I can see, there is no principled reason why this state of affairs should be universal. In languages

like Bulgarian, Romanian, Serbo-Croatian, and Polish, for example, it is reasonable to assume that this restriction does not hold: all *wh*-words are free to move to the left periphery in the specifier position of C heads endowed with *wh*-features and stay there without further modifications of the structure. The prototypical case in (42a), taken from Bošković 1999:165 and cited in Richards 1993 (see also Cinque and Krapova 2008 for a detailed analysis of the order of *wh*-phrases in multiple fronting in Bulgarian) implements the sequence in (42b).[12]

> (42) a. . . . [kogo C [kakvo C e   pital   Ivan]]?
>   whom   what   AUX asked Ivan
>   'Whom did Ivan ask what?'
>   b. . . . Force > (Top) > *Foc* > *Foc* > (Top) > Fin > TP

Thus, one of the empirical advantages of the current proposal is that it predicts that languages will vary in whether the presence of multiple *wh*-phrases in the same clausal structure forces clause structure folding, yielding the WISE. More explicitly, if the inventory of clausal heads in the left periphery of a given language is richer than in Italian in that it allows the occurrence of multiple Foc heads, then the complex phenomena of clause structure folding observed in sections 1 and 2 (the WISE) should not exist in that language. Notice also that since clause structure folding is a rescue strategy, it could well be the case that other languages implement different mechanisms to save a structure if the left periphery is not rich enough to host more than one *wh*-phrase. This amounts to saying that *wh*-in-situ could still be an option for other languages, provided that long-distance feature checking is available via Agree, or that LF movement of *wh*-phrases is allowed (see footnote 1). Certainly, the empirical data analyzed here show that this is not an option in Italian.

4 Conclusion

In this article, I proposed that there is no such thing as *wh*-in situ in Italian. Rather, all *wh*-elements move to the left periphery; the resulting word order at the final stage of derivation is due to a rearrangement of the structure that I call *clause structure folding*, involving a coordinative (abstract) head and CP-splitting. Furthermore, I argued that this case of clause structure folding is due to a language-specific restriction on the architecture of the left periphery requiring the syntactic locus for *wh*-movement feature checking to be unique. Clause structure folding and the WISE in Italian ultimately turn out to be the result of a rescue strategy allowed by UG. Italian, then, belongs to the same (1a) class as Bulgarian and Polish, in that there is no mixed strategy for multiple *wh*-phrases: they all move to the left periphery. Whether or not the taxonomy can be entirely reduced to two—the first two classes in (2) only—is an intriguing issue but one that must be left for future research.

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[12] Coordination can of course be exploited in languages without necessarily involving clause structure folding. For an interesting analysis of conjunction in Russian multiple *wh*-phrase constructions, potentially extendable to cover other Slavic languages such as Bulgarian, see Chaves and Paperno 2007 (David Pesetsky, pers. comm.).

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