Subject-Verb Inversion in Spanish Wh-Questions
Movement as Symmetry Breaker

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1. Introduction

In Spanish, like in many other languages, the subject–verb order must be inverted in wh-questions when the wh-element is an object, leading to Wh–Verb–Subject order. Unlike what happens in languages such as English, Dutch, or Italian, subject–verb inversion in Spanish is obligatory in both root (1) and embedded (2) wh-questions (Torrego 1984).

(1) a. ¿Qué ha comprado Juan?
what has bought  John
b. *¿Qué Juan ha comprado?
what John has bought
‘What did John buy?’

(2) a. No sé qué robó Juan.
not know what stole  John
b. *No sé qué Juan robó.
not know what John stole
‘I don’t know what John stole’

However, inversion is not always obligatory in Spanish wh-sentences. It has been noted in the literature that inversion is optional when the wh-word is an adjunct. Nonetheless, although judgments are more variable than with argument wh-words, most native speakers of Peninsular Spanish consider subject–verb inversion obligatory with most adjunct wh-words too (Rutten 1995).

(3) a. ¿Cuándo vendió Juan este coche?
when  sold  John this car
b. *¿Cuándo Juan vendió este coche?
when  John sold  this car
‘When did John sell this car?’
Yet, with some wh-adjuncts subject-verb inversion appears to be optional. *Por qué* 'why' is one of the few adjuncts that is perfectly acceptable with and without subject-verb inversion (Rutten 1995):

(14) a. ¿Por qué Juan *arregló* esta bicicleta?
    why John repaired this bike
    ‘Why did John repair this bike?’

b. ¿Por qué *arregló* Juan esta bicicleta?
    why repaired John this bike
    ‘Why did John repair this bike?’

This asymmetry between *por qué* ‘why’ and other wh-elements does not only show up in Spanish. Rizzi (1996: note 16) notes that in Italian *perché*, unlike other wh-elements, allows the subject and the verb to appear in the uninverted order:

(5) a. Perché Gianni è partito?
    why John is gone
    ‘Why did John go?’

b. *Dove Gianni è andato?
    where John is gone
    ‘Where did John go to?’

c. *Chi Maria ama?
    who Maria loves
    ‘Who does Maria love?’

In the following sections I will try to provide an account of this asymmetry between adjunct wh-questions and argument (object) wh-questions. My proposal capitalizes on the role of antisymmetry requirements on phrase structure (Kayne 1994), and its role in triggering overt movement, such as proposed by Moro (1997). Before showing how Moro’s approach to overt movement can deal with the observed Spanish (and other) data, I will first discuss a previous account of subject–verb inversion in wh-questions and argue that it fails to account for the observed adjunct–argument asymmetry.

2. The *wh*-criterion as trigger for subject–verb inversion

According to Rizzi (1996), subject–verb (or subject–Aux) inversion is the result of the working of the *wh*-criterion:
(6) **Wh-Criterion** (Rizzi 1996)
   
   (A) A *wh*-operator must be in a Spec–Head configuration with a [+wh] *X*°
   
   (B) A [+wh] *X*° must be in a Spec–Head configuration with a *wh*-operator

The [+wh] C of interrogative embedded clauses is selected by the root verb. The *wh*-element is raised to Spec,CP to fulfill clause (B) of the *wh*-criterion. This explains the absence of subject–Aux inversion in embedded clauses in English and of subject–verb inversion in embedded Italian clauses.

(7) a. John knows [CP what [C [IP Mary wants t]]]
   b. Tutti si domandano [CP che cosa [C [IP il directore abbia detto t]]]
   ‘Everybody wonders what the director has said.’

In root clauses, however, there is no selected [+wh] C to which a *wh*-operator can move. Rizzi assumes that in this case the [+wh] specification is generated in INFL and subsequently moved to C by the raising of Aux to C in English, or V to C, in Italian.

(8) a. [*CP What [C [IP John [I will [VP buy t]]]]]
   b. [CP What [C [I will [VP buy t]]]]

Raising Aux to C puts the *wh*-operator in a Spec–Head configuration with a [+wh] head, satisfying the *wh*-criterion.

Not all root *wh*-questions require inversion, though. Rizzi notes that Aux to C (or V+I to C) does not apply in subject *wh*-movement:

(9) a. Who saw John?
   b. *Who did see John?

Rizzi argues that Aux to C movement is not necessary here; since the *wh*-subject before moving to Spec,CP is in a Spec–Head agreement configuration with the [+wh] specified I, the I and the *wh*-subject bear the same index. By moving the *wh*-subject to Spec,CP the *wh*-subject and C will also share the same index. This means that after movement of the *wh*-subject to Spec,CP, the C and the [+wh] specified I will have the same index, which makes movement of Aux to C superfluous.

However, it is not only *wh*-subjects that do not trigger (V+I) to C movement. As mentioned in the previous section, *wh*-adjuncts like Spanish por *qué* and Italian *perché* ‘why’ do not trigger obligatory subject–verb inversion, which suggests that movement of V+I to C does not have to take place in this case.
Rizzi suggests that *perché* may have the option of being generated in C (see also Rizzi 1990). He argues that this possibility may be connected to its morphological analysis (*per* + *che*), which relates it to the complementizer (*che*). *Perché* then manifests [+wh] on C, hence V+I to C is no longer required. In order to satisfy clause (A) of the *wh*-criterion, a null operator in Spec,CP must be assumed.

This “morphological” account of the absence of subject–verb inversion with *perché*, however, is problematic in some respects. In the first place, it is not very plausible that Spanish *qué* and Italian *ché* in *por qué* and *perché*, respectively, correspond with the complementizer *que/che*. It seems more obvious to analyse *qué/ché* in *por qué/perché* as corresponding to the wh-element *qué/ché* ‘what’ (as the spelling suggests). This would explain why *qué/ché* in *por qué/perché* bears stress, while complementizer *que/che* is not stressed.

A second argument against analysing *qué/ché* in *por qué/perché* as corresponding to the complementizer is that there are other elements beyond *por qué* that fail to trigger obligatory subject–verb inversion in Spanish. As I will show in section 3, Spanish *cómo* ‘how’ displays a similar behavior yet no morphological relation or similarity with any complementizer can be found. In the next section I will briefly discuss Kayne’s (1994) ideas on phrase structure, and how Moro’s (1997) Dynamic Antisymmetry (DA) approach makes use of this proposal in order to derive overt movement.¹

### 3. The Linear Correspondence Axiom as a trigger for overt movement

Kayne’s (1994) theory of antisymmetry aims at deriving the major property of X-bar theory from a single axiom, the Linear Correspondence Axiom (LCA). The LCA is a hypothesis about Universal Grammar which states that asymmetric c-command between nonterminal nodes maps into a linear order of the terminal nodes. It follows from the LCA that in a well-formed tree there cannot be two nonterminal nodes symmetrically c-commanding each other unless at most one of these nonterminal nodes contains another terminal node. Otherwise, the sets of terminal nodes dominated by the two symmetrical nodes are not linearly ordered.

Due to space limitations I cannot go into the details of Kayne’s proposal, but according to the LCA the following configurations are universally excluded:
(10a) is a situation in which a head (X) selects another head (Z) as a complement (this could be the case of a verb selecting a clitic pronoun), (10b) represents a Small Clause (SC), and (10c) is a case of double XP-adjunction (of UP and XP to YP).

Kayne argues that the LCA is a condition that applies to all levels of syntactic representation. This means that the constructions displayed in (10) are inadmissible both before and after Spell Out, or stated differently, before and after overt movement takes place. It is obvious that under these assumptions antisymmetry requirements can never trigger (overt) movement. It is, however, not very obvious that linearization should play a role at any other level than PF, since it is only at PF where pronunciation of word strings becomes relevant. This position is explicitly taken by Moro (1997), who assumes that before the derivation reaches Spell-Out (and at LF), structures such as those displayed in (10) are admissible, but as soon as the derivation reaches the PF component, the offending “points of symmetry” must be destroyed (see Chomsky 1995 and Broekhuis 1996 for similar views). Moro calls this way of deriving overt movement from antisymmetry requirements “Dynamic Antisymmetry” (DA). According to Moro, DA is the trigger for movement of the predicate or the subject in structures such as (11). Before Spell-Out, in (11a) the subject of the SC and its predicate create a point of symmetry (similar to (10b)). Movement of either the subject (11b) or the predicate (11c) destroys this symmetry.

(11) a. be \[SC [these pictures] [the cause of the riot]]
b. \[These pictures] \[t \[the cause of the riot]]
c. \[The cause of the riot] \[these pictures] \[t]]

When the subject or the predicate moves out of the SC, it will leave a trace. However, this trace will not create a point of symmetry: traces are invisible at PF. Moro suggests that DA could also be responsible for subject–Aux inversion
in English root *wh*-questions, and probably for all overt movement. In the next section I will show how DA could explain subject verb inversion in Spanish, and how DA in combination with Rizzi's (1990) ideas on "referentiality" of *wh*-elements can account for the observed adjunct-argument asymmetry with respect to inversion in Spanish (and Italian) *wh*-questions.

4. Subject–verb inversion as symmetry breaking movement

4.1 Argument *wh*-questions

Moro (1997) has suggested that "symmetry-breaking movement" is responsible for subject–Aux inversion in English.

    b. Which book did John buy?

In his account the *wh*-phrase first moves to a position adjoined to IP. In this position, however, a point of symmetry is created: *which book* in the IP adjoined position and *John* in Spec,IP c-command each other, paralleling the abstract configuration (10c). This point of symmetry is destroyed by further movement of *which book* to Spec,CP and of the auxiliary *do* to C. In this position *which book* asymmetrically c-commands *John*, and the configuration is fine. Note that this approach can also account for the absence of Aux movement to C in the case of *wh*-subject extraction: when the *wh*-subject moves to a position adjoined to the IP it leaves a trace in Spec,IP. However, since traces are not visible at PF, no LCA violation occurs.45

(13) [IP Who₁ [IP t₁ [saw this man]]?]

I propose that subject–verb inversion in Spanish can be derived in a similar way as in English, with one small difference: Moro (1997) assumes that in null-subject languages Spec,IP is always occupied by *pro* (which I assume to be base generated in Spec,VP, where it receives the external theta role). The lexical subject is an element that can be adjoined to IP. Note that this adjunction does not violate the LCA, since *pro* as an empty category is not visible at PF. When the *wh*-object *qué* adjoins to IP, the LCA is violated, since the overt subject and *qué* c-command each other. This point of symmetry is solved by V+I to C, creating a CP level at which Spec *qué* can be hosted:
However, "symmetry breaking movement" is not the only way to achieve an antisymmetrical structure in Spanish. Since I assume, following Moro, that the "real" subject in null-subject languages is always a pro, this opens the possibility of adjoining the overt subject to VP, instead of IP. In that case the wh-object that adjoins to IP does not create a "point of symmetry" with the lexical subject, making movement of V+I to C and movement of qué to Spec,CP unnecessary, hence impossible, under standard assumptions of economy:

(15)  [IP Què, [IP pro, [I compró, [VP t_j, [VP t_k, [VP t_j, t_i]]]]]]

‘What did John buy?’

The question is now: should (15) be preferred to (14b) as a more economical derivation? It is true that (15) involves fewer movement steps than (14b). However, this is only true if we adopt global economy as the kind of economy that governs syntactic derivations. If we adopt local economy instead, both derivations are equally economical, since at the moment that the subject is adjoined to IP, movement of V+I to C and of qué to Spec,CP are the only, hence the most economical steps that can be taken to avoid a violation of the LCA. Since local economy requires less computational complexity (Chomsky 1995), I will adopt this kind of economy and assume that both (14b) and (15) are possible derivations in Spanish.  

4.2 Adjunct wh-questions

As Rutten (1995) has shown, most wh-adjuncts require inversion, both in root and in embedded clauses (see (3)), the only exception being por qué ‘why’, as illustrated in (4). If inversion (V+I to C) is not required in this case, this can only mean that por qué is in a position where it does not create a point of symmetry with the subject in an IP adjoined position, which means that it must be in a head-position. I will assume that this head-position is C (as in Rizzi 1996).

(16)  [CP [C Por qué [IP Juan [IP pro, [IP compró este coche tan feo]]]]]

‘Why did John buy such an ugly car?’
The questions are now: is there independent evidence that \textit{por qué} is in C instead of Spec,CP, and why can only some adjuncts occupy this position?

I will argue that the possibility for some \textit{wh}-elements to appear in C is indeed related to their adjunct status, but only indirectly. \textit{wh}-objects are theta marked in the complement position of the verb. Since this position is an XP position, movement of \textit{wh}-objects can only target another XP position, like Spec,CP, otherwise some variant of the Structure Preserving Hypothesis would be violated. \textit{wh}-adjuncts, on the other hand, are not theta marked by the verb. This property would in principle allow them to be base generated as X°s in C. Of course, this raises the question of why not all \textit{wh}-adjuncts in Spanish are allowed to appear in C. I want to follow Rizzi (1990) and suggest that \textit{wh}-elements should not (only) be distinguished on the basis of their being selected by the verb or not (which traditionally determines argumenthood), but on the basis of their referentiality. Rizzi shows that with respect to long-distance movement across \textit{wh}-islands there is a difference between non-selected \textit{wh}-instrumentals and locatives on the one hand, which are extractable essentially at the same level as selected \textit{wh}-elements (causing at most a subjection violation), and nonselected \textit{wh}-elements of manner and reason on the other hand, which cause a strong form of ungrammaticality when moved across a \textit{wh}-island (nonselected temporal \textit{wh}-phrases having an intermediate status).

(17) a. ‘\textit{In che negozio non ti ricordi che cosa abbiamo comprato?}’
   ‘In what shop don’t you remember what we bought?’

b. ‘\textit{A che ora non ti ricordi che cosa abbiamo detto?}’
   ‘At what time don’t you remember what we said?’

b. ‘\textit{Per che ragione non ti ricordi che cosa abbiamo detto?}’
   ‘For what reason don’t you remember what we said?’

Rizzi argues that \textit{wh}-arguments and (nonselected) instrumental and locative \textit{wh}-adjuncts can be extracted more easily across \textit{wh}-islands because they are more referential in nature. Referential variables can satisfy the identificational part of the ECP by establishing a binding relation with the operator, a procedure that is only sensitive to strong islands. Nonreferential variables, on the other hand, must be connected to their operators by means of antecedent government, which is strictly local.

Let us adopt Rizzi’s proposal and assume that \textit{wh}-elements can be distinguished on the basis of their referentiality. Some \textit{wh}-elements are assigned a referential index, like \textit{wh}-arguments and \textit{wh}-adjuncts such as \textit{cuando} ‘when’ or \textit{dónde} ‘where’, while reason \textit{wh}-adjuncts like \textit{por qué} ‘why’ cannot have a referential index. Suppose now that referential indexes are assigned in an XP
position, just like arguments (= selected elements). This means that elements without a referential index need not be generated as XPs, but can in fact be $X^0$'s. This explains the possibility for the latter being generated in C.

In fact, the less referential nature of some wh-adjuncts can best be illustrated for another wh-adjunct that does not require inversion in Spanish (for most speakers I asked, and many of the native speakers tested by Rutten 1995): cómo 'how'. However, whether inversion takes place or not has consequences for its interpretation.

(18) a. ¿Cómo ha comprado Juan este coche?
   how has bought John this car
   'In what way did John buy this car?'
   'How is it possible that John bought this car?'

   b. ¿Cómo Juan ha comprado este coche?
   how John has bought this car
   'How is it possible that John bought this car?'

In (18a), where inversion has taken place, cómo has two interpretations. According to one interpretation ("in what way") cómo expresses a sort of modification of the situation expressed in the clause: it behaves as a predicate of the relevant event, or stated differently, it denotes a set of events. I will call this interpretation the "referential" interpretation. According to the second interpretation ("how is it possible" or "how come"), cómo is interpreted as a sort of comment on a given situation: it is "propositional". In the uninverted order (18b), however, only the propositional interpretation is available. This shows once more that the "non referential" interpretation corresponds with $X^0$ status and base generation in C position, and that the possibility of base generation in C does not depend on the morphology of the wh-word, as suggested by Rizzi (1996).7.8

Before closing this section one final question must be addressed: if por qué (and "propositional" cómo) are in C, how do we account for the fact that inversion is still an option with these elements, as shown in (4b) and (18a)? There are two possible explanations. One possibility would be to allow por qué to be optionally generated as an XP, in which case the same applies to por qué as to "referential" wh-elements (which have no other option than being XPs). Note that the highly "non-referential" status of por qué does not exclude this possibility: "nonreferential" wh-elements need not be XPs, but there is no a priori reason for excluding this. There is, however, a second possibility: if the lexical subject can either be adjoined to IP or VP, the inverted word order can be obtained by just adjoining the lexical subject to VP. Por qué can then remain in C, and no optional XP status need be assigned to it.9
I will adopt this latter explanation, since it avoids redundancy: it accounts for optional inversion by making use of mechanisms independently available in Spanish. In fact, if we assume $X^0$ status to be the unmarked or default $X'$-status, there is no reason for the child to give up the initial hypothesis that por qué is always an $X^0$ in Spanish in favor of the more complex hypothesis that it can be both an $X^0$ and an XP: sentences like (4b,d) and (18a) can always be analyzed as involving VP adjunction of the lexical subject, like in (19).

5. Conclusion

In this paper I have tried to show how the DA approach of Moro (1997) can account for the adjunct–argument asymmetry in Spanish $wh$-questions: subject–verb inversion has been claimed to be obligatory for $wh$-arguments and optional for $wh$-adjuncts. I have shown that (i) the real asymmetry is neither between $wh$-arguments and $wh$-adjuncts (Torrego 1984), nor between por qué/perché and the other $wh$-elements (Rizzi 1996), but between “referential” and “nonreferential” $wh$-elements (Rizzi 1990), and (ii) that “nonreferential” $wh$-adjuncts in Spanish are generated as $X^0$s in C position, while “referential” $wh$-elements are generated as XPs in argument position after which they move to an IP adjoined position. $wh$-elements that are in C will always respect the LCA, irrespective of whether the lexical subject is adjoined to IP (uninverted Wh–Subject–Verb order) or to VP (inverted Wh–Verb–Subject order). $Wh$-elements that are XPs will either force the lexical subject to adjoin to VP or force V+I to move to C, in which case the $wh$-element ends up in Spec,CP. In either case, the result is an inverted word order: Wh–Verb–Subject.

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Notes

1. As a LIN-reviewer notes, -quoi in French pourquoi ‘why’ corresponds unambiguously to the wh-word quoi ‘what’ and not to the complementizer, which is que. Interestingly, like Spanish por qué and Italian perché, French pourquoi behaves exceptionally with respect to subject verb inversion: unlike other wh-elements it does not allow so-called “stylistic inversion”, a kind of inversion which shows some similarities with Spanish (and Italian) inversion.

2. Note that c-command between UP and XP is not blocked by YP in (10c), since the intervening YP is a segment and segments are excluded from Kayne’s definition of c-command. Note also that Kayne does not make a principled distinction between Specs and adjuncts.

3. Moro (1997) does not explain why movement of V+I to C is necessary when the wh-word moves to Spec,CP. I assume that the former movement is necessary in order to trigger the realization of the CP layer. If this movement were not needed, there would be no way for the PF component to distinguish IP adjunction from movement to Spec,CP. However, it is not inconceivable that in some languages an empty head can be inserted in C position, making V+I to C unnecessary. French could be such a language, since it allows constructions such as (i).
   (i) Qui elle a rencontré?
   who she has met
   ‘Who did she meet?’

   Obviously, this matter requires further elaboration.

4. How movement of the wh-word out of the VP should follow from antisymmetry requirements is still unclear. I will not address this issue here, leaving it for future research.

5. The presence of obligatory inversion in Spanish embedded wh-argument clauses is unexpected according to Moro (1997), since the embedded CP level is selected by the root verb, making V+I to C superfluous. For a possible solution to this problem, see Baauw (1997).

6. Cases like (1a) may cast some doubt on the analysis of subject-verb inversion as movement of V+I to C, since in this case the inflection bearing element is an auxiliary. Movement of I to C predicts (i) to be grammatical, contrary to fact.

   (i) *¿Cuándo ha Juan comprado una bicicleta?
      when has John bought a bike
      ‘When did John buy a bike?’

      However, Barbosa (1997) notes that (ii) is grammatical in Spanish:

   (ii) Había Juan leído casi todo el libro, cuando le dijeron que...
      had John read almost whole the book, when they told that...
      ‘John had almost read the whole book when they told him that…’

   Whether lexical material may appear between the Aux and the past participle appears to depend on the morphological “weight” of the Aux. “Heavier” forms like imperfect había or future tense habrá tolerate lexical material between it and the past participle (which I assume to be in AgrO) more easily than present tense ha, presumably due to some unclear
additional PF constraint. For cases like (1a) this means that they can only be analyzed as involving VP adjunction of the lexical subject to VP, in which case movement of (V+)I to C is no longer required, hence impossible.

7. As suggested by the LIN-reviewer, like Spanish cómo, French comment ‘how’ has two interpretations (in which way/how is it possible): Crucially, when stylistic inversion applies, only the “in which way” interpretation is available (De Cornulier 1974).

8. “Referentiality” in Rizzi’s sense is a gradual concept, as shown in (17). This explains why some speakers of Spanish will allow other wh-adverbs than por qué and cómo in C.

9. Interestingly, in French, which is not a null-subject language, stylistic inversion is impossible with pourquoi ‘why’ (and comment in the “how is it possible” sense). However, the fact that French stylistic inversion is more heavily constrained than inversion in Spanish wh-questions, suggests that the former might require a different analysis.

10. Rizzi (1990) claims that French pourquoi is in Comp, since it is not sensitive to negative islands, unlike other wh-adverbs. The same applies to Spanish por qué and cómo in the “how come/how is it possible” sense (I. Bosque, p.c).

References