Wh-in-Situ Constructions: Syntax and/or Phonology?

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1. Introduction

In this paper I provide an account of the behavior of wh-in-situ constructions in Spanish. The analysis to be pursued argues that the distribution of in situ wh-phrases is governed by phonological properties, not by purely syntactic ones, as in Uribe-Etxebarria (UE) (2002). More precisely, in situ wh-phrases in Spanish need to appear last within their intonational phrase.

The paper is organized as follows. First, I will discuss wh-in-situ in French. This will serve as the starting point in our investigation of the wh-in-situ phenomenon in Spanish. Second, I will introduce the main approach to the phenomenon under consideration (i.e. UE (2002)). I will raise problems for this study and conclude that it fails to explain the defining properties of Spanish wh-in-situ questions. Third, I will pursue the idea that the phonological properties of these questions determine their behavior and distribution. In order to formalize this idea, I will take Zubizarreta’s (1998) formulation of the stress assignment algorithm as the starting point. Then, I will adopt Stjepanović’s (1999, 2003) system, in which stress assignment and the Copy Theory of movement interact. I will argue that the outcome of the account to be proposed is more satisfactory than previous accounts. It not only overcomes previous problems but it also accounts for wh-in-situ constructions in Spanish in a unified way. Finally, I will draw a cross-linguistic comparison between wh-in-situ in Spanish, French and English. It turns out that the differences between the three languages can be explained by appealing to syntactic as well as phonological differences among the three languages.

2. French wh-in-situ constructions

It is well-known that French has a mixed pattern when it comes to wh-movement. As shown in (1a), French exhibits a movement pattern (cf. (1a)) and a non-movement pattern, as in (1b):

(1) a. Qu’a acheté John?
   what has bought John

   b. John a acheté quoi?

French wh-in-situ has a very limited distribution. More specifically, the wh-in-situ strategy is only allowed in short-distance questions. As noted in Bošković (1998), this strategy is disallowed in long-distance contexts ((2a-b)), embedded questions, and overt C questions:

(2) a. Qu’a dit Peter que John a acheté?
   what has said Peter that John has bought

   b. *Peter a dit que John a acheté quoi?

3. Spanish wh-in-situ: Main characteristics

As observed by UE (2002), Spanish is a language that exhibits a mixed pattern of the French type. Wh-words in Spanish can be fronted, as in (3a), or they can stay in situ, as in (3b):¹

¹ For helpful comments and discussion, I would like to thank Željko Bošković, Jonathan Bobaljik, Howard Lasnik and William Snyder.

Qué compró Juan?
What bought John
‘What did John buy?’

a. [Y] Juan compró qué?

b. ¿Y] Juan compró qué?

One property of wh-in-situ questions in Spanish noted by UE is that they do not have a neutral order. If we consider (4), and we compare it with its declarative counterpart in (5), one immediately notices that the word order of the elements is non-neutral in the former example.

[a. [Y] tú le diste a María (el) qué?
and you CL gave to Mary the what
‘What did you give to Mary?’

b. */?? [Y] tú le diste a quién la guitarra?

UE notes that curiously enough, the SFR can be overcome if there is a pause immediately following the wh-word:

In order to account for all these properties, UE proposes the following account: Spanish wh-in-situ questions have a complex syntax and involve two movement operations. First of all, the wh-word moves to Spec CP overtly. Then, the non-interrogative material (i.e. the remnant IP) moves over the displaced wh-word. To illustrate, let us go through some of the data presented above to see how the analysis works. The most basic example is (3b), repeated as (8):

(a. [Y] tú le diste a María (el) qué?
and you CL gave to Mary the what
‘What did you give to Mary?’

1) [IP Juan compró qué]
2) [CP qué, [IP Juan compró ti]]
3) [XP [IP Juan compró ti]], [CP qué ti]]

A more interesting example is the non-neutral word order in (4), repeated as (9):

(9) [Y] tú le distes a María (el) qué?

The derivation for this example is given below (irrelevant details are omitted):²

1) [IP Juan compró qué]
2) [CP qué, [IP Juan compró ti]]
3) [XP [IP Juan compró ti], [CP qué ti]]

Note that the conjunction ‘y’ (and) is inserted between square brackets in the wh-in-situ example. When I elicited the judgments from my informants, I gave them a previous context. The conjunction ‘y’ was used to offer a smooth transition between the context itself and the wh-in-situ question.

¹ For Etchépare and Uribe-Etxebarria (to appear), in situ wh-phrases move overtly to Spec FP followed by movement of the remnant to TopP.
The derivation for the example is provided below:

1) \([IP \, \text{tú le diste qué a María}]\)
2) \([CP \, \text{qué, } [IP \, \text{tu le diste ti a María}]]\)
3) \([XP \, [IP \, \text{tu le diste ti a María}], [CP \, \text{qué, ti}]]\)

As the derivation makes clear, ‘qué’ starts in its neutral position. The wh-phrase moves to Spec CP and then the IP remnant moves to XP generating the correct word order in (9). As a consequence of these movements, the wh-phrase appears in sentence final position and hence conforms to the requirements of the SFR.

There are several problems with UE’s account. If we assume that wh-words move overtly to Spec CP and the non-interrogative material moves to XP, the prediction here is that a wh-in-situ within an island should be bad under UE’s analysis. This prediction is not confirmed by the data, as shown by the examples below:

(10) a. Te has enamorado del hombre que vive con quién?
    you have fallen-in-love of-the man who lives with who
    ‘Who have you fallen in love with the man that lives with?’

b. *Con quién te has enamorado del hombre que vive?

If we adopt UE’s analysis, both examples in (10) should have the same grammatical status since overt movement to Spec CP out of an island occurs in both cases. This implies that there is no overt movement to Spec CP in the a. example. If that were the case, the sentence should be ungrammatical, contrary to fact. The relevant steps of the derivation are provided below.

(10a) \(\rightarrow\) 1) Te has enamorado del hombre que vive con quién
        2) \([CP \, \text{Con quién, } [IP \, \text{te has enamorado del hombre que vive, ti}]]\) (= (10b)) [problem!]

Another problem with UE’s analysis is that it runs into trouble once we examine constructions with two wh-phrases in situ. A sentence such as (11) is possible in Spanish.

(11) Iván le pidió qué a quién?
    Ivan CL asked what to who
    ‘What did Ivan ask to who?’

If we adopted a two-step derivation, we would obtain the following (I only represent the first step):

1) Iván le pidió qué a quién
2) \([CP \, \text{A quién, qué, } [IP \, \text{Ivan le pidió, ti, ti}]]\)

What step 2 is telling us is that Spanish is like Bulgarian, that is, a Multiple-Wh-Fronting language (see (12)). Of course, this is a wrong prediction. In Spanish, the most common way to express the Bulgarian sentence in (12) is as in (13b) with one wh-phrase in Spec CP and the other one in situ. Crucially, the Multiple-Wh-Fronting pattern in (13a) (see also step 2 above) is ruled out in Spanish.

(12) Kogo kakvo e pital Ivan?
    who-dat what-acc is asked Ivan
    ‘Who did Ivan ask what?’

(13) a. *A quién qué le compró Iván?
    to who what CL bought Ivan
    b. A quién le compró Iván (el) qué?
At this point I believe that we have enough evidence to abandon UE’s analysis. The question is: Is there a better way to analyze the data? I will argue that there is. I will argue that the phonological properties of the in-situ wh-phrases are crucial in determining their distribution.

4. Background assumptions

Before offering my analysis, I will spell out the background assumptions I’m adopting in this paper. First of all, I adopt the idea that focus is identified through stress. That is, a constituent can be identified as focus if it contains the main stress of the sentence. This idea has been put forward in several works such as Chomsky (1971), Jackendoff (1972), Cinque (1993), Zubizarreta (1998) and Stjepanović (1999, 2003), among others. The two last works just mentioned are going to be crucial for the analysis proposed in this paper. In particular, Stjepanović adopts Zubizarreta’s formulation of the Nuclear Stress Rule (NSR). The basic idea is that if a constituent receives stress by the NSR, it can be identified as new information focus. Below I provide some definitions of the stress assignment algorithm. All these definitions come from Zubizarreta and Stjepanović adopts them in her system. Zubizarreta assumes a modular definition of the NSR, as can be observed in (14) and (15). We will only focus on the C-NSR since this is the part of NSR that applies in Romance languages such as Spanish and Italian.

(14) C-NSR:
Given nodes C_i and C_j, that are metrical sisters, the one lower in the syntactic asymmetric c-command ordering is more prominent.

(15) S-NSR:
Given nodes C_i and C_j, that are metrical sisters, the one lower in the selectional ordering is more prominent.

In order to capture the relationship between focus and prosody Zubizarreta proposes the Focus Prominence Rule (FPR):

(16) Focus Prominence Rule (FPR):
Given two sister categories C_i (marked [+F] and C_j (marked [-F]), C_i is more prominent than C_j.

Another important aspect we need to take into account is that the NSR only applies if both sisters are metrical visible. For example, traces, determiners, auxiliaries, some prepositions and defocalized constituents are invisible to the NSR in languages such as English or German. In Spanish all material is metrical visible.

I assume with Stjepanović the Copy Theory of movement (Chomsky, 1993) and the possibility of pronunciation of lower copies (Bošković 2001, 2002; Franks 1998, Bobaljik 1995 etc.).

The last assumption I’m making is that stress assignment interacts with copy deletion (cf. Stjepanović 1999, 2003). That is, stress assignment takes part in deciding which copy should be pronounced. The highest copy will be pronounced unless the pronunciation of this copy leads to a PF violation. The kind of violation we are considering is a case where main stress would not be assigned. In those cases we pronounce a lower copy to make sure that main stress can be assigned.

5. The analysis

Let us start this section with a brief introduction to how the NSR works in Spanish. As discussed extensively by Zubizarreta, Spanish is subject only to the C-NSR, which means that the lowest element in the asymmetric c-command ordering is going to receive main prominence. Given the question in (17), we need to give an answer such as (19) with the element which is the new information focus of the sentence as the most embedded element. If we answer the question as in (18) with ‘Juan’ in sentence-initial position we obtain an ungrammatical sentence because ‘Juan’ needs to appear as the most embedded element in order to receive main stress.
Now, let us discuss wh-in-situ constructions. Recall that the most basic data we are trying to explain is sentence (3b), repeated as (20):

(20) \[ Y \text{ Juan compró qué?} \]

According to Zubizarreta, wh-words are intrinsically marked [+F]. Following Stjepanović, the kind of structure (20) would have before Spell-Out is the following (I include copies and F-marking):

(21) \[
\begin{array}{c}
\text{AgrSP Juan compró } \text{AgrOP qué compró } \text{VP Juan compró qué]}
\text{[-F]} \text{[-F]} \text{ [+F]} \text{[-F]} \text{[-F]} \text{[-F]} \text{[-F]} \text{[+F]}
\end{array}
\]

In (21), the first metrical sisters we need to consider are the subject ‘Juan’ in AgrSP and AgrS’. The subject is [-F] and AgrS’ is unspecified for feature [F]. This is so because AgrS’ contains both [+F] and [-F] elements. Since ‘Juan’ and AgrS’ do not have contradictory specifications, the FPR does not apply. The C-NSR applies and AgrS’, being the most embedded element in the asymmetric c-command ordering, receives prominence. The next pair of metrical sisters the algorithm considers are the verb ‘compró’ and AgrOP. The verb is [-F] and AgrOP is only [F]. The FPR does not apply. The C-NSR applies and assigns prominence to AgrOP. The algorithm keeps on reapplying in the same fashion until it reaches the last pair of metrical sisters, that is, the verb ‘compró’ and the in-situ wh-word ‘qué’. As can be observed, ‘compró’ is [-F] and ‘qué’ is [+F]. The FPR can apply in this case because there is a contradictory situation between the two sisters. The FPR applies and assigns main prominence to the [+F] element: ‘qué’. The NSR also applies and assigns prominence to the same element. After copy deletion applies, we obtain the structure in (22). Note that since there are no PF requirements on the copies of the subject and the verb, the highest copies of these elements get pronounced.

(22) \[
\begin{array}{c}
\text{AgrSP Juan compró } \text{AgrOP qué compró } \text{VP Juan compró qué]}
\text{[-F]} \text{[-F]} \text{ [+F]} \text{[-F]} \text{[-F]} \text{[-F]} \text{[-F]} \text{[+F]}
\end{array}
\]

In (23), I provide an example with a ditransitive structure. The stress assignment algorithm applies exactly in the same way as in (20). In other words, the joint work of the C-NSR and the FPR determines that the lowest copy of the wh-phrase will be pronounced.

(23) \[ Y \text{ tú le diste la guitarra a quién?} \]

(24) \[
\begin{array}{c}
\text{AgrSP tú diste [AgrOP la guitarra diste ] [AgrOP a quién diste } \text{VP tú diste la guitarra a quién]}
\text{[-F]} \text{[-F]} \text{[-F]} \text{[+F]} \text{[-F]} \text{[-F]} \text{[-F]} \text{[-F]} \text{[+F]}
\end{array}
\]

(25) \[
\begin{array}{c}
\text{AgrSP tú diste [AgrOP la guitarra diste ] [AgrOP a quién diste } \text{VP tú diste la guitarra a quién]}
\text{[-F]} \text{[-F]} \text{[-F]} \text{[+F]} \text{[-F]} \text{[-F]} \text{[-F]} \text{[-F]} \text{[+F]}
\end{array}
\]

Let us examine another example where pronouncing the lowest copy is obligatory if one wants to derive the correct word order. The new example under examination is (4) (repeated as (26)). This
example is particularly interesting because it contains a non-neutral word order resulting from the SFR imposed on the wh-phrases.

(26) [Y] tú le distes a María (el) qué?

The input structure to PF looks as follows:

(27) \[ \text{AgrSP} \text{tú diste} \text{AgrOP qué diste} \text{AgrDOP a María diste} \text{VP tú diste qué a María} \]

\[-F\] \[-F\] \[+F\] \[-F\] \[-F\] \[-F\] \[-F\] \[-F\] \[-F\] \[+F\] \[-F\]

The stress assignment algorithm applies in the same way as in the examples above up until it reaches the last pair of metrical sisters, namely, ‘qué’ and ‘a María’. ‘Qué’ is [+F] and ‘a María’ is [-F]. There is a clear contradictory situation in terms of F-marking. The FPR wants to assign prominence to the [+F] constituent ‘qué’. However, the NSR wants to assign prominence to ‘a María’ since this is the lowest element in the asymmetric c-command ordering. How does the conflict between the FPR and the NSR get resolved? According to Stjepanović, copy deletion applies at this point and deletes the lowest copy of ‘a María’. The FPR applies again and assigns prominence to ‘qué’. The NSR does not apply now because ‘a María’ is no longer metrically visible. The NSR and the FPR have determined that the highest copy of the IO should be pronounced while the lowest copy of the DO should be pronounced. After copy deletion takes place, (27) looks as (28):

(28) \[ \text{AgrSP} \text{tú diste} \text{AgrOP qué diste} \text{AgrOP a María diste} \text{VP tú diste qué a María} \]

\[-F\] \[-F\] \[+F\] \[-F\] \[-F\] \[-F\] \[-F\] \[-F\] \[-F\] \[-F\] \[-F\]

One aspect I haven’t discussed is the fact that the arguments of the verb seem to be moving out of the VP in the syntax (at least as an option). It is standardly assumed that the preverbal subject and the verb move quite high in Spanish (see Ordoñez (1997) and Zubizarreta (1998), among many others). The claim that objects move out of the VP is not that straightforward. I will use a test offered by Bošković (1997). The starting point is the English data in (29):

    b. John [intentionally [twice [knocked on the door]]] intentionally > twice

In the first sentence ‘twice’ takes scope over ‘intentionally’. That is, the sentence is making reference to two instances of intentional knocking. In the second sentence the scope facts are reversed and the sentence is referring to only one intention, which was to knock on the door twice. Given the standard assumption that height determines scope, Bošković takes these data as evidence for the existence of a difference in the direction of adverb adjunction. In the first sentence the adverbs are right adjoined, which means that ‘twice’ is higher than ‘intentionally’. In the second sentence they are left adjoined, which means that ‘intentionally’ is higher than ‘twice’. Bošković takes these facts as a testing ground for the movement of elements outside of VP. The crucial Serbo-Croatian example is provided below:

(30) Jovan je oborio Petra namerno dva puta

Jovan is failed Peter deliberately twice
‘Jovan failed Peter deliberately twice’

According to Bošković, this example is ambiguous. The conclusion emerging from these data is that on the reading in which the first adverb has scope over the second adverb, the object (and the participle) has moved outside of the VP since the adverbs must be left-adjoined.

If we apply the same test to the Spanish data we obtain similar results. Sentence (31) is also ambiguous indicating that, on the reading in which the first adverb has scope over the second, the object has moved outside of the VP:
(31) Juan (le) falló a Pedro deliberadamente dos veces  
John CL failed to Peter deliberately two times

Sentences with two objects give us exactly the same results, i.e. (32) is ambiguous. This indicates that both objects are moving out of the VP. More precisely, this is the case under the reading in which ‘intencionalmente’ scopes over ‘dos veces’.

(32) Juan le enseñó el libro a María intencionalmente dos veces  
John CL showed the book to Mary intentionally two times

In summary, we have evidence for the fact that arguments raise out of the VP in Spanish.

So far we have been able to account for simple sentences of the type in (3b) and non-neutral sentences such as (4). Can we use the same mechanism to account for the whole Spanish paradigm? I will argue that this is possible indeed. The next example under study is (33b):

(33) a. *[Y] tú le diste a quién la guitarra?  
b. [Y] tú le diste a quién # la guitarra?

(33a) above is ungrammatical because the wh-word does not conform to the SFR. The sentence can be salvaged if there is a pause after the wh-word. One common characteristic between this example and previous examples is that in all cases there exists the intuition that the wh-word is in final position. This is really clear in (3b) but not so obvious in (33b). In fact, ‘a quién’ is intonational-phrase final in (33b), not sentence final. One issue that needs to be clarified is the domain of the stress assignment algorithm. If the domain is the sentence, then (3b) is fine but we run into trouble with (33b). If the domain is the intonational phrase then we are fine in both cases. Following Zubizarreta, I will assume that the domain of stress assignment is the intonational phrase. Let me quote Zubizarreta here:

(34) Within an intonational phrase, the rhythmically most prominent word must be right-adjacent to the intonational phrase boundary (...) (Zubizarreta, p. 84)

If this is correct, then we only need to take into account the intonational phrase (not the whole sentence, although the two may coincide) when applying the stress assignment algorithm.

Given this, there are two independent intonational phrases in (33b): ‘tú le diste a quién’ and ‘la guitarra’. If the domain of stress assignment is the intonational phrase, the stress assignment algorithm is only going to see the ‘tú le diste a quién’ part in (33b). I assume that the NSR and the FPR proceed in the same way and assign prominence to ‘a quién’ by virtue of it being marked [+F] and by virtue of it being the lowest element in the asymmetric c-command domain.

Now, let us ask ourselves: Why aren’t there island effects in wh-in-situ constructions? (see (10) above) The answer is going to lie in the fact that there is no overt movement of the wh-word to Spec CP under the current analysis. The relevant structures are provided in (35) and (36). Note that the embedded CP is parsed as an independent intonational phrase.

(35) [CP que [AgrSP vive [AgrOP con quién vive [VP vive con quién]]]]  
[-F]  [-F]  [+F]  [-F]  [-F]  [+F]

(36) [CP que [AgrSP vive [AgrOP con quién vive [VP vive con quién]]]]  
[-F]  [-F]  [+F]  [-F]  [-F]  [+F]

6. Cross-linguistic comparison: Spanish, French and English

In this section I compare wh-in-situ constructions in Spanish with French and English wh-in-situ. I evaluate whether we are dealing with the same phenomenon in the three languages or whether we need different analyses to account for cross-linguistic variation.
6.1. French

In his analysis of French wh-in-situ, Bošković (1998) mentions that there are crucial differences between the examples in (37a) and those in (37b):

(37)  a. *Jean ne mange pas quoi?
Jean neg eats neg what
‘What doesn’t John eat?’
b. Qui ne mange pas quoi?
who neg eats neg what
‘Who doesn’t eat what?’

The main difference between (37a) and (37b) is that the example in (37b) contains an additional wh-phrase located in Spec CP in the overt syntax. What these examples show us is that the in situ wh-phrases in (37a) and those in (37b) are different; they have a different syntax and hence, should be analyzed in a different way.

Let us see evidence that all in situ wh-phrases in Spanish exhibit a parallel behavior:

(38)  a. [Y] Juan no come (el) qué?
and John neg eats the what
b. Quién no come (el) qué?
who neg eats the what

As the examples make clear, Spanish in situ wh-phrases behave the same. The conclusion from the Spanish data is that all Spanish in situ wh-phrases exhibit the same syntax. French in situ wh-phrases are different; they have a different syntax depending on the presence or absence of an additional wh-phrase in Spec CP.

6.2. English

It is standardly assumed that wh-in-situ questions in English only have an echo reading:

(39)  Your father saw who?

Interestingly, my informants accepted (39) given a previous context (see Reglero (2004) on this)) Let us examine English constructions where there is a wh-phrase in situ and another wh-phrase in Spec CP. This will help us determine whether all kinds of wh-in-situ in English have the same syntax.

(40)  a. [And] John doesn’t eat what?
b. Who doesn’t eat what?
c. [And] John and Peter believe that Mary has seen who?
d. Who believes that Mary has seen who?

As observed above, once we add an additional wh-phrase the judgments remain the same. All sentences are grammatical. From these data we can conclude that all wh-in-situ phrases in English have the same syntax. This is exactly what happens in Spanish (but not in French).

At this point English is behaving just like Spanish. There is one last aspect one needs to consider before proposing a unified analysis for wh-in-situ in these two languages. Wh-phrases in situ are subject to the SFR in Spanish. As (41) shows, wh-phrases in English are not subject to this requirement. Wh-phrases can appear in final position, as in (41a), but they don’t have to ((41b)). In (41b), there’s no need for a pause after the wh-word. Note that the judgments remain the same when we add another wh-phrase in Spec CP.
(41)  a. [And] you gave the guitar to who?
b. [And] you gave who the guitar?
c. Who gave the guitar to who?
d. Who gave who the guitar?

Based on the previous data we can conclude that wh-in-situ in Spanish and wh-in-situ in English have the same syntax but different prosody. My last claim is based on the fact that only in situ wh-phrases in Spanish are subject to the SFR. English in situ wh-phrases are not subject to this requirement.

7. Conclusions

In this paper I have shown that the defining properties of wh-in-situ constructions in Spanish (non-neutral word order and the SFR) can be derived from their phonological properties. To be more precise, in situ wh-phrases in Spanish need to be last within their intonational phrase. Using Stjepanović’s (1999, 2003) system as a tool, I have accounted for this property. In situ wh-phrases appear in this position as a result of the joint work of the stress assignment algorithm (Zubizarreta (1998)) and the Copy Theory of movement. My analysis has proven successful in offering a unified account of wh-in-situ in Spanish. Furthermore, I have been able to offer an account of the cross-linguistic differences between Spanish, French and English wh-in-situ constructions.

References


