

Obligatory inversion as avoidance of unlinearizable representations*

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1 Introduction

In Spanish, the order of subject and verb is relatively free, as can be seen in the sentences in (1), which are not identical in information structure terms, but are all equally natural.

- (1) a. Juan recibió la encomienda.
Juan received the parcel
- b. Recibió Juan la encomienda.
- c. Recibió la encomienda Juan.

This freedom is curtailed under certain specific circumstances; in particular, the order verb-subject is obligatory when there is fronting of some, but not all, *wh*-constituents:¹

- (2) a. ¿Qué hizo Juan ayer?
what did Juan yesterday
‘What did Juan do yesterday?’
- b. *¿Qué Juan hizo ayer?
what Juan did yesterday

In this paper, we will concentrate on the properties of a certain dialect of Spanish, namely that spoken in the Río de la Plata (henceforth RP) region, i.e., Buenos Aires, Montevideo, and environs, and argue that the obligation to invert follows from certain conditions for linearization at the PF interface. Several mutually incompatible principles have been advanced to account for a multitude of patterns reported in the literature for different dialects, among which we count the following:

*I’ve been selective with judgements, so the following informants, to whom I am greatly thankful, are not wholly responsible for the empirical foundation of this paper: bla bla bla.

¹Since we depart from the assumption that the basic word order of Spanish is SVO, we will henceforth speak of subject-verb inversion whenever the verb precedes the subject, though, as we will argue below, inversion results from the failure of the subject to raise, rather than on an additional movement operation, as the terminology might suggest.

- Only argumental wh- phrases force inversion (Torrego, 1984, Suñer, 1994).
- “Argumentlike” wh- phrases, as determined by a gradient scale of argumenthood, force inversion (Baković, 1998).
- Non-D-linked wh- phrases force inversion (Barbosa, 2001).
- Non-heavy non-D-linked wh- phrases force inversion (Arnaiz, 1992).

In addition, focus fronting and successive cyclic movement of wh- phrases through the Spec,CP of embedded clauses have been claimed to force subject-verb inversion in conditions that are a subset of the conditions where inversion is required in matrix clauses with a wh- phrase in Spec,CP.

We will show that the approach outlined here can be relaxed in ways that are both precise and independently motivated to account for dialects other than the one considered here, and that some nontrivial predictions are made as to the extent of dialectal variation.

2 The core facts

Subject-verb inversion in RP Spanish is generally not an obligatory concomitant of wh- fronting:

- (3) a. ¿Por qué Juan te llamó?
 for what Juan to-you called
 ‘Why did Juan call you?’
 b. ¿A quién María le mandó el paquete?
 to whom María to-him sent the package
 ‘Who did María send the package to?’

There are two core cases in which inversion *is* obligatory:

- (4) When the wh- word is a DP and the subject is nominative:
- a. ¿Qué vio Juan en Buenos Aires?
 what saw Juan in Buenos Aires
 ‘What did Juan see in Buenos Aires?’
 b. *¿Qué Juan vio en Buenos Aires?
 c. ¿A quién Juan conoció en Buenos Aires?
 to whom Juan met in Buenos Aires
 ‘Who did Juan meet in Buenos Aires?’
 d. ¿A quién Juan le envió la encomienda?
 to whom Juan to-him sent the parcel
 ‘Who did Juan send the parcel to?’
 e. *¿Quién Juan quiere que le escriba
 who Juan wants that to-him write
 ‘Who does Juan want writing him?’

- (5) When both the wh- word and the subject are dative:
- a. *¿A quién a Juan le pareció que le habían dado el premio?
to whom to Juan to-him seemed that to-him had given the prize
'Who did it seem to Juan that had been given the prize?'²
 - b. ¿A quién Juan dijo que le habían dado el premio?
to whom Juan said that to-him had given the prize
'Who did Juan say that had been given the prize?'

In Torrego (1984), an argument is made for successive cyclic wh- movement on the basis that in the dialects analyzed, when inversion is obligatory, it is forced in all but the most embedded clause. Though this is a complication that we will eventually need to address, in RP Spanish inversion is obligatory only in the highest CP:

- (6) a. ¿Qué dijo Luis que la gente decía que el diario había publicado?
what said Luis that the people said that the paper had published
'What did Luis say that the people were saying that the newspaper had published?'
- b. ¿Qué dijo Luis que decía la gente que había publicado el diario?

These effects (i.e., the "obligatoriness" of inversion) are weakened under certain complex conditions, not made fully explicit in the literature. The following contrasts are from Arnaiz (1992), who hints at the relevance of D-linkedness of the wh- phrase, but discards the hypothesis on the basis of examples such as (9):

- (7) a. *¿Qué Juan ha preparado para la comida?
what Juan has prepared for the meal
- b. ?¿Qué platos Juan ha preparado para la comida?
what dishes Juan has prepared for the meal
- (8) a. *¿Cuánto Rosa pesa este mes?
how much Rosa weighs this month
- b. ?¿Cuántos kilos Rosa pesa este mes?
how many kilos Rosa weighs this month
- (9) ?¿Qué diablos Juan ha preparado para la comida?
what the devil Juan has prepared for the meal

We will put aside these complications by concentrating on the simplest possible wh- phrases for the time being.

²Note that wh-fronting over a dative subject without inversion seems to be degraded even if the fronted constituent is a DP, something that our approach doesn't capture.

3 The sketch of an analysis

Alexiadou and Anagnostopoulou (2001) discuss several situations that are reminiscent of at least the core case of obligatory inversion described in (4). They note, for instance, that stylistic inversion in French is blocked from applying with transitive verbs:

- (10) a. Je me demande quand partira Marie.
 I to-me ask when departs Marie
 b. *Je me demande quand achèteront les consommateurs les
 I to-me ask when will buy the consumers the
 pommes.
 apples
 c. ?Je me demande quand écrira ton frère à sa
 I to-me ask when will write your brother to his
 petite amie?
 girlfriend
- (11) a. * “What is the exchange rate?” asked Mary John.
 b. “What is the exchange rate?” asked Mary of John.
 c. “What is the exchange rate?” Mary asked John.

Alexiadou and Anagnostopoulou (2001) make the generalization in (12) about cases such as the preceding.

- (12) When the subject is VP-internal and there is also a VP-internal object, subject inversion is not possible unless the object is a PP. (Alexiadou and Anagnostopoulou, 2001: 197).

Though this generalization, and the essentials of Alexiadou and Anagnostopoulou’s analysis, which relies on competition for case between the two DPs, seem not to carry over directly to other inversion facts (v.g., the data in (5)), there is a striking family resemblance between them. In section 7 below, we show how the core facts of inversion receive a unified explanation under proposal made by Richards (2002), which captures facts such as those discussed in Alexiadou and Anagnostopoulou’s paper but extends the empirical domain to other cases where identical XPs are banned from appearing together within a particular domain.

First, though, we must argue that the contrast between inverted and non-inverted structures involves DP movement rather than I-to-C movement, and that the argument vs. adjunct distinction, which has played the most prominent role in the description of the inversion facts in Spanish, is ersatz. Why we argue for these positions should become clear when the analysis is fully outlined.

4 The structure behind subject-verb inversion

Two points have to be addressed before we proceed: (1) how is inversion different from other deviations from standard word order in Spanish, which is generally quite free, and (2) what units invert.

Constituent postposing Word order is quite free in Spanish. Let us consider the following:

- a. S V DO IO María envió una carta a Pedro.
- b. V S DO IO Envío María una carta a Pedro.
- c. V DO *S* IO Envío una carta María a Pedro.
- d. V DO IO *S* Envío una carta a Pedro María.

Sentence (d) bears focus on the postposed subject, and sentence (c) bears focus on both the postposed subject and indirect object. Sentences (a) and (b) have no focussed constituents when pronounced with neutral declarative intonation.

So in fact we seem to have two neutral orders (S V DO IO, V S DO IO), and the possibility of extraposing any constituent to the right of IO, with special intonation and a focus interpretation.

We will thus consider the movement that yields (c) and (d) to be of a different nature from the movement that produces inversion.³

The constituent that is moved Note that V above refers to Neg+Clitics+Aux+V (cf. ex. 4). In some dialects, subjects can be placed between Aux and V (with some restrictions), but in RP Spanish these orders are unacceptable, so they

³Another assumption, which we see no reason to challenge at this point, is that optional and obligatory inversion involve the same structures and movements — i.e., that obligatoriness stems from constraints on the resulting structure that are independent of the description of the structure and the transformations involved.

are not within the scope of our discussion. We will treat this cluster as a unit.⁴ More generally, in RP Spanish it is impossible to place a subject between sequences of verbs that have undergone restructuring, a point to which we will return below.

The fact that what inverts with the subject is maximally Neg+Clitics+Aux/Modals+V, rather than just the finite V/Aux, is one of the main characteristics distinguishing Spanish inversion from Germanic V2, usually analyzed as T-to-C movement. An additional difference is the fact that, for the most part,⁵ there are no asymmetries in inversion between main and embedded contexts (though V2 does exist in embedded clauses in some Germanic languages).

If the inversion found in Spanish interrogatives cannot result from T-to-C movement, we will assume, and then attempt to show, that in inverted structures the subject DP has failed to raise to [Spec,IP], remaining in Spec,VP. This will involve showing that the verb in Spanish always raises to T, and never any further. The arguments for both points are given in section 5.

T-to-C and “Romance-type” inversion coexist in French (cf. Kayne, 1972), some northern Italian dialects, and Rhaeto-Romance. In French, the latter is exemplified by “stylistic inversion”, mentioned in section 3 (cf. 13a), whereas the former is exemplified by the inversion with pronominal subjects in (13b):

- (13) a. Où voulaient dîner tes amis?
 where wanted to dine your friends
 ‘Where did your friends want to dine?’

⁴ The following data are for Iberian Spanish:

- a. ?No lo hubiera usted podido oír a Pedro.
 not him would have you been able to hear to Pedro
 ‘You wouldn’t have been able to hear Pedro.’
 b. No lo hubiera podido usted oír a Pedro.
 c. No lo hubiera podido oír usted a Pedro.
 d. Usted no lo hubiera podido oír a Pedro.

Suñer (1987) considers that the few instances in which the subject cannot appear between the auxiliary and the main verb follow from a restriction at the PF interface barring a short (one-syllable) auxiliary followed by anything other than the main verb. The relevant pair is the following:

- Lo hubiera usted oído en la mesa.
 him should have you heard in the table
 ‘You should have heard him in the table.’
 *Lo ha usted visto?
 him have you seen

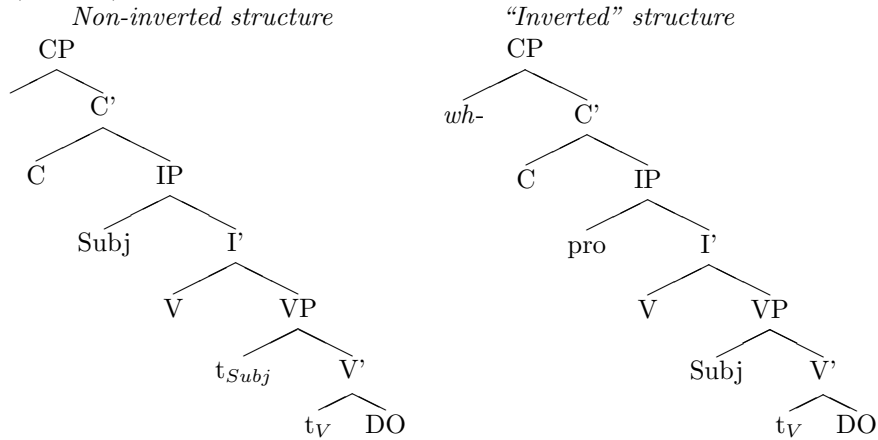
All other modals and auxiliaries allow the subject to intervene between them and the main verb. This, to which one can add the remark that the ungrammaticality of (4) is not as strong as, for instance, lack of inversion in argument *wh*- questions, makes the PF filter analysis plausible.

⁵But cf. Baković (1998).

- b. OÙ veut-il aller?
 where wants-him to go
 ‘Where does he want to go?’

In some Romance languages (which include at least Catalan and Standard Italian) inversion relates SVO to VOS (Bonet, 1990 ascribes this to [Spec,VP] being to the right in Catalan, something that accords with the analysis we defend). In Spanish it relates SVO to VSO ([Spec,VP] would be on the left). All other orders in Spanish are clearly marked, and will be considered to be derived by constituent postposing.

Therefore we have the following structure for inverted and non-inverted structures in “Romance-type” inversion (this is the position for which Suñer (1994) argues):



In cases where the surface order is SVO, the subject has moved to [Spec,IP].

As we said in section 3, subjects are prevented from raising by a PF condition on linearization. A variant of this approach would be to have argumental *wh*-’s land in [Spec,IP], preventing movement of the subject to this position in just these cases. V at either I or in situ gets us the right word order in the sentences considered so far. An option like this is suggested by Bonet (1990), where furthermore CP is not projected in main clauses. Bonet (1990) has the [Spec,VP] position be to the right of V’, mostly to account for a series of facts which will not concern us here. In Catalan, inversion targets the whole V’, making it plausible that the subject has remained in situ in the right-branching [Spec,VP]. To get VSO if the subject doesn’t go past I, Bonet needs right adjunction of the object, which seems less plausible for Spanish than for Catalan, given the facts about information structure discussed above.

Suñer mentions a proposal by Groos and Bok-Bennema (1986) which has approximately the same features as Bonet’s applied to Spanish. Though this approach has certain advantages, it involves making [Spec,IP] ambiguous between being an A and an A’ position, and should be put aside unless we have principled reasons for making this move. Whether we do or not is to be seen once the class of *wh*- phrases that require inversion is delimited — i.e., do they have

special case requirements that force them to land at [Spec,IP], etc.? The same could be said about the approaches in Baković (1998) and Arnáiz (1993), where structures without inversion are obtained by the adjunction of the *wh*-phrase or by topicalization, respectively, rather than by its movement to the specifier of a head to which the V can move: the contrast in behavior hasn't been convincingly argued to be correlated to any other fact about the *wh*-phrases themselves.

5 Arguments for V-to-T but not beyond

We will now present some arguments that have been advanced in favor of V not raising past T in Spanish, and of the low (perhaps *in situ*) position of subjects under inversion. For completeness, we review some arguments previously presented in the literature, though they rest on questionable assumptions.

5.1 Adverb placement

Suñer (1994) presents two arguments for V-to-I movement: the first, theory-dependent one, is that movement to I has to take place for the verb to acquire its inflectional morphology. Suñer's second argument has to do with the placement of subjects between both finite and infinitival V and VP-internal adverbs of a particular sort that has a close bond with the verb:

- (14) a. Jugar Juan limpio a las cartas es una contradicción.
 to play Juan clean to the cards is a contradiction
 'For Juan to play clean at cards is a contradiction.'
 b. Aunque jugaba Juan limpio a las cartas, siempre ganaba.
 though played Juan clean to the cards always won
 'Even though Juan played clean at cards, he always won.'

Following Pollock (1989), it is argued that adverbs are in fixed positions in the phrase structure, and other constituents move past them. The surface position of adverbs is thus a guide to what movements have taken place. Suñer gives the paradigms such as the following as evidence that V doesn't move past I:

- (15) a. Bri todavía/aún estudia historia del arte.
 Bri still/yet studies history of art
 'Bri still studies art history.'
 b. ¿Qué idioma todavía estudia Pepita?
 What language still studies Pepita
 'What language does Pepita still study?'

Suñer contends that the position of negation also argues for V not moving past I, since the negative particle *no* never appears to the right of the verb, regardless of its position with respect to the subject.

Since there is no asymmetry between argument and adjunct *wh*- phrases in the placement of adverbs and negation with respect to the verb, and inversion is only optional with adjunct *wh*- phrases, the null hypothesis, Suñer points out, is that the verb doesn't move past I.

The argument from negation is weakened by the now common assumption that Neg⁰ is a head through which the verb moves adjoining to it (in fact, this is probably correct anyway, since nothing but the verbal clitics can intervene between negation and the verb),⁶

The facts about adverb placement in Spanish are also slightly more complicated than Suñer makes them to be. The position of most adverbs is quite free, as the following data attest:

- (16) a. Alegrementemente Juan comió la sopa.
 Happily Juan ate the soup
 'Juan happily ate the soup.'
 b. Juan alegrementemente comió la sopa.
 c. Juan comió alegrementemente la sopa.
 d. Juan comió la sopa alegrementemente.

Only a few adverbs, among which are adverbs of aspect (*ya* 'already', *todavía* 'still') and extent (*casi* 'almost', *sólo* 'only'), and some "epistemic" adverbs (*aparentemente*, *evidentemente*), seem to always occupy a fixed position. It is still possible to make the argument solely based on the position of these, as was done in (15). Against this it might be said, based on the general freedom on adverb placement that Spanish seems to display, that any restrictions on where adverbs can be come from other factors, such as that these adverbs need to scope over the surface structure position of the verb, giving no indication as to what this position is. This would go against the usual assumption about head movement, namely that it reconstructs.

5.2 Negative concord items

In Spanish, negative concord items such as *nadie* 'nobody', *nunca* 'never', *ninguno* 'noone', require the negation marker *no* before the verb if they occur postverbally, but not if they are in preverbal position:

- (17) a. Juan no contestó nunca lo que le preguntamos.
 Juan not answered never it that him asked
 'Juan never answered what we asked him.'
 b. Juan nunca contestó lo que le preguntamos.

⁶We assume here that V movement respects the head movement constraint, so that movement of V (past I) to C would require it to land in all intermediate head positions on its way. Thus, it would adjoin to the Neg⁰ and carry it along to C (or whatever its final resting place is).

- (18) a. No sabe nadie qué va a pasar acá.
 not know nobody what will happen here
 ‘Nobody knows what will happen here.’
 b. Nadie sabe qué va a pasar acá.
- (19) a. No le explicaron a nadie cómo hacerlo.
 not to-him explained to nobody how to do it
 ‘They didn’t explain to anybody how to do it.’
 b. A nadie le explicaron cómo hacerlo.

Arnaiz (1992) makes the unwarranted claim that the absence of *no* obtains if and only if the negative concord item is in [Spec,IP]. The fact about concord items seems to be that *no* is not present on the verb no matter how high above the verb the concord item is. This generalization could be accommodated by saying that the *no* $\sim \emptyset$ alternation is absence vs. presence of agreement with a negative word; agreement obtains if the negative word and the verb (which presumably has moved through the Neg⁰ head) are in a Spec-Head configuration at some point of the derivation. Thus, no claim about the position of the verb can be made based on the facts of negative concord items.

Before we conclude this section, we should note a fact that we will return to in section 9. Preverbal negative concord items are awkward in interrogatives:

- (20) a. ¿Qué no contestó nunca Juan?
 what not answered never Juan
 ‘What didn’t Juan ever answer?’
 b. ?? ¿Qué nunca contestó Juan?
 what never answered Juan
 ‘What did Juan never answer?’

5.3 Quantifier floating

Arnaiz (1992) shows that quantifiers can be floated by preverbal subjects only:

- (21) a. Los hombres fueron todos a la tienda.
 the men went all to the store
 b. *¿Adónde fueron los hombres todos?
 where went the men all
 (cf. ¿Adónde fueron todos los hombres?)

Floating of quantifiers are considered by Sportiche (1988) and others to be adjuncts to a noun phrase that are stranded after movement of the rest of the DP. If this is true, floating quantifiers can only appear at the positions that form a chain with the moved DP. The full facts in RP Spanish are the following:⁷

⁷Some of the starred examples are possible with an intonation other than the neutral one; in particular, cf. the right-extraposition facts discussed above, which make, v.g., (22e) acceptable if both *all* and *María* are focalized. The example sentences are Arnáiz’s (with a small modification, the introduction of the dative clitic) but the judgements are our own.

- (22) a. *Los hombres todos le habían dedicado un poema a María
 The men all to-her had dedicated a poem to María
 ‘All the men had dedicated a poem to María’
 b. Todos los hombres le habían dedicado un poema a María
 c. *Los hombres le habían todos dedicado un poema a María
 d. Los hombres le habían dedicado todos un poema a María
 e. *Los hombres le habían dedicado un poema todos a María
 f. *Los hombres le habían dedicado un poema a María todos.

In the present case, the position of *todos* argues clearly that the chain headed by the subject contains only two positions, one preverbal and one postverbal. The impossibility of any stranding of the quantifier if the subject is postverbal, as in (21b), strongly suggests that the postverbal subject is in its base position.

5.4 Inversion with restructuring and control verbs

In Spanish, certain sequences of verbs display restructuring properties. The main diagnostic for restructuring is the climbing of clitics from the lower to the higher clause, and the inability to place negation anywhere but on the highest verb:

- (23) a. Juan le esta contando todo a María.
 Juan to-her is telling all to María
 ‘Juan is telling María everything.’
 (cf. Juan esta contándole todo a María.)
 b. Juan le quiere contar todo a María.
 Juan to-her wants to tell all to María
 ‘Juan wants to tell María everything.’
 (cf. Juan quiere contarle todo a María.)
 c. *Juan le prometió contar todo a María.
 Juan to-her promised to tell all to María
 (cf. Juan prometió contarle todo a María.)
- (24) a. Juan no le quiso ir a decir a María.
 Juan not to-her wanted go to say to María
 ‘Juan didn’t want to go tell María.’
 b. *Juan le quiso no ir a decir a María.
 c. *Juan le quiso ir a no decir a María.
 d. Juan quiso no ir a decirle a María.
 Juan wanted not go to tell-her to María
 ‘Juan wanted to not go tell María.’

Note that in example (23c), which is unambiguously a control construction, it is impossible for the clitic to climb to the main clause. The facts of inversion

in control and restructuring constructions parallel the clitic climbing facts, with subjects capable of appearing between the two verbs when there is control, but not when there is restructuring:⁸

- (25) a. ¿Qué le va a decir Juan?
 What to-him goes to say Juan
 ‘What will Juan tell him?’
 b. *¿Qué le va Juan a decir?
- (26) a. ¿Qué prometió contarle Juan a María?
 What promised to tell her Juan to María
 ‘What did Juan promise to tell María?’
 b. ?¿Qué prometió Juan contarle a María?
 What promised Juan to tell her to María

As was noted in footnote 4, subjects cannot appear between auxiliaries, so the pattern of restructuring verbs is similar to that of sequences of auxiliaries. One might think that if we have any good reason to analyze a sequence of auxiliaries as something that can itself move past the subject, rather than having the subject move past it, then restructuring constructions shouldn’t force us to think otherwise. Yet verbs in restructuring contexts are clearly more separate than sequences of auxiliaries:

- (27) Juan le pudo sin embargo decir la verdad.
 Juan to-him could nevertheless tell the truth
 ‘Juan nevertheless could tell the truth to him.’
- (28) ?? Juan le estaba sin embargo diciendo la verdad.
 Juan to-him was nevertheless telling the truth
 ‘Juan was nevertheless telling the truth to him.’

This renders an Aux+V movement approach less plausible than one where it is the subject that moves or fails to move over the verbal complex.

5.5 Differences from standard V2 encore

Two characteristics of standard V2 languages are not present in Spanish, despite there being inversion: there is no main vs. embedded clause asymmetry in inversion, and there is no ban on verbs being sentence initial. We address each of these objections to V-to-C in Spanish briefly here.

The idea with the main vs. embedded asymmetry is that if V is moving to C, there being an overt complementizer in C would prevent this movement from happening. In Spanish, however, a complementizer can appear before a *wh*-word in an embedded clause:

⁸It’s not totally clear what the structure for (26a) is, since, contrary to what normally happens with right-extraposition, *Juan* is not focalized.

- (29) María preguntó que cuándo iríamos nosotros a visitarla.
 María asked that when would go us to visit her
 ‘María asked when we’d go visit her.’

These facts are used by Bonet (1990) to argue that *wh*- words move only to [Spec,IP] in Spanish. Suñer, on the other hand, proposes that a handful of verbs select a “double CP” complement. If this is a possibility, embedded V2 can’t be prevented by the usual mechanism, and we don’t expect an asymmetry.

Suñer notes that another characteristic of V2 is that it leaves clitics behind, since these are banned from absolute initial position. In Spanish it is nevertheless possible to have the order Aux V X. We should recall sentence (4), though: one-syllable auxiliaries need to be followed by the main verb. In Spanish one could say that clitics need to be proclitics to a V (presumably the facts of Bulgarian discussed by Suñer mean that auxiliary clitics have to be phonological enclitics of anything). Thus this argument of Suñer’s should be considered inconclusive.

To sum up, many of the arguments previously proposed in the literature in favor of V not moving past T and of the subject staying low in inversion constructions don’t hold up to close scrutiny. The structure is nevertheless upheld by quantifier stranding tests, and is rendered plausible, if not totally confirmed, by several of the other arguments.

6 A standard approach to obligatoriness

Once we have argued for a particular structure, we have to ask ourselves what prevents movement of the subject to [Spec,IP] in just the cases described in (4) and (5).

In the data discussed Suñer (1994), inversion is obligatory with argumental *wh*- phrases. This prompts the author to propose that obligatory inversion involves an argumental agreement relation that has to hold between C and I. If a *wh*- phrase is argumental, movement of the subject to [Spec,IP] is blocked to prevent it from disrupting the agreement relation. Verbs and the DPs selected by them are marked with the feature [+argumental]. Agreement has to hold between a moved [+argumental] DP and the verb. This is done in two steps:

1. Argumental *wh*- phrases must be licensed through symmetric Arg-agreement between α (=SpecC) and β (=C).
2. β Arg-agrees with γ (=V) only if β and γ are Arg-marked and no other Arg-marked element is closer to γ .

The second step includes a locality condition that prevents subjects from being raised to [Spec,IP], since here they would intervene between the argumental *wh*- phrase and the object.

Essentially, then, what types of *wh*- phrases force inversion is determined by the diacritic feature [+argumental]. The argument vs. adjunct distinction has

been argued to be invisible to syntactic operations by Przepiórkowski (1999), and the distinction is blurred in much recent work.⁹ For this reason, and for its essentially stipulative character, Suñer’s proposal seems misguided. There are still some empirical reasons for discarding it. Some verbs in Spanish select PP direct objects.¹⁰ These arguments, contrary to what is the case with DP arguments, do not force inversion:

- (30) a. ¿Con qué Juan sueña?
 with what Juan dreams
 ‘What does Juan dream about?’
 b. ¿En qué Juan piensa?
 in what Juan thinks
 ‘What does Juan think about?’

On the other hand, if argumenthood were a relevant dimension, one would expect a sharp contrast among the following, which we don’t detect:

- (31) ¿Cuánto Juan pesa?
 how much Juan weighs
 ‘How much does Juan weigh?’
 (32) ¿Cuánto Juan te criticó anoche?
 how much Juan you criticize last night
 ‘How much did Juan criticize you last night?’

7 Inversion is required for linearization

We will now attempt a formalization of the approach that was sketched in section 3. Once again, the point of departure are the data from RP Spanish, where the conditions for inversion aren’t exactly what is described in Suñer (1994), to which we will turn only later.

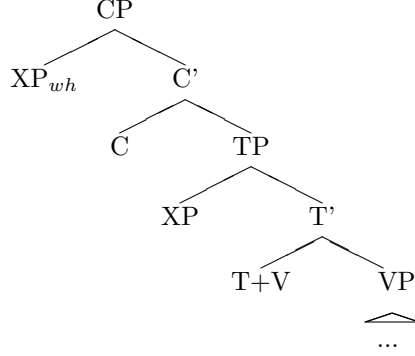
Kayne (1994) proposes that representations in syntax don’t encode precedence relations, and that these are determined at the PF interface by mapping asymmetric c-command relations to linear precedence by what is called the Linear Correspondence Algorithm (LCA). An extension of this approach is proposed in Richards (2002): the LCA is only sensitive to categorial labels, such that if a precedence statement of the form $\langle XP, XP \rangle$ is yielded by the asymmetric c-command relations in a tree, linearization fails, even if each XP corresponds to a different constituent.

It is clear how this approach might help us to account for (4) and (5): in each case, without inversion we would have a sequence of two constituents with conceivably the same categorial label, without any intervening material. If we wish to force inversion by a constraint on linearization, we need to ask more precisely which are the configurations that we wish to exclude.

⁹[Borer Refs.; HPSG work on this]

¹⁰The examples that we have here are regrettably all optional arguments.

In the sections above we have argued that subject-inversion such as that found in Spanish (and in French stylistic inversion) follows from failing to raise the subject to Spec,TP, rather than from raising of the verb to a position higher than T. Thus, the structure that obtains when there is no inversion is the following:



In cases of inversion the subject XP remains in its base position in the specifier of VP.

It is easy to see how linearization is possible in a structure that involves inversion. The XP in the Spec,CP position asymmetrically c-commands the TP, and thus precedes everything in its image, which includes the XP in Spec,VP. In order to exclude structures that have no inversion, we need definitions of c-command and dominance that prevent either that the precedence statement $\langle XP, TP \rangle$ be produced by the linearization algorithm or that the lower XP be in the image of TP.

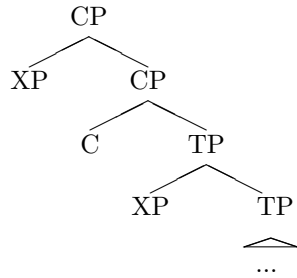
This can be achieved if we define c-command as follows:¹¹

- (33) α c-commands β iff (a) α is not contained in β , and (b) all projections that dominate α dominate β .
- (34) α dominates β if all segments of α are found going up the tree from β .
- (35) α contains β if at least one segment of α is found going up the tree from β .

Specifiers, as in Kayne (1994), are merged like adjuncts, i.e., they are contained but not dominated by their maximal projection.

Applying this definition, it is possible to see that in the following tree the XP in Spec,CP asymmetrically c-commands TP and the XP in Spec,TP, producing the statement $\langle XP, TP \rangle$ and the ambiguous statement $\langle XP, XP \rangle$. Since the lower XP is not in the image of TP, this is not sufficient to linearize both XPs with respect to each other.

¹¹The notion “going up the tree” is not defined here, but should be intuitively obvious, and avoids the ambiguous use of the term “dominance”.



A crucial question remains to be addressed. If linearization happens cyclically at each phase, why do we have the contrast between obligatory inversion in the matrix clause and optional inversion in all embedded clauses?¹² In fact, if what is spelled out is a phase head and its complement, why is inversion required in matrix clauses, if one of the XPs that is to be linearized is at the phase edge, and thus not linearized together with the XP in [Spec,IP]?

Clearly something has to be said about when the spellout of the highest Spec,CP occurs. This issue is not addressed in most work dealing with phases, and has been resolved in different ways in recent work. For Fitzpatrick (to appear), the highest phase head can fail to be spelled out; his analysis is agnostic as to when it is spelled out in the cases in which it is. In Adger (2003), the material at the edge of the highest phase is spelled out together with the rest of the phase. If our analysis of the facts of inversion in Spanish as following from a constraint at the PF interface is correct, then the assumption that we have to make is that spellout of the highest phase is complete, i.e., that Spec,CP isn't left to be spelled out later.

Inversion in embedded clauses is not obligatory, because the Spec,CP position of embedded clauses *is not* spelled out together with the rest of the phase. In fact, inversion isn't obligatory even in the case of embedded questions, a surprising fact that lends support to the present analysis:

- (36) Preguntó qué Juan quería hacer.
He asked what Juan wanted to do

8 Constraining ambiguity in linearization

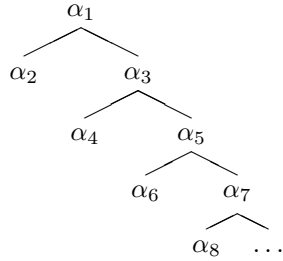
The actual implementation of the extension of the LCA proposed in Richards (2002) calls for the elimination of all “uninformative” ordered pairs from the set of asymmetric c-command relations before attempting to convert this set into a linear order. Thus, ambiguous ordered pairs of the form $\langle XP, XP \rangle$ are eliminated. Translating this back into the actual structural configurations that yield it, we get the possibly generally desirable result that two identically labelled XPs within a certain domain cannot be linearized unless one of them is dominated by a differently labelled YP.

¹²As we noted above, some dialects have been claimed to force inversion in embedded contexts as well. Discussion of these is presently beyond our reach.

Yet just as uninformative as ambiguous ordered pairs are sets of contradictory ordered pairs, such as $\{\langle XP, YP \rangle, \langle YP, XP \rangle\}$. These would also be eliminated from the linearization set, even if each XP is a different constituent of the tree, because, since only categorial labels are seen, the two ordered pairs are in contradiction.

To determine whether this is a desirable result, we again need to translate back to the actual configurations that lead us to this type of contradiction. First of all, though, note that the subsets of the linearization set that could be eliminated in this way, depending on how exactly the elimination of ambiguities is construed to work, can be arbitrarily large. $\{\langle \alpha_1, \alpha_2 \rangle, \dots, \langle \alpha_{n-1}, \alpha_n \rangle\}$ will be eliminated as long as the labels in α_1 and α_n are identical, and there exist pairs $\langle \alpha_i, \alpha_{i+1} \rangle$ for all i between 1 and $n - 1$.

Let us limit ourselves to strictly right-branching structures without adjunction (i.e., specifiers), for simplicity without loss of generality, and number nodes in a convenient way.



The pairs produced here are all $\langle \alpha_i, \alpha_j \rangle$ such that i is even and $j > i + 1$. If an α_n has the same label as an α_m , and $\langle \alpha_m, \alpha_n \rangle$, then all ordered pairs $\langle \alpha_i, \alpha_j \rangle$ such that there exist pairs $\langle \alpha_m, \alpha_i \rangle$ and $\langle \alpha_j, \alpha_n \rangle$ will be eliminated, together with $\langle \alpha_m, \alpha_i \rangle$ and $\langle \alpha_j, \alpha_n \rangle$ themselves. The only pairs that would remain would be those where the second term is α_k with k odd, since these never asymmetrically c-command other nodes.

So if α_i and α_j have the same label, and α_i is on a left branch (i.e., i is even), then all the ordered pairs $\langle \alpha_m, \alpha_n \rangle$ such that m and n are even and $i \leq m$, $n \leq j$ will be eliminated. This means that linearization will have available to itself only the ordered pairs of the form $\langle \alpha_i, \alpha_j \rangle$ with j odd whenever a node asymmetrically c-commands another node with the same label. Can a structure be linearized with just this?

Since we are excluding adjunction, a node α_i dominates all nodes α_j such that $j > i$. So for α_k , if there exists $\langle \alpha_k, \alpha_i \rangle$, α_k precedes α_i and all α_j . This is sufficient to produce complete linear orders for structures except in the immediate vicinity of a node that has the same label as a node that asymmetrically c-commands it, no matter how high up. More precisely, in the tree above, if the label in α_8 is identical to that of α_2 , then α_6 won't be linearizable with respect to it.¹³ If we introduce specifiers, the vicinity is enlarged to one level up (i.e., α_4 , if it were a specifier, also couldn't linearize w.r.t. α_7 or α_8).

¹³If this is the case with α_7 , nothing changes, since α_6 doesn't asymmetrically c-command α_7 anyway.

It’s not our aim in this paper to decide whether this is a desirable result or not.¹⁴ There are two things that need to be pointed out, though. One is that we are crucially assuming that the relation of *dominance*, contrary to asymmetric c-command, *can* distinguish between nodes that have the same label. If dominance had access only to the information available to asymmetric c-command, any recursion on the spine would create problems for linearization,¹⁵ and even more problems arise when we introduce specifiers, which can hold maximal projections, thus discarding the relation of domination by any other maximal projection with the same label. A second point is that eliminating *all* ordered pairs that enter in a “contradiction chain” might be too radical a solution for the contradiction. An alternative would be to compute linearization in a more local way, such that only pairs $\langle \alpha, \alpha \rangle$ are discarded, but this amounts to making every projection into a separate domain, duplicating much of the work that phases should do.

9 What is identical?

In the analysis sketched out above, linearization fails if two XPs that have the same categorial label aren’t linearized by a statement involving one of them and a YP dominating the second, since, as linearization only has access to categorial labels, the statement $\langle XP, XP \rangle$ is ambiguous.

We know that two nominative DPs and two dative DPs count as identical, but, as we have seen, it is possible to have a dative *wh*- phrase before a nominative subject without inversion; thus, dative DPs should count as distinct from nominative ones. Furthermore, PPs are distinct from either:

- (37) ¿Con quién a Juan le pareció que María se había ido?
with whom to Juan to-him seemed that María se had gone
‘Who did it seem to Juan that María had left with?’
- (38) ¿Con quién Juan pensó que María se había ido?
with whom Juan thought that María se had left
‘Who did Juan think that María had left with?’

In particular, an XP headed by the “dative marker” *a* is distinct from an XP headed by the preposition *a*, whether it is allative or the introducer of an infinitival:¹⁶

¹⁴In fact, it seems to do only minimal damage to standard accounts of linearization, but this damage might be crucial.

¹⁵No recursion could in fact be a property of a phase, nevertheless.

¹⁶There are independent reasons to make the distinction between dative and allative *a*, most conspicuously the possibility of clitic-doubling of constituents headed by the former, discussed by Cuervo:

- a. Le envié el paquete a Juan.
to-him sent the package to Juan
‘I sent Juan the package.’

- (39) ¿A qué a Juan le pareció que lo habían invitado?
to what to Juan to-him seemed that him had-3P invited
What did it seem to John that he had been invited to?
- (40) ¿A hacer qué Juan quiere que vayamos?
to do what Juan wants that we go
‘What does Juan want us to go do?’

We will therefore need to assume that XPs headed by “dative *a*” have a distinct label, KP, an assumption that is not altogether implausible.

Finally, though it is not our intention to address the whole range of dialectal variation offered by Baković (1998) (of which Suñer 1994 is a special case), we will attempt to show that some sources of variation might be accommodated under the present approach. In particular, Baković notes that there is a hierarchy among *wh*- words, with those lower in the hierarchy triggering inversion in a particular dialect only if all those higher also do. The hierarchy is the following:¹⁷

- (41) *quién*, *qué* >> *dónde*, *cuándo* >> *cómo* >> *por qué*

What we will contend here is that dialects might differ in the categorial labels that *wh*- words are assigned. This doesn’t lead to circularity if independent tests for determining labels can be applied. Nothing of consequence seems to bear on the categorial label of a *wh*- word, in fact. If a language allows temporal expressions that are DPs (i.e., if there is a mechanism for assigning case to these), then there is no reason to call *when* an AdvP, even if it ranges over expressions that are usually AdvPs or PPs.

We will consider two cases where temporal and locative *wh*- words (or rather, their unstressed relatives, used as relative pronouns) could pattern together with DP *wh*- words. They are exemplified in the following sentences:

- (42) a. ?Estoy contento con donde estoy viviendo.
I am happy with where I am living
- b. ?Estoy contento con cuando nos toca el examen.
I am happy with when us falls the exam
- c. *Estoy contento con adonde nos estamos mudando.
I am happy with to where we are moving
- d. *Estoy satisfecho con porque lo hizo.
I am satisfied with why it he did

-
- b. *Le envié el paquete a Francia.
to-him sent the package to France
not: ‘I sent the package to France.’

¹⁷ *Cuánto/a/s* ‘how much/many’ and *cuál/es* ‘which one(s)’ aren’t included in Baković’s hierarchy. From the RP Spanish data, the latter should be considered to belong above *dónde* and *cuándo*, though it’s unclear if they are distinct from *qué* and *quién*. The position of the former isn’t clear.

- (43) a. Está más bonito que el lunes.
 it is more pretty than Monday
- b. ?? Está más bonito que normalmente.
 it is more pretty than normally
 (cf. Está más bonito que lo normal.)
- c. Está más bonito que cuando lo conocimos.
 it is more pretty than when him we met
- d. ?? Fue más fácil de salir que como hicimos antes.
 it was more easy to come out than how we did before

Since in RP Spanish temporal and locative *wh*- words don't force inversion, they are by hypothesis not DPs, and thus (42a) and (42b) are marginal. They are nevertheless OK in dialects where inversion with locative and temporal *wh*- words is obligatory.¹⁸ We aren't *forced* to the conclusion that *cuándo* and *dónde* are DPs solely by the fact that they head free relatives that are complements to PPs. One could contend that in all of these cases there's ellipsis of part of a DP, i.e., of a definite determiner and a noun such as *place*, *reason* or *time*. An account based on ellipsis, though, could not explain the contrasts that we see above.

The examples in (43) show that in the relevant constructions a nominal is usually required after comparative *que*.¹⁹ In these cases, free relatives headed by *cundo* are OK (even in RP Spanish — perhaps this context doesn't *demand* a DP). In any case, this shows that such free relatives cannot be adverbial, which under standard assumption means that their head isn't adverbial. An ellipsis analysis won't get us out of this either.

In sum, we have argued that the requirement on inversion in Spanish is due to a failure of linearization at the PF interface when the *wh*- phrase is of the same category as the subject. This accounts succinctly for the data from one dialect of Spanish, and might be extended to other patterns discussed in the literature given that some flexibility is allowed to learners in the labeling of *wh*- phrases.

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¹⁸The empirical basis of this correlation is of course less than solid, as a dialect survey hasn't been the focus of our effort. We just wish to point out what correlations should be sought if our story is on the right track.

¹⁹In (43b), it is shown (as a curiosity maybe) that the grammatical alternative to the adverbial is a (reduced) free relative headed by *lo*.

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