

PROSODIC CONSTRAINTS ON WH-EXTRACTION FROM INFINITIVAL CLAUSES

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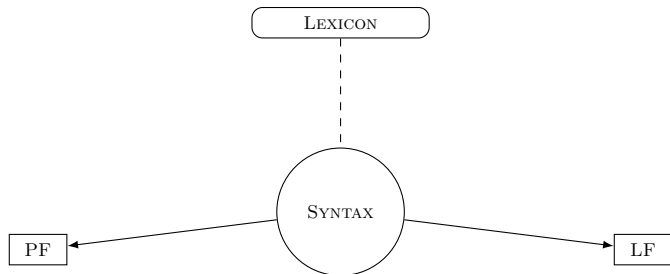
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INTRODUCTION

The so called **T-Model of Grammar** (Chomsky & Lasnik 1977, i.a.) establishes a feeding relation between *narrow syntax*, *semantics* and *phonology*.



Our concern is the *syntax–phonology interface*. In particular, the way in which *prosodic phrasing* relates to syntax and its operations.

- This architecture entails that *prosodic phrasing* must be computed from the syntactic structure.

INTRODUCTION

THE EXPECTATION

Under the T-Model, *prosodic properties* are not supposed to bleed *syntactic operations*, e.g., movement.

IN THIS PRESENTATION...

- ✓ Spanish exhibits a pattern in which an apparently heterogeneous set of factors *repairs* movement-based violations.
- ✓ The effect can be captured in terms of *prosodic constituency*, i.e., if movement leads to a certain prosodic parsing, the sentence is odd.
- ✓ We suggest that this restriction follows from a *faithfulness constraint* on prosodic constituents containing traces.

THE RESTRICTION

Our empirical domain consists of infinitival TPs functioning as subjects of completive clauses. These subjects can be both preverbal and postverbal.

- (1) Creo que causa problemas [TP leer este tipo de libros].
think that causes trouble to.read this type of books
'I think that reading this type of book causes trouble.'
- (2) Creo que [TP leer este tipo de libros] causa problemas.
think that to.read this type of books causes trouble
- (3) Jorge dijo que estaba prohibido [TP comprar estas cosas].
Jorge said that was forbidden to.buy these things
'Jorge said that buying these things was forbidden.'
- (4) Jorge dijo que [TP comprar estas cosas] estaba prohibido.
Jorge said that to.buy these things was forbidden

THE RESTRICTION

An asymmetry arises if a constituent is wh-extracted from these subjects.

- (5) ¿Qué libros creés que causa problemas [TP leer tⁱ]?
what books think that causes problems read
'What books do you think it is troubling to read?'
- (6) *¿Qué libros creés que [TP leer tⁱ] causa problemas?
what books believe that read causes trouble
- (7) ¿Qué cosa dijo Jorge que estaba prohibido [TP comprar tⁱ]?
what thing said Jorge that was forbidden to.buy
'What thing did Jorge say it was forbidden to buy?'
- (8) *¿Qué cosa dijo Jorge que [TP comprar tⁱ] estaba prohibido?
what thing said Jorge that to.buy was forbidden

Wh-extraction is impossible if the subject TP is preverbal; see Haegeman et al. (2014) and references therein for similar observations.

AMELIORATION EFFECTS

We observe that there is a series of mitigating circumstances improving the acceptability of sentences like (6) and (8).

- (6) * ¿Qué libros creés que [TP leer tⁱ] causa problemas?
what books believe that read causes trouble
'What books do you think it is troubling to read?'
- (8) * ¿Qué cosa dijo que [TP comprar tⁱ] estaba prohibido?
what thing said that to.buy was forbidden
'What thing did Jorge say it was forbidden to buy?'

AMELIORATION: CASE 1

The acceptability of sentences like (6) and (8) improves if additional material, e.g., an **adjunct PP**, appears together with the infinitive.

- (6) * ¿Qué libros creés que [TP leer tⁱ] causa problemas?
what books believe that read causes trouble
- (9) ¿Qué libros creés que [TP leer tⁱ en el secundario] causa problemas?
trouble
'What books do you think it is troubling to read in high school?'
- (8) * ¿Qué cosa dijo Jorge que [TP comprar tⁱ] estaba prohibido?
what thing said Jorge that to.buy was forbidden
- (10) ¿Qué cosa dijo Jorge que [TP comprar tⁱ en las farmacias] estaba prohibido?
forbidden
'What thing did Jorge say it was forbidden to buy in pharmacies?'

AMELIORATION: CASE 2

If the infinitive is interpreted as a *contrastive focus* and receives the corresponding intonation, the sentence in (6) becomes acceptable.

- (6) *¿Qué libros creés que [TP leer tⁱ] causa problemas?
what books believe that read causes trouble
- (11) A: Creo que comprar esos libros causará problemas.
think that to.buy those books will.cause trouble
'I believe that buying those books will cause trouble.'
- B: Bueno, ¿pero qué libros creés que [TP LEER tⁱ] causará
okay but what books think that to.read will.cause
problemas?
trouble
'Okay, but what books do you think it will cause trouble to READ?'

AMELIORATION: CASE 2

The same effect obtains with (8) under these conditions.

- (8) * ¿Qué cosa dijo que [TP comprar tⁱ] estaba prohibido?
what thing said that to.buy was forbidden
- (12) A: Jorge dijo que vender estas cosas estaba prohibido.
Jorge said that to.sell these things was forbidden
'Jorge said that it was forbidden to sell these things.'
- B: Bueno, ¿pero qué cosas dijo que [TP COMPRAR tⁱ] estaba
okay but what things said that to.buy was
prohibido?
forbidden
'Okay, but what things did he say it was forbidden to BUY?'

AMELIORATION: CASE 3

A third amelioration factor is the presence of a *parenthetical adjunct* between the subject TP and the finite verb.

- (6) * ¿Qué libros creés que [TP leer tⁱ] causa problemas?
what books believe that read causes trouble
- (13) ¿Qué libros creés que [TP leer tⁱ], de acuerdo con tu experiencia, causa problemas?
what books think that to.read of according with your experience causes trouble
'What books do you think it causes trouble to read, in your experience?'
- (8) * ¿Qué cosa dijo Jorge que [TP comprar tⁱ] estaba prohibido?
what thing said Jorge that to.buy was forbidden
- (14) ¿Qué cosa dijo Jorge que [TP comprar tⁱ], sin lugar a dudas, estaba prohibido?
what thing said Jorge that to.buy without place to doubt was forbidden
'What thing did Jorge say it was forbidden, without any doubt, to buy?'

AMELIORATION: CASE 4

A fourth and final amelioration effect is triggered by *ellipsis*; this is a well-attested case of *island repair* (Ross 1969, Merchant 2001).

- (6) * ¿Qué libros creés que [TP leer tⁱ] causa problemas?
what books believe that read causes trouble
- (15) Creés que leer ciertos libros causa problemas, pero no sé
think that to.read certain books causas trouble buy not know
qué libros creés que [TP leer tⁱ] causa problemas.
what books think that to.read causes trouble
'You think that reading certain books causes trouble, but I don't know
what books.'

As (15) shows, phonological deletion of the extraction domain makes the pattern acceptable.

AMELIORATION: CASE 4

The same effect is once again attested with (8).

- (8) * ¿Qué cosa dijo Jorge que [TP comprar tⁱ] estaba prohibido?
what thing said Jorge that to.buy was forbidden
- (16) Jorge dijo que comprar ciertas cosas estaba prohibido, pero no sé
Jorge said that to.buy certain things was forbidden but not know
qué cosas dijo que [TP comprar tⁱ] estaba prohibido
what things said that to.buy was forbidden
Jorge said that buying certain things was forbidden, but I don't know
what things.'

A STRUCTURAL RESTRICTION?

As mentioned, the restriction attested in (6) and (8) is reminiscent of subject island effects already attested in Spanish.

Starke (2001: 57) notices that preverbal subjects in Spanish are opaque for extraction, while postverbal subjects are rather transparent.

- (17) ??* ¿De qué autor crees que [DP varios libros tⁱ] han recibido premios internacionales?
of which author think that several books have received awards international
- (18) ? ¿De qué autor crees que han recibido premios internacionales [DP varios libros tⁱ]?
of which author think that have received awards international
'By which author do you think several books have received international awards?'

A STRUCTURAL RESTRICTION?

This pair can be accounted for in syntactic terms, e.g., Haegeman et al. (2014) treat it as a violation of the *freezing principle*.

- (19) FREEZING
A moved constituent is frozen for extraction.

Under this condition, the opacity of the preverbal subject is expected.

- (20) De qué autor ... $\underbrace{[\text{DP varios libros } t^i]}_*$... han recibido ... DP ... *cf. (17)*

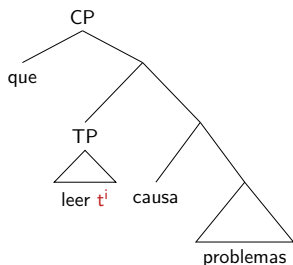
- (21) De qué autor ... han recibido ... $\underbrace{[\text{DP varios libros } t^i]}_{\text{OK}}$... *cf. (18)*

However, a structural approach does not seem to be able to explain the amelioration effects attested with (6) and (8).

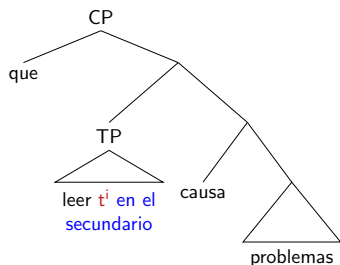
A STRUCTURAL RESTRICTION?

There seems to be no relevant structural distinction between the unacceptable sentences and their “repaired” counterparts.

(22) a.



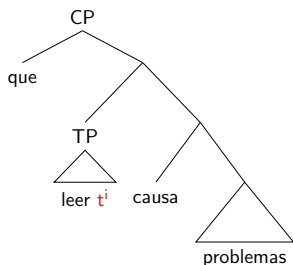
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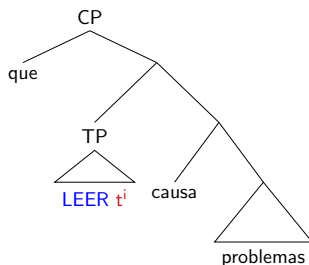
A STRUCTURAL RESTRICTION?

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(23) a.



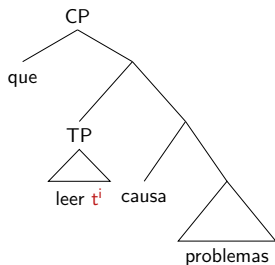
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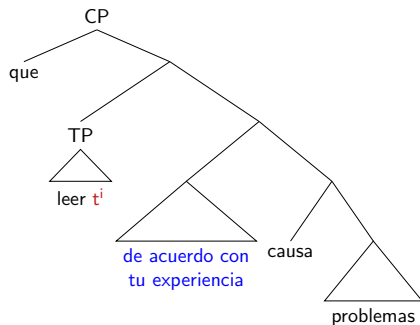
A STRUCTURAL RESTRICTION?

There seems to be no relevant structural distinction between the unacceptable sentences and their “repaired” counterparts.

(24) a.



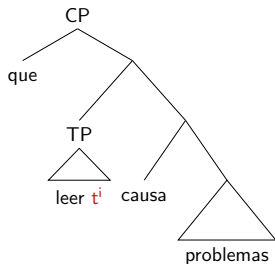
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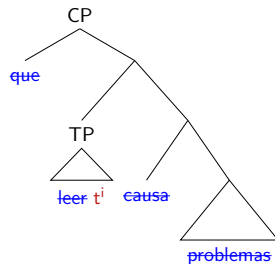
A STRUCTURAL RESTRICTION?

There seems to be no relevant structural distinction between the unacceptable sentences and their “repaired” counterparts.

(25) a.



b.



A STRUCTURAL RESTRICTION?

Besides, the pattern discussed by Starke (2001) and Haegeman et al. (2014) does not exhibit the same amelioration effects that we saw with (6) and (8).

- (26) * ¿De qué autor crees que [DP varios libros tⁱ sobre política]
of what author think that several books about politics
recibieron premios internacionales?
received awards international
'By which author do you think several books about politics have
received international awards?'
- (27) ?? Dijiste que varios libros de cierto autor recibieron premios
said that several books by certain author received awards
internacionales, pero no recuerdo de qué autor dijiste que [DP
international but not remember by what author said that
varios libros tⁱ] recibieron premios internacionales.
several books received awards international
'You said that several books by a certain author received international
awards, but I don't remember what author.'

A PROSODIC APPROACH

We believe the restriction in (6) and (8) is related to the *prosodic phrasing* of the subject infinitival clause. The generalization in (28) aims to capture this.

- (28) Wh-extraction from a subject infinitival clause S_{inf} in preverbal position is impossible if S_{inf} is mapped into a prosodic word ω that is immediately dominated by the phonological phrase φ containing the VP.

In other words, the subject infinitival TP S_{inf} cannot host a wh-trace if the embedded clause is phrased as (S_{inf} VO).

Thus, our hypothesis is that the prosodic structure of sentences like (6) and (8) fits the description in (28).

- (29) ... (leer $_{\omega}$ causa $_{\omega}$ problemas $_{\omega}$) $_{\varphi}$ cf. (6)

- (30) ... (comprar $_{\omega}$ estaba $_{\omega}$ prohibido $_{\omega}$) $_{\varphi}$ cf. (8)

It goes without saying that *ellipsis* prevents the violation of (28).

A PROSODIC APPROACH

As discussed, the presence of an extra argument or and adjunct within the subject TP *repairs* the violation based on movement.

(31) ... [TP leer t^i en el secundario] causa problemas

We contend that this TP is mapped as its own phonological phrase φ . Since the phrasing is (S_{inf})(VO), wh-extraction can take place from within the TP.

(32) ... (leer_ω en-el-secundario_ω)_φ (causa_ω problemas_ω)_φ

(32) fits a number of observations regarding Spanish prosodic phrasing.

- It follows from the tendency of Spanish of grouping verbs together with their modifiers if these are syntactically simple.
- It (32) fits the observation that the average phonological phrase consists of two phonological words.
- It is in line with D'Imperio et al.'s (2005) observation that *syntactic branchingness* in the subject increases the frequency of (S)(VO) phrasings in Spanish.

A PROSODIC APPROACH

An analogous explanation can be posited for the next two amelioration effects.

(33) ... [TP LEER tⁱ] causa problemas

(34) ... [TP leer tⁱ], sin lugar a dudas, causa problemas

In the case of (35), we take that **contrastive focus** must be aligned with a φ -boundary (Truckenbrodt 1999, Féry 2013); in Spanish, this is right alignment.

(35) ... (LEER _{ω}) _{φ} (causa _{ω} problemas _{ω}) _{φ}

As for (36), the parenthetical adjunct introduces its own prosodic domain (Truckenbrodt 2015), and therefore separates the infinitive from the verb.

(36) ... leer) _{φ} (sin lugar a dudas) _{φ} (causa _{ω} problemas _{ω}) _{φ}

AN EXPLANATORY CONJECTURE

While there are reasons to maintain the descriptive generalization in (28), it is not obvious which are the theoretical principles supporting it.

- (28) Wh-extraction from a subject infinitival clause S_{inf} in preverbal position is impossible if S_{inf} is mapped into a prosodic word ω that is immediately dominated by the phonological phrase φ containing the VP.

We believe that this restriction is the result of mechanisms ensuring a *faithful* mapping between syntax and phonology.

- The intuition is that certain *syntactic phrases* need to be expressed as *phonological phrases* at PF in order to serve certain functions.
- One of these functions is hosting an A'-trace.
- We conceive this as a sort of *prosodic cue* that constrains the positions in which a *gap* can be posited during language processing.

AN EXPLANATORY CONJECTURE

Take the following assumptions for the sake of the argument.

- ✓ *Traces* of wh-movement are generated within *phrases* headed by a predicate.
- ✓ *Phonological phrases* are meant to be isomorphic to *syntactic phrases*.

The phrasings in (32), (35) and (36) reflect in a transparent way that there could be a *trace* within the phrase headed by the infinitive.

(32) ... (leer_ω en-el-secundario_ω)_φ (causa_ω problemas_ω)_φ

(35) ... (LEER_ω)_φ (causa_ω problemas_ω)_φ

(36) ... leer)_φ (sin lugar a dudas)_φ (causa_ω problemas_ω)_φ

Things are different if the infinitive is mapped into a phonological word: there is no cue that this element can host a *trace*.

(37) ... (leer_ω causa_ω problemas_ω)_φ cf. (6)

(38) ... (comprar_ω estaba_ω prohibido_ω)_φ cf. (8)

IN THIS PRESENTATION...

- We revisited the observation that *preverbal subjects* in Spanish are opaque for extraction.
 - ➔ We showed it with *infinitival clauses* functioning as subjects in embedded environments.
- However, we also saw that there are four *mitigating circumstances* under which the acceptability of these extractions improves.
 - ➔ Adding an *extra argument or adjunct* to the bare infinitive,
 - ➔ *focusing* the infinitive,
 - ➔ introducing a *parenthetical adjunct* between the infinitive and the inflected verb, and
 - ➔ applying *ellipsis* to the whole embedded clause.
- We observed that the pattern can be captured in terms of *prosodic constituency*.
 - ➔ The ameliorating conditions lead to *(S)(VO) phrasings*.
- We conjectured that the relevant restriction arises as part of a *faithful mapping* between syntax and phonology.

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