

**The alternation improper indirect *wh*-questions and DPs containing restrictive relatives
and the nominal / referential properties of CP***

Matos, Gabriela¹ & Brito, Ana Maria²

(¹Universidade de Lisboa: FLUL, CLUL; ²Universidade do Porto: FLUP, CLUP)

0. Goal

In this talk we will explore the alternation between the so called improper *wh*-indirect questions, in (1), and DPs containing restrictive relatives, in (2). We will focus on Portuguese, although this alternation occurs in other languages, in particular in Spanish, but also in English, as shown by the translation of the examples:

- (1) *Eles sabem que atitudes devem tomar.* (EP=European Portuguese)
they know which attitudes should take.
'They know which kind of attitudes they should take'
(2) *Eles sabem as atitudes que devem tomar.*
they know the attitudes that should take
'They know the attitudes that they should take.'

Our main goals are:

- (i) to evidence that this alternation is allowed by a particular subclass of predicates that impose a specific content to their CP/DP argument;
(ii) to determine the semantic and syntactic features that relate these CPs and DPs.

1. Introduction

The parallelism between DP and CP is known at least since Longobardi (1994) and Szabolcsi (1994). Starting from her work on Hungarian, Szabolcsi emphasizes that the complementizers (of the *that* type) and the articles are some sort of subordinators in the sense that they enable a clause and a DP to act as arguments (cf. also Coene & d'Hulst 2002: 6).

At the CP level this explains that, in order for a sentential constituent to be an argument of a matrix predicate, a complementizer (overt or covert) is needed, as illustrated in (3a) and (3b).

- (3) a. *Eu disse [CP que [TP a Maria saiu]]* (EP)
I said that the Mary left.PRES.3SG
'I said that Mary left'
b. *Eu disse [CP \emptyset [TP ir sair]]*
I said go.INFIN leave
'I said I will leave'

Within Minimalism the correlation between CP and DP has been strength by the assumption that these syntactic categories are Phases, that is, domains with a potential of denotation.

Recent work has studied the referential properties of embedded CPs, regarding their correlation with the classes of predicates that select them (de Cuba & Ürögdi 2009, Haegeman & Ürögdi 2010, Hinzen & Sheehan 2011), and the structure that these CPs exhibit in a language like Spanish (de Cuba & MacDonald 2011).

In this talk, developing previous work (Matos & Brito, in press), we will investigate the alternation between improper indirect *wh*-questions and DPs containing restrictive relatives,

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taking this alternation as an evidence for nominal / referential properties of argument *wh*-CPs introduced by D-linked *wh*P, as in (1).

2. Restrictions on the alternation between argument *wh*-CPs and DPs containing restrictive relatives

The alternation between *wh*-CPs and DPs containing restrictive relatives is restricted to improper indirect questions; in addition, only a subclass of verbs allow this construction.

2.1. Proper and improper indirect questions

The distinction between proper and improper indirect questions has been reported in the literature for English and Spanish (Plann 1982, Suñer 1991, 1993, 1999), both for *wh*-questions (cf. examples in (a)) and for yes/no questions (cf. examples in (b)):

Proper indirect questions:

- (4) a. They {asked/wondered} which book John read. (En)
 b. Mary asked you whether it is raining.
- (5) a. *Juan preguntó/ se preguntaba cuántos invitados iban a venir.* (Sp)
 John asked/ wondered how many guests would come
 ‘John asked/wondered how many guests would come.’
 b. *María se preguntó (que) si se habría equivocado.* (Sp)
 María wondered (that) if was wrong
 ‘María wondered whether she was wrong.’

Improper indirect questions:

- (6) a. John knows how many students passed the test. (En)
 b. Mary knows whether they serve breakfast.
- (7) a. *Dijo cuáles eran sus actores favoritos: Nicholson y Newman.* (Sp)
 said which were his actors favorite: Nicholson and Newman.
 ‘He revealed who his favorite actors were: Nicholson and Newman’
 b. *Bri nos dijo si su abuela había ido a Madrid.* (Sp)
 Bri us told if her grandmother had gone to Madrid
 ‘Bri told us whether her grandmother had gone to Madrid.’

In Spanish proper indirect questions have been characterized by the possibility of a *Recursive Comp*, see (5b), a matter extensively studied (Plann 1982, Suñer 1991, 1993, 1999, Lahiri 2002, Demonte & Soriano 2009, de Cuba & Mac Donald 2011). Contemporary European Portuguese has no *Recursive Comp*. However, there are properties that distinguish the two kinds of embedded clauses:

(i) From a *discursive point of view*, proper and improper questions differ in illocutionary force: while proper indirect questions in (4) and (5) report a question, improper indirect questions in (6) and (7) have a declarative nature.

(ii) *Semantically*, they differ in propositional status: proper indirect questions are not propositions, since they cannot be true or false – in (4b), *Mary asked you whether it is raining*, the embedded clause *whether it is raining* is not true nor false, since the matrix subject does not know if it is raining or not. In contrast, improper indirect questions are propositions, since they have an assigned truth value – in (6b), *Mary knows whether they serve breakfast*, it is asserted that Mary knows the answer (yes or no) to the embedded clause.

(iii) *Lexically*, the verbs that select proper and improper questions belong to different semantic subclasses, as it is well known (see (8) and (9)):

- (8) Predicates that select proper indirect questions (non-exhaustive list)
- a. Predicates of communication with an interrogative content:
perguntar ‘ask’, *inquirir* ‘inquire’, *interrogar-se* ‘wonder’.
 - b. Predicates expressing lack of knowledge:
ignorar ‘ignore’, *desconhecer* ‘not to know’, *não saber* ‘not to know’
- (9) Predicates that select improper indirect questions (non-exhaustive list)
- a. Predicates of acquisition, retention or loss of knowledge:
saber ‘know’, *descobriu* ‘find out/discover’, *reparar* notice’, *ver* ‘see’, *lembrar* ‘remember’, *esquecer* ‘forget’
 - b. Predicates of conjecture:
adivinhar ‘guess’, *prever* ‘predict’
 - c. Predicates of communication
comunicar ‘communicate’, *dizer* ‘say’, *explicar* ‘explain’, *revelar* ‘revel’

(iv) *Syntactically*, in Portuguese, there are restrictions on the kind of complementizer that heads the embedded clause:

a) In proper indirect questions, interrogative verbs select indirect yes/no questions with the complementizer *se* ‘if’ and exclude the declarative complementizer *que* ‘that’, (10):

- (10) *Ela perguntou/perguntou-se/inquiriu {se/*que} a Ana enfrentava alguma dificuldade*
she asked/ wondered inquired if/*that the Ana faced any trouble
‘She asked/wondered/inquired {if/*that} Ana faced any trouble.’

b) In improper indirect questions, given the fact that the licensing predicates are non-interrogatives, the selected complementizer is *que* ‘that’, not *se* ‘if’, (11):

- (11) a. *Ela recordou {que/*se} a Ana enfrentava alguma dificuldade.*
she remembered that/if the Ana faced some trouble
‘She remembered if Ana faced some trouble.’
- b. *Nós adivinhámos/previmos {que/*se} o barco ia tomar aquela rota.*
we guessed/predicted that/if the boat would take that route
‘We guessed/predicted that/*if the boat would take that route.’

2.2. Predicates that license the alternation between improper indirect *wh*-questions and DPs containing restrictive relative clauses

The verbs that license the alternation between improper indirect *wh*-questions and DPs with restrictive relatives constitute a subclass of those that select improper indirect questions. They include *verbs of acquisition, retention or loss of knowledge* (cf. (12)) *verbs of conjecture* (cf. (13)) but only some *verbs of communication* (see the contrast between (14a) vs. (14b)).

- (12) a. *Ela sabia/ descobriu/ recordou quantos livros havia na*
she knew/ discovered / remembered how many books there were in the
biblioteca.
library
‘She knew/ discovered/remembered how many books there were in the library.’
- b. *Nós adivinhámos/ previmos que rota o barco ia tomar.*
we guessed/ predicted which route the boat would take
‘We guessed/predicted/remembered which route the boat would take.’
- (13) a. *Ela descobriu/ recordou a quantidade de livros que havia na*
she discovered /remembered the amount of books that there were in the

biblioteca.

library.

‘She discovered/remembered the amount of books that existed in the library.’

- b. *Nós adivinhámos/ previmos a rota que o barco ia tomar.*
 we guessed/ predicted the route that the boat would take
 ‘We guessed/predicted the route that the boat would take’

- (14) a. *Ela explicou/ revelou/disse/comunicou que estratégia era preciso adoptar*
 she explained / revealed/said/communicated which strategy was needed to adopt
 ‘She explained/revealed/said/communicated which strategy we should adopt.’

- b. *Ela explicou/ revelou/*disse/*comunicou a estratégia que era preciso adoptar*
 she explained /revealed/said/communicated the strategy that was needed to adopt
 ‘She explained/revealed/said/communicated which strategy we should adopt.’

In fact the alternation under study apparently must involve predicates with a *cognitive import*. As illustrated in (14), not all the verbs of communication overtly express a cognitive value: *explicar* ‘explain’ and *revelar* ‘reveal’ have this property, but *dizer* ‘say’ or *comunicar* ‘communicate’ do not; thus, the latter verbs do not accept the relativized DP (cf. (14b))

For the most part, the predicates that allow the alternation between improper *wh*-questions and DPs containing restrictive relatives fit into the Class E of Hooper & Thompson’s (1973: 480) typology:

Non-factive predicates:			Factive predicates	
A	B	C	D	E
<i>Strongly assertive predicates</i>	<i>Weakly assertive predicates</i>	<i>Non-assertive predicates</i>	<i>Factive predicates</i>	<i>Semi-factive predicates</i>
say, report, exclaim, assert, claim, be true, be certain, be sure, be obvious	suppose, believe, think, expect, guess, imagine, it seems, is happens, it appears	be (un)likely, be (im)possible, be (im)probable, doubt, deny	resent, regret, be sorry, be surprised, bother, be odd, be strange, be interesting	realize, learn, discover, know, see, recognize

These predicates are semi factive-predicates: they presuppose the truth of their CP argument and the existence of the entity it denotes, but lose their factivity in certain contexts, namely in questions and conditionals (15):

- (15) *Se ele descobrir que está a chover, ele avisa-nos.*
 if he finds out that is to rain, he let know us
 ‘If he finds out that it is raining, he will let us know.’

However, some of the verbs that occur in this alternation are included by Hooper & Thompson’s typology in other classes: *guess*, which corresponds to European Portuguese *adivinhar*, is included in the class B, of *weakly assertive predicates*, and *explicar* ‘explain’ or *revelar* ‘reveal’ would probably be included in class A, of the *strongly assertive predicates*. Nevertheless, these predicates may have a (semi-)factive reading (cf. (16b)):

- (16) a. *Ele previu/ revelou que ia chover, e choveu.*

- He predicted/guessed/revealed that would rain, and rained
 ‘He predicted/guessed/revealed that it would rain, and it rained’
 b. #*Ele previu / revelou que ia chover, mas enganou-se.*
 He predicted/guessed/ revealed that would rain, but was wrong.
 ‘He predicted/guessed/revealed that it would rain, but he was wrong.’

Hooper & Thompson’s classification does not capture this fact, since it takes assertive and factive features as being opposed to each other (see classes A, B and E). So, an alternative proposal must be adopted.

Recent approaches do not take factivity as a primitive feature; instead they assume that it may be explained in terms of referentiality (de Cuba & Ürögdi 2009, de Cuba & MacDonald 2011, Haegeman & Ürögdi 2010, Hinzen & Sheehan 2011).

Developping this idea, Hinzen and Sheehan (2011) propose a typology based on the features assertive/non-assertive, communication/cognitive/other, definite /indefinite:

I	II	III	IV	V	VI
<i>Strongly assertive communication definite predicates (semi-factives)</i>	<i>Strongly assertive communication indefinite predicates (non factives)</i>	<i>Weakly assertive cognitive definite predicates (semi-factives)</i>	<i>Weakly assertive cognitive indefinite predicates (non-factives)</i>	<i>Non-assertive definite predicates (emotive factives)</i>	<i>Non-assertive indefinite predicates</i>
disclose, divulge, confess, point out, reveal	say, claim, assert, report, vow	know, discover, find out, forget, realize, grasp	think, believe, suppose, guess, imagine, prove, decide	regret, deplore, resent, detest, hate, be glad, be aware, care, mind	doubt, be possible, be likely, wish, want, order, ask.

In this classification, the assertive nature of a predicate is not incompatible with its factive status, and the cognitive meaning of predicates is taken into account.

So, we conclude that the alternation between improper indirect *wh*-questions and DPs containing restrictive relatives is licensed by *assertive cognitive definite predicates*, be they communicative (class I) or not (class III). Notice that the authors assign to both classes semi-factive effects.

3. A syntactic approach to improper *wh*-questions and relative clauses

There are structural properties that, despite relating improper *wh*-questions and relative clauses, also distinguish them.

Within the Minimalist Program, since Chomsky (1995), embedded *wh*-clauses have been represented as in (17), where C codifies the illocutionary force of the sentence and the Specifier of C contains an operator that binds a copy of the *wh*-phrase inside TP:

$$(17) [_{CP} whP_i [C + \langle int \rangle / \langle decl \rangle / \langle excl \rangle] [_{TP} \dots [whP]_i \dots]]$$

Elaborating on this proposal, Rizzi (1997) presented a split CP analysis, reformulated in Rizzi (2004) as in (18), where only Force and Fin(itness) are obligatory:

(18) [Force [Top* [Int [Foc [Top* [Mod* [Top* [Fin [IP]]]]]]]]] (Rizzi 2004:242)

According to Rizzi, *Force* is the locus of the declarative complementizer. In questions, *FocP* is the landing site of core wh-questions and *Int* is required in yes / no questions and some adverbial wh questions in some languages (eg. Italian). In European Portuguese, we claim that *Int* does not occur and the features <int> and <decl> compete for Force (cf. Matos & Brito, in press).

3.1. The syntax of improper indirect wh-questions

Accepting Rizzi's framework, improper indirect wh-questions in European Portuguese may be analysed as in (20) for a sentence like (19):

(19) *Eu descobri que livro (é que) tu leste.*
 I found out which book (Foc) you read
 'I found out which book you read.'

(20) [_{ForceP} whP [_{Force} <decl>] [_{FocP} [_{Foc}] [_{FinP} Fin [_{TP} tu leste t]]]]

The main property that distinguishes improper from proper indirect wh-questions is their declarative illocutionary force.

3.2. The syntax of DP containing relative clauses

Restrictive relatives and improper wh-questions share the declarative force and the fact of involving A'-dependencies. Still, two main properties distinguish them — see (i) and (ii):

(i) Restrictive relatives are not limited to the selection domains of *assertive cognitive definite predicates* (cf. (21) vs (22):

(21) *Eu encomendei/ comprei/ li o livro que tu escreveste.*
 I ordered/ bought/ read the book that you wrote
 'I ordered/bought/read the book that you wrote'

(22) **Eu encomendei/ comprei/ li que livro tu escreveste.*
 I ordered/ bought/ read which book you wrote

This freer occurrence is related to the fact that a relative clause is embedded in a DP, a category that may occur in a wider range of contexts. In fact, despite their divergences, current approaches to restrictive relatives agree in including the relative clause inside a DP. The *adjunction analysis* assumes that the relative CP is pair merged with a base generated DP/NP (e.g. Ross 1967, Brito 1991). The *raising analysis* claims that the relative CP is selected by D and a NP raises from inside this CP and merges into Spec of CP (e.g. Vergnaud 1974, Kayne 1994, Bianchi 1999).

Adopting a raising analysis, we propose the representation in (24) for the relevant DP in (23):

(23) *Eu encomendei o livro que tu leste.*
 I ordered the book that you read
 'I ordered the book that you read.'

(24) [_{DP} O [_{ForceP} livro_i [_{Force} OP_i que <+declarative>] [_{FinP} <+finite> [_{TP} tu leste ~~livro~~_i]]]]

(ii) The second property that distinguishes relative clauses from improper indirect questions is that they exclude the focalizing expression *é que* (cf. (25) vs. (26)):

- (25) **Eu descobri o livro que é que a Maria leu.*
 I discovered the book that FOC the Mary read
- (26) *Eu descobri que livro é que a Maria leu.*
 I discovered which book FOC the Mary read
 ‘I discovered which book Mary read’

The exclusion of *é que* is accounted in (24), by the non-selection of Foc(P). The impossibility of focalizing *que* ‘that’, as in (25), is probably due to the intrinsic complementizer content of this element. Similarly, the NP-raised into Spec ForceP may not be focalized by *é que*, because it is discursively interpreted as part of the so called relative clause antecedent, i.e. as given information, not as contrastive focus. The exclusion of *é que* in relatives is expected, because at the level of interpretation where discursive information is integrated, ForceP must establish a topic-comment relation with the “DP-antecedent”.

4. The correlation CP/DP and the alternation between improper *wh*-questions and DPs containing restrictive relatives

Given the differences presented above, which are the semantic, syntactic and discursive properties that favour the alternation of these constructions (cf. (1)-(2), repeated in (27)-(28))?

- (27) *Eles sabem que atitudes devem tomar.*
 they know which attitudes should take.
 ‘they know which kind of attitudes they should take’
- (28) *Eles sabem as atitudes que devem tomar.*
 they know the attitude that should take
 ‘They know the attitude that (they) should take.’

4.1. The lexical semantic CP/DP correlation

The classification of Hinzen & Sheehan (2011) presented in table 2 intends to account for the semantic properties shared by the CPs and DPs selected by the predicates under analysis.

According to the authors, in the nominal level, in order to refer to an entity, we use quantified expressions, definite descriptions or deictic expressions, proper names and pronouns. In the sentence level there are different possibilities for expressing a situation: propositions, facts and truths. They conclude that there is a similar scale of referentiality in the nominal and the sentence domains.

Exploring this parallelism, Hinzen and Sheehan propose that the feature definite/indefinite, classically used just for the nominal domain, may enter in the classification of sentential complements, CP (see table 2). When the CP is quantificational, it yields an indefinite/intensional interpretation, as in (29), where the complement clauses do not have a referential value and clauses (a) and (b) are not synonyms, because they have an open truth value, equivalent to a non-specific indefinite, whose existence is left open:

- (29) a. Lois Lane thinks (that) Superman is a superhero.
 b. Lois Lane doubts (that) Clark Kent is a superhero.

In contrast, in matrix sentences like (30), which have the same truth value and are interchangeable, the sentences present an interpretation similar to rigid reference:

- (30) a. Superman is a superhero.
 b. Clark Kent is a superhero.

The intermediate case is constituted by factive embedded clauses, which are presupposed as true (31). According to the authors, a complement clause selected by a factive verb is equivalent to a definite expression, which is not surprising, considering the possibility of being paraphrased by *the fact (...)*.

- (31) He regrets that it is raining.

The case of factives is especially relevant for our analysis: all the verbs that select improper indirect questions and DP modified by a restrictive relative exhibit the same feature combination: they are *assertive cognitive definite predicates*.

The alternation between improper indirect questions and relative DPs supports the relevance of the feature <+definite> for DPs (see (32a, c), (33a, c)), indefinite DPs being excluded (32b), (33b):

- (32) a. *Ela descobriu quantos livros havia na biblioteca.*
 she found out how many books there were in the library
 ‘She found out how many books there were in the library.’
 b. #*Ela descobriu uma quantidade de livros que havia na biblioteca.*
 she found out a quantity of books that there were in the library
 ‘She found out a quantity of books that there were in the library.’
 c. *Ela descobriu a quantidade de livros que havia na biblioteca.*
 she found out the quantity of books that there were in the library
 ‘She found out the quantity of books that there were in the library.’
- (33) a. *Nós adivinhámos que opções o capitão ia tomar.*
 we guessed which options the captain would take
 ‘We guessed which options the captain would take.’
 b. **Nós adivinhámos umas opções que o capitão ia tomar.*
 we guessed some options that the captain would take
 ‘We guessed some options that the captain would take’
 c. *Nós adivinhámos as opções que o capitão ia tomar.*
 we guessed the options that the captain would take
 ‘We guessed the options that the captain would take.’

These data confirm that the alternation under analysis involves CPs and DPs with a high degree of referentiality.

4.2. The syntactic and discursive CP/DP correlation

The <+definite> feature assigned to these predicates by Hinzen & Sheehan (2011) is based on their semantic behaviour with respect to *that*-CPs. Yet, the authors left open two questions:

- (34) i. How is the verbal <+definite> feature related with *that*-CPs and definite DPs in Syntax?
 ii. How to extend this analysis to other types of CPs, namely to improper indirect *wh*-questions?

4.2.1. Syntactic counterparts of the predicate definite feature

Regarding the first question, we consider that the <+definite> feature of the verb is connected to the more general feature <+referential>, exhibited both by definite DPs and *that*-CP selected by (semi-)factive verbs.

We also assume that in the sentence syntactic structure, *v*, in contrast with *V*, is a hybrid category, which exhibits both lexical and a functional content (cf. Chomsky 2001, 2008).

Thus, we hypothesize that, along with the <acc(usative)> feature, *v* displays an additional feature, <ref>, which counts as an uninterpretable feature for the *v*, but not for DP/CP verbal arguments. This feature is inherited by *V*, by Agree (Chomsky 2008). Thus, the <ref> feature of *v*-*V* must be valued for the derivation to converge (see 35).

When *v*-*V* are headed by an *assertive cognitive definite predicate* the selection features of this predicate requires that, from the viewpoint of SEM, only a <+ref> goal may adequately value the uninterpretable <ref> feature of the *v*-*V* probe, the DP or CP selected by the verb. Agree operates and the feature attribute <ref> of *v*-*V* is instantiated with the value +ref:

(35) [_{VP} [*v* <acc>, <def: +ref>] [_{VP} [*V* ... <ref: +ref>] [_{DP_{+ref} / CP_{+ref}]]]}

4.2.2. Definiteness in improper indirect wh-questions

As for the second problem: Hinzen and Sheehan have only considered the correlation between definite DPs and *that*-CPs. But, how may improper indirect wh-questions be interpreted as <+ref> CPs?

(36) *Nós descobrimos que rota o barco ia tomar.*
 we found out which route the boat would take

We hypothesise that D-linking plus declarative illocutionary force is computed as <+ref> and <+specific>, as illustrated in (37):

(37) CP_{+ref, +specific} = [WhP_{D_linked} [Force declarative]]

We also claim that these features parallel the <+def> feature of the corresponding DP with a specific restrictive relative, as in (38).

(38) *Nós descobrimos a rota que o barco ia tomar.*
 we found out the route that the boat would take

In fact, although (38) may constitute an adequate paraphrase of (36), these sentences are not perfect synonymous.

Concluding remarks

The main goal of this paper was to account for the parallels between DP and CP, namely regarding their referential properties, focussing on the alternation between improper indirect questions and restrictive relatives in European Portuguese.

Adopting Hinzen & Sheehan's (2011) typology, we claimed that this alternation was licensed by verbs with an *assertive cognitive definite value* (semi-factives).

Given that improper indirect questions and restrictive relative both display declarative illocutionary force and present A'-dependencies, we tried to find out in what measure their syntactic structure explained their alternation. We concluded that they behave differently, a major difference being related to the fact that the relative clause is embedded within a DP.

Turning back to the parallels between DP and CP, we tried to establish the syntactic and discursive counterparts of the semantic referential feature proposed in Hinzen & Sheehan

(2011). We claimed that a <+ref> feature is present in v in the derivation of a syntactic structure involving verbs with *assertive definite value* (classes I and III). We also proposed that there is a <+ref> feature in improper *wh*-indirect questions, which mainly relies on the D-linked nature of the *wh*-CP, together with its declarative illocutionary force.

Thus, we conclude that not only the lexical properties of the predicates that select improper indirect *wh*-questions and restrictive relative clauses, but also some syntactic and discursive properties converge to account for the alternation between these two constructions.

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