

The Cartography of Syntactic Structures: Criteria, Freezing and Interface Effects

1. The criterial approach to scope-discourse semantics.

(1) A' chains are a way to associate two kinds of interpretive properties to elements: properties of *argumental semantics* (thematic roles for arguments and, more generally, S-selectional properties), and properties of *scope-discourse semantics* (Chomsky 2004).

- (2) a Which book should you read ___?
 b This book you should read ___
 c (It is) THIS BOOK (that) you should read ___ (rather than something else)
 d The book which you should read ___
 e What a nice book I read ___ !

(3) The criterial view of scope-discourse-semantics: there is a system of dedicated heads signalling to the interface components the basic scope-discourse properties. (Rizzi 1991/1996, 1997).

- (2') a Which book Q should you read <which book> ?
 b This book Top you should read <this book>
 c THIS BOOK Foc you should read <this book>
 d The book which R you should read <the book>
 e What a nice book Excl I read <what a nice book> !

- (4) a Ik weet niet [wie of [Jan ___ gezien heeft]] (Dutch varieties, Haegeman 1996)
 'I know not who Q Jan seen has'
 b Un sè [do [dan lo yà [Kofi hu ì]] (Gungbe, Aboh 2004)
 'I heard that snake the Top Kofi killed it'
 c Un sè [do [dan lo wè [Kofi hu ___]] (Gungbe, Aboh 2004)
 'I heard that snake the Foc Kofi killed '
 d Der Mantl [den wo [dea Hons ___ gfundn hot]] (Bavarian, Bayer 1984)
 'The coat which R the Hans found has'
 e Che bel libro che [ho letto ___] ! (Italian)
 'What a nice book Excl I read '

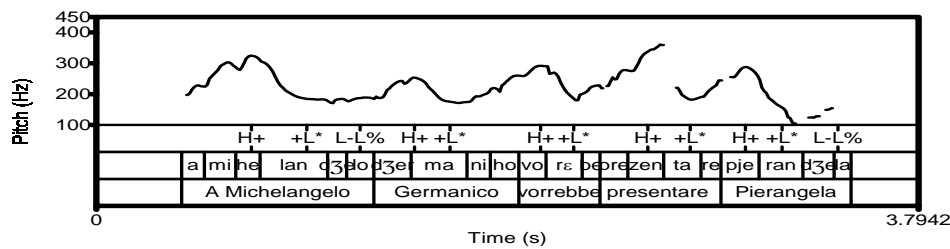
(5)a X_{CritF} is part of the numeration, triggers an internal search for XP_{CritF} ; the XP_{CritF} thus identified undergoes internal merge to the Spec of X_{CritF} , for CritF = Q, R, Top, Foc, Excl,....

b X_{CritF} carries explicit instructions concerning how its dependents (Spec and complement) must be interpreted by the interface systems dealing with sound and meaning.
 (Rizzi 1991/96, Aboh 2007)

- (6) [XP_{Topic} [Top YP]]
 Topic Comment

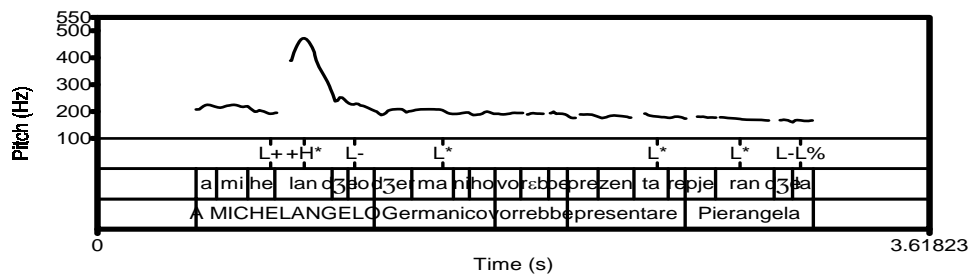
- (7) [XP_{Focus} [Foc YP]]
 Focus Presupposition

(8) Pitch contour of “Topic – Comment” in Italian (from Bocci 2009)



A Michelangelo (Top), Germanico vorrebbe presentare Pierangela
 ‘To Michelangelo (Top), Germanico would want to introduce Pierangela’

(9) Pitch contour of “Focus – Presupposition” (from Bocci 2009)



A MICHELANGELO (Foc) Germanico vorrebbe presentare Pierangela (, non a Piero)
 ‘TO MICHELANGELO (Foc) Germanico would want to introduce Pierangela (,not to Piero)

(10) In the criterial approach,

- movement to a topic or focus position is like other kinds of movement, internal merge triggered by certain morphosyntactic features, like object movement in passive, wh-movement, etc.
- There is no need to postulate a separate, special category of “prosodically driven” movement, hence no reason to enlarge the class of formal options admitted by Universal Grammar.
- There is no need to postulate a direct link between intonational structure and pragmatics: the connection is fully mediated by syntax, as is the case for other properties of sound and meaning.
- The syntax-interpretation interface is fully transparent: the approach tries to “syntacticize” scope-discourse semantics as much as possible (Cinque & Rizzi 2010), without enriching the inventory of the computational mechanisms needed on either side of the interpretive interface. The only enrichment has to do with the functional lexicon, but the size of the functional lexicon is an empirical question.

2. The cartography of syntactic structures.

(11) ... do Kofi *ya* gankpa me *we* kponon le su i do
 ‘...that Kofi Top PRISON IN Foc policemen Pl shut him there (Gungbe: Aboh 2004)

(12) [CP ... C ... [IP ... I ... [VP ... V ...]]] (Chomsky 1986)

(13) The cartography of syntactic structures:

- each layer in (12) is an abbreviation for a much richer structural zone;
- the system of functional heads is much richer than previously thought;
- ... but the building block is always the same: a head projects into a phrase by taking complements and specifiers through recursive applications of Merge;

(14) The projects of drawing detailed structural maps started with Romance and Germanic (Rizzi 1997, ed. 2004b, Cinque 1999, ed., 2002, Belletti, ed. 2004, 2009, Grewendorf 2002, Haegeman 2006, etc.) and extended to Finno-Ugric (Puskas 2000), West African (Aboh 2004), Bantu (Bilola 2008), Creole (Durreleman 2008), East-Asian (Tsai 2007, Endo 2007, Saito 2010), Dravidian (Jayaseelan 2008), Austronesian (Pearce 1999), Classical languages (Salvi 2000), etc.

(15) The Force-Finiteness system

- a It is likely [*that* in a few days [they will leave]] (English)
- b Is doíche [faoi cheann cúpla lá go [bhféadfaí imeacht]]
'Is probable at-the-end-of couple day that they could leave' (Irish: McCloskey 2002)
- c Dywedais i [*mai* 'r dynion fel arfer a [werthith y ci]]
'Said I C the men as usual C will-sell the dog' (Welsh: Roberts 2004)

(16) Credo che Piero Top, QUESTO Foc, a Gianni, volesse dirgli
'I believe that Piero, THIS, to Gianni wanted to say to him'

(17) [... Force [... (Topic*) [... (Focus) [... (Topic*) [... Fin [_{TP} ...]]]]]] (Rizzi 1997)

(18) [... [... [... [... [_{TP} ...] Fin] (Topic*)] Force] Report] (Saito 2010)

Saito (2010) argues that a recursive (thematic) topic is sandwiched in between Force and Fin in Japanese, much as in Italian; so the structure of the clausal periphery is akin in the two languages, modulo headedness and other parametric differences.

3. Cartographic representations vs “simpler syntax”

(19) Two questions :

- I. Are syntactic representations with an impoverished inventory of functional heads (C, T, v for the clause) sufficient?
- II. Is the functional hierarchy primitive or derived?

(20) About I: Syntactically “simpler” alternatives?

- i. a single CP layer;
- ii. multiple adjunctions permitted to IP/TP;
- iii. interpretive systems made capable of interpreting the adjoined material as topic or focus, and of expressing general or language-specific cooccurrence and ordering constraints.

(21) But such a “simpler syntax” approach has several drawbacks:

- i. It has no natural way to express the fact that different C-like particles expressing properties of the typology of clauses (Cheng 1991) occur in different positions wrt to other elements ((22): *che Top / Top di* in Italian, Rizzi 1997), or can co-occur in a strict order (e.g.. (23): *que (Top) si* in Spanish, Plann 1982, Suner 1994; (24) *no ka to* in Japanese, Saito 2010).
- ii. In languages with overt Q, topic and focus particles, a “simpler syntax” approach must introduce special mechanisms in the interface systems to account for the distributional properties of such particles (which can't simply be assimilated to case-like endings on the DP because they typically don't appear *in situ*)
- iii. A “simpler syntax” approach must endow the interpretive systems of mechanisms capable of capturing the observed variation (unique topics in some languages, recursive topics in other languages: an adjunction approach would expect the second case to be general, and would permit no obvious parametric mechanism to allow for a single adjunction in some languages).

- (22)a Ho deciso *che* a Gianni, gli dirò la verità
 ‘I decided that to Gianni Top, I will tell him the truth’
 b Ho deciso, a Gianni, *di* dirgli la verità
 ‘I decided to Gianni Top, *di* to tell him the truth

- (23) Me preguntaron *que si* tus amigos ya te visitaron en Granada
 ‘They asked me that if your friends had already visited you in Granada’
 Suner (1994:349):

- (24) Taroo-wa [_{CP} kare-no imooto-ga soko-ni ita (no) ka (to)] minna-ni tazuneta
 T.-TOP he-GEN sister-NOM there-in was *no ka to* all-DAT inquired
 ‘Taroo asked everyone *if* his sister was there’ (Saito 2010: (41))

(25) An approach assuming cartographic representations can capture these properties via a fundamental, independently necessary mechanism: head selection, admitting a certain amount of parametric variation (e.g., Top can be recursive in some languages, while it can only select Foc or Fin in other languages). Head selection will interact with independent constraints (e.g., locality: Abels 2010, Haegeman 2010; semantic selectional properties,...) to determine the cooccurrence and ordering restrictions on the functional sequence.

4. Criterial positions delimit chains. (Rizzi 2006)

- (25) ___ X_{Crit} ___ X_{s-sel}

- (26)a Bill wonders [*which book Q* [she read ___]]
 b * *Which book Q* does Bill wonder [___ *Q* [she read ___]] ?
 (Lasnik & Saito 1992, Boskovic 2005)

- (27) Criterial Freezing: An XP meeting a criterion is frozen in place

- (28) Non è chiaro [[*quanti libri di Piero*] *Q* siano stati censurati]
 ‘It isn’t clear how many book by Piero *Q* have been censored’

- (29)a *E’ di Piero* che non è chiaro [[*quanti libri* ___] *Q* siano stati censurati]
 ‘It is by Piero that it is not clear how many books have been censored’
 b * *E’ [quanti libri di Piero]* che non è chiaro [___ *Q* siano stati censurati]
 ‘It is how many books by Piero that it isn’t clear have been censored’
 c *E’ [quanti libri di Piero] Q* siano stati censurati] che non è chiaro ___
 ‘It is how many books by Piero have been censored that it isn’t clear’

- (30) Criterial Freezing: In a criterial configuration, the criterial goal is frozen in place (Rizzi 2010)

- (31) ?? *E’ di Piero* che non è chiaro [[*quanti libri* ___] *Q* abbiano vinto un premio]
 ‘It is by Piero that it isn’t clear how many books have won a prize’

- (32) Sub-extraction is only possible from a complement position. (see Huang’s 1982 CED)

4. The status of subjects.

(33) Mary will [___ meet Bill] (VP Internal Subject H.: Kuroda 1988, Koopman & Sportiche 1991)

(34) What justifies movement to subject position?

- i. requirements of the Case-agreement system, hence the syntax-morphology interface;
- ii. interpretive requirements, hence the syntax-CI interface (Subject Criterion)

(35) A Gianni piacciono queste idee
'To Gianni please these ideas'

(36) The interpretive counterpart of subjecthood: an argument is selected and taken as the starting point in the description of the event, which is presented as "being about" that argument.

(37)a Un camion ha tamponato un autobus
'A truck bumped into a bus'
b Un autobus è stato tamponato da un camion
'A bus was bumped into by a truck'

(38) ... poi ___ è ripartito (after (37)a: the truck left. After (37)b: the bus left)
'... then ___ left' (Calabrese 1986: *pro* picks out the referent about which the event is reported)

(39) # Un autobus, un camion lo ha tamponato
'A bus, a truck bumped into it'

NB: (39) becomes felicitous if the bus is somehow connected to the context, i.e.

(40) Q: Sai perché il traffico degli autobus è così perturbato stamattina?
'Do you know why the bus traffic is so perturbed this morning?'

A: Mah, io so solo che un autobus, un camion lo ha tamponato mentre usciva dal garage
'Well, I only know that a bus, a truck bumped into it while it was going out from the garage'

(41) Top: [+ aboutness], [+ D-linking] (see Beninca' & Poletto 2004, Frascarelli & Hinterhoelzl for more refined typologies)

(42) Subj: [+ aboutness]

NB: in (40)A *pro* in the adverbial clause can take both the subject and the topic of the previous sentence as antecedent, as is expected if *pro* picks out the Spec of a [+aboutness] head. See also:

(43)a Gianni ha salutato Piero. Subito dopo *pro* è uscito (*pro* = Gianni)
'Gianni greeted Piero. Immediately after that *pro* left'

b Piero, Gianni lo ha salutato. Subito dopo *pro* è uscito (*pro* = Gianni or *pro* = Piero)
'Piero, Gianni greeted him. Immediately after that *pro* left'

(44) Properties of Subj:

- a. ... Fin ... Subj ... T (Cardinaletti 2004, etc.)
- b. Subj is [+D] head which attracts a nominal [+N] element to its Spec.
- c. Subj triggers the aboutness interpretation at the interface

- (45) El fio el mangia l pom (Milan)
 ‘The boy Subj eats the apple’ (Rizzi 1986, Poletto 2000, Manzini and Savoia 2005, etc.)
- (46)a Jean en a publié [la première partie ____] en 1968 (de ce roman : en = pro-PP)
 ‘Jean of-it published the first part in 1968 (of this novel)’
 b [La première partie ____] en a été publiée ____ en 1968 (Ruwet 1972)
 ‘The first part of-it was published in 1968’
- (47)a Jean en a publié [trois ____] en 1968 (romans : en = pro-NP)
 ‘Jean of-them published three in 1968 (novels)’
 b * [Trois ____] en ont été publiés ____ en 1968
 ‘Three of-them have been published in 1968’
- (48) [Combien ____] il en a publiés ____ en 1968?
 ‘How many he of-them published in 1968 ?’

En can be extracted and the remnant DP A-moved in (46)b, but not in (47)b, where *en* pronominalizes and extracts the NP, hence the whole [+N] part of the DP. No problem arises with this derivational mode in (48) because A’ movement does not target [+N].

5. Subject-Object Asymmetries, and strategies of subject extraction (Rizzi & Shlonsky 2007)

- (49)a * Who do you think [that [____ Subj will come]]?
 b Who do you think [that [Mary Subj will meet ____]]?
- (50) Subject extraction is blocked by Criterial Freezing
- (51)a * Who would you prefer [for [____ Subj to win]]?
 b Who do you work for ____?
- (52)a * Combien de personnes veux-tu [que [____ Subj viennent à ton anniversaire]] ?
 ‘How many people do you want that come to your birthday ?’
 b ? Combien veux-tu que [[____ de personnes] Subj viennent à ton anniversaire]] ?
 ‘How many do you want that of people come to your birthday ?’
 (Obenauer 1976, Kayne 1983, thanks to P. Hirshbühler)
- (53) * Combien veux-tu que [[____ d’étudiants] Subj signent la lettre]]
 ‘How many do you want that of students sign the letter ?’ (Shlonsky 2008)

The contrast (52)b-(53) strengthens the conclusion that sub-extraction cannot take place from the criterial position (if it could, one would expect no difference between the two cases), but from the thematic position. The ill-formedness of (53) suggests that specifiers in general, not just criterial specifiers, disallow sub-extraction (see generalization (22)). Hence, constraints on sub-extraction are independent from (and stronger than) freezing (Lohndal 2010).

(52)b is thus derivable via sub-extraction of *combien* from object position in the vP phase, and movement of the remnant [____ d’étudiants] to subject position. It can be attracted there because the [+N] part has not been extracted (in contrast with (47)b).

(53) A typological property: Null Subject Languages are not sensitive to that-trace effects (Perlmutter 1970, Rizzi 1982, 1990, Nicolis 2005).

(54) Chi credi che verrà? (Rizzi 1982, 1990)

‘Who do you think that will come?’

(55) Chi credi [che [*pro* Subj verrà ___]]?

‘Who do you think that will come?’

(56)a Que rapazes o Paulo desconfia que tenham beijado *todos* a Maria? (Menuzzi 2000)

‘Which boys Paulo suspects that have kissed all Maria?’

b Que rapazes o Paulo desconfia que tenham *todos* beijado a Maria?

c *Que rapazes o Paulo desconfia que *todos* tenham beijado a Maria?

7. Extraction from Clefts and argument/adjunct asymmetries.

(66)a E’ Gianni che hai visto ___

‘It is Gianni that you saw’

b Chi è ___ che hai visto ___?

‘Who is it ___ that you saw ___?’

(67)a Non è Gianni che ho incontrato ___

‘It is not Gianni that I met ___’

b * Chi non è ___ che hai incontrato ___ ?

‘Who is it not ___ that you met ___?’

(Rizzi 1993)

(68)a E’ Gianni che non ho incontrato ___

‘It is Gianni that I didn’t meet ___’

b Chi è ___ che non hai incontrato ___ ?

‘Who is it ___ that you didn’t meet ___?’

(69)a Credo che sia Gianni che dovremmo incontrare

‘I believe that it is Gianni that we should meet’

b ? Chi credi che sia ___ che dovremmo incontrare?

‘Who do you think that it is ___ that we should meet’

(70)a Mi domando se sia Gianni che dovremmo incontrare

‘I wonder if it is Gianni that we should meet’

b * Chi ti domandi se sia ___ che dovremmo incontrare ___ ?

‘Who do you wonder if it is ___ that we should meet ___?’

(71)a E’ Gianni che mi domando se dovremmo incontrare ___

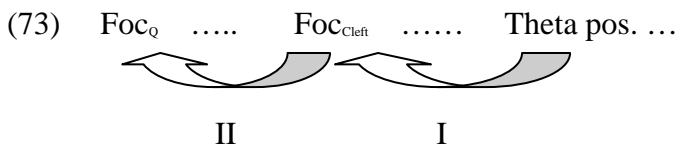
‘It is Gianni that I wonder if we should meet ___’

b Chi è ___ che ti domandi se dovremmo incontrare ___ ?

‘Who is it ___ that you wonder if we should meet ___?’

(72) Chi ... (*WI) ... è ___ che ... (WI) ... ___ ...

‘who it is that



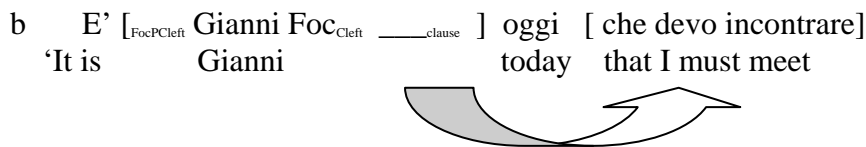
(74) Under Criterial freezing, an element cannot move to the Spec of Foc_{Cleft} and then continue to move to the Spec of the left-peripheral focus. So the extra movement, movement II, must involve either

- i. Movement of a smaller phrase than mov. I (i.e., subextraction), or
- ii. Movement of a larger phrase than mov I (i.e., movement of the whole criterial configuration, much as in (29)c) (K. Abels, p.c.)

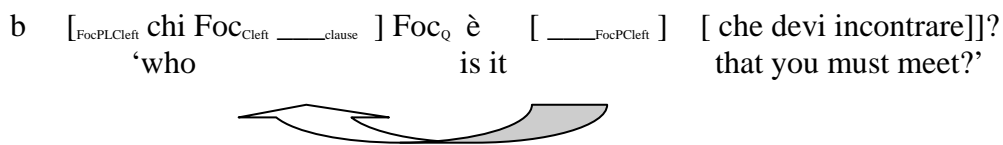
(75) E' [_{FocPCleft} Gianni Foc_{Cleft} [che devo incontrare]] (Belletti 2008)
 'It is Gianni that I must meet'

(76) E' Gianni, oggi, che devo incontrare
 'It is Gianni, today, that I must meet'

(77)a E' [_{FocPCleft} Gianni Foc_{Cleft} [che devo incontrare]] oggi → Extraposition →
 'It is Gianni that I must meet today'



(78)a Foc_Q è [_{FocPCleft} chi Foc_{Cleft} _____{clause}] [che devi incontrare]
 'It is who that you must meet'



(79) * [_{FocPCleft} chi Foc_{Cleft} _____{clause}] Foc_Q non è [_____{FocPCleft}] [che devi incontrare]?
 'who isn't it that you must meet?'



8. An asymmetry between questions and relatives.

- (80)a Chi è ___ che devi incontrare?
'Who is it that you should meet?'
b * L'uomo che è ___ che devo incontrare ha lasciato la città
'The man who it is that I must meet left the city'
- (81)a Non so chi (è ___ che) dobbiamo incontrare
'I don't know who (it is that) we must meet'
b Contatterò chi (*è ___ che) dobbiamo incontrare
'I will contact who (it is that) we must meet'

Bresnan and Mchombo (1978) attributed the impossibility of building a relative out of a cleft to an interpretive clash: relatives are "topic-like", hence incompatible with the focalization induced by the cleft. Questions are "focus-like" hence consistent with clefting.

BUT: the head of the relative can be focused, e.g. contrastively, without triggering an interpretive clash:

- (82) Dovevi leggere un LIBRO che ti avevo prestato (non un articolo)
'You should have read a BOOK that I had lent to you, not an article'

We can now capitalize on the analysis of extraction from clefts in 7. The moved head in a relative is restricted to the category NP/DP, presumably because the attractor searches the structure for such a category in order to build a large DP. But under the analysis in 7, the phrase moved leftward from the focus of clefts is in fact the entire focus phrase, it can't be an NP/DP (ultimately, because of Criterial Freezing). So, the categorial requirement on the head of the relative cannot be satisfied in (80)b. The relevant intermediate representation is (83):

- (83) E' [_{Foc Cleft P} [l'uomo] Foc_{Cleft} ___] [che devo incontrare ___]]

Questions are less categorially selective than relatives: a variety of phrases can be attracted by Q, provided that the phrase is endowed with Q: so (80)a is fine with the whole Foc_{cleft} pied-piped to the left periphery.

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