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A note on left-peripheral maps and interface properties

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The cartographic analysis of the left periphery leads to the identification of invariant and variable properties in the syntactic expression of scope-discourse configurations, such as topic-comment and focus-presupposition. One notable property is that languages typically permit a unique focus in the left periphery of a clause, whereas left-peripheral topics may proliferate in many languages. A comparative analysis of Italian and Gungbe reveals that Italian disallows distinct LP foci also in distinct clauses of complex sentences, an option which is permitted in Gungbe. The proposal developed in this paper capitalizes on computational mechanisms applying at the interfaces with sound and meaning to capture the invariant core and the variability in these left-peripheral properties across languages.

Keywords: cartography, left periphery, focus, interfaces

1. Introduction

The cartographic enterprise involves a large descriptive and comparative dimension: in the first place, we want to know what the right structural maps are for the different zones of the syntactic tree, and what kinds of invariant and variable properties of the maps we can find across languages. This dimension has shown a strong heuristic capacity, leading to much work on numerous languages, and to the identification of cross-linguistic generalizations. Nevertheless, drawing the empirically correct maps is only the first step of the research. Questions of explanation immediately arise: why do we find the invariant properties that are observed across maps? And what is the appropriate parametrization to capture the cross-linguistic variation?

Addressing these issues immediately implicates a theoretical dimension: as soon as we ask questions on the deeper reasons of the arrangements we observe,

cartography can become a powerful generator of empirical issues for syntactic theory, which can enlarge the empirical basis of theoretical studies. See Cinque & Rizzi (2010), Rizzi & Cinque (2016), Rizzi (2017) for discussion.

After a quick presentation of the criterial approach to the syntactic expression of scope-discourse properties, I will discuss an empirical generalization involving topic and focus structures: while topics may proliferate, at most one left peripheral-focus seems to be allowed per clause. This constraint seems to hold in general, but languages clearly differ in the possibility of allowing distinct left-peripheral foci in distinct clauses of the same complex sentences: Italian disallows such a long-distance co-occurrence, while Gungbe permits it. In this note, I will try to capitalize on the computational mechanisms applying at the interface of syntactic representations with systems of sound and meaning to capture the observed invariant and variable properties in this important area of A-bar syntax.

2. Syntactic and interface properties of criterial heads

In the cartographic study of the left periphery of the clause, the criterial approach to constructions expressing scope-discourse properties has played a crucial role (Rizzi 1997 and much subsequent work). According to this approach, the complementizer system is in fact a complex structural zone populated by a sequence of functional heads (Top, Foc, Q, Rel, Excl, ...) which have a dual function:

- In syntax, they trigger movement, attracting to their specifier a phrase endowed with matching features. So, a Q head attracts a phrase endowed with a + Q feature, a Top head attracts a phrase endowed with a + Top feature, etc.
- At the interfaces with sound and meaning, criterial heads trigger interpretive procedures for the proper assignment of scope-discourse properties at LF, and the appropriate intonational contour at PF.

So, A'-constructions expressing scope discourse properties like topicalization or focalization involve representations such as the following, with criterial heads in bold:

- (1) a. This book **Top** you should read _ tomorrow
 b. **THIS BOOK** **Foc** you should read _, not Bill's book

Top and Foc are not pronounced in English, but this structure-based approach is made plausible by the existence of many languages in which criterial heads are overtly realized, e.g. the languages with overt topic and focus markers such as the African language Gungbe (cf. Aboh 2004):

- (2) a. Un sè [do [dan lo yà [Kofi hu ì]]] (Gungbe, Aboh 2004)
 ‘I heard that snake the **Top** Kofi killed it’
 ‘I think that, as for this book, you should read it tomorrow.’
- b. Un sè [do [dan lo wè [Kofi hu _]]] (Gungbe, Aboh 2004)
 ‘I heard that snake the **Foc** Kofi killed ’
 ‘I think that **THIS BOOK** you should read not the one by Suru.’

Under uniformity guidelines, it is natural to make the hypothesis that all languages involve a system of criterial heads, and what varies is their morphological realization, a low-level spell-out parameter. This argumentation of course presupposes that Top and Foc markers in cases like (2) indeed are part of the clausal spine, and are not postpositions or case-like endings attached to the moved phrases (see Rizzi 2013 for possible kinds of relevant evidence). Moreover, uniformity assumptions typically have to be weakened, as the analysis proceeds and gets refined, under the pressure of empirical evidence: obviously, natural languages are not completely uniform, so that non-trivial parameters of variation must be introduced; nevertheless starting from assumptions of uniformity is the necessary precondition for doing comparative syntax.¹

At the LF interface, the criterial head guides the interpretation by triggering particular interpretive routines which capitalize on the transparent syntactic representations, e.g., for topics,

- (4) [] Top []
 “Topic” “Comment”

Or, informally, “interpret the specifier of Top as the topic, a contextually salient referent, and the complement of Top as a comment that is made about the topic”. Interpretive routines at the semantic-pragmatic interface define the conditions for appropriate use in discourse. These conditions can be studied by setting up mini-discourse contexts, and testing the appropriateness of the criterial configurations in such discourse fragments. Consider, for instance, the following discourse fragment in Italian, illustrating licensing conditions on topics:

- (5) a. I libri che hai comprato ieri mi sembrano adatti per i regali di Natale...
 ‘The books you bought yesterday seem appropriate as Christmas present...’
- b. In effetti, il libro di Gianni, lo vorrei regalare a Maria.
 ‘In fact, Gianni’s book, I would like to give to Maria.’

1. An extraordinary opportunity for developing such cross-linguistic arguments is offered by domains that show an important range of microvariation in historically related system (Kayne 2005), such as the dialects of Romance and Germanic, e.g., in the spell-out of heads of the high IP field and of the complementizer system: Poletto (2000), Manzini & Savoia (2005).

i.e., a left-peripheral topic selects a referent drawn from a presupposed set: in the case of the discourse fragment reported in (5), speaker A introduces a set of books, and interlocutor B selects a member of this set as a topic and makes a comment about it.

The Top head also guides contour assignment rules in the path to the PF interface, along the lines, e.g., if the system presented in Bocci (2013) for Italian.

Analogous considerations hold for left-peripheral focus. In Romance, not all kinds of foci can use left peripheral slots. For instance, simple new information focus (e.g., expressing the value of the variable in the answer to a *wh* question: Belletti 2001, 2004), uses an IP internal position in standard Italian and many other Romance varieties (see also Cruschina 2012 for elements of variation on this point). On the contrary, one kind of focus which can be expressed in the left periphery is corrective focus, which singles out a piece of information attributed to the interlocutor (typically expressed by the interlocutor in the immediate discourse context) and corrects it, as in the following discourse fragment, taken from Bianchi, Bocci and Cruschina (2014):

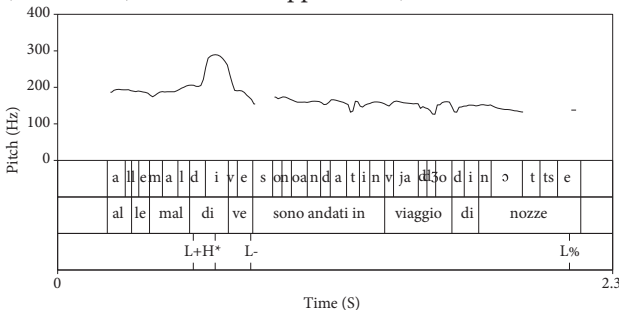
- (6) A: Se ho capito bene, sono andati alle isole Vergini.
 ‘If I understood correctly, they went to the Virgin Islands.’
- B: Ti sbagli! ALLE MALDIVE sono andati in viaggio di nozze!
 ‘You are wrong! TO THE MALDIVES they went on honeymoon!’

The interpretation here is determined by an interpretive routine like the following:

- (7) [] Foc_{contr} []
 “Focus_{contr}” “Presupposition”

i.e., against a presupposed background (they went somewhere on honeymoon), interlocutor B corrects interlocutor A’s statement on the destination of their trip. The left peripheral position expressing the correction bears high prominence, whereas the presupposed part bears a flat intonational contour, as is shown in the following figure based on the experimental work presented in Bianchi, Bocci & Cruschina (2014), and discussed in Rizzi & Bocci (2016):

- (8) (Corrective) Focus – Presupposition (from Bianchi, Bocci & Cruschina 2014)



Bianchi, Bocci and Cruschina (2014) also show that Italian can use the left peripheral slot to express another kind of focus, mirative focus, through which the speaker expresses an information that is surprising and unexpected given his/her previous set of assumptions. Such a background licensing mirative focus can be typically expressed in the immediately preceding sentence in a discourse fragment like the following:

- (9) ...E io che credevo che fossero dei poveracci! Figurati un po'...
 '...and I believed they were poor people! Can you imagine....
 ... UNA FERRARI si sono comprati!
 '... A FERRARI bought for themselves!'

The contour of mirative focus is distinct from the one assigned to corrective focus, Bianchi et al., cit., argue, but the contour assigned to the presupposition of mirative focus shows the same flattening as the presupposition with corrective focus.

3. There can be multiple topics, but LP focus is unique: The role of LF interface principles

Many languages permit a proliferation of topics, e.g. Italian (and Romance in general), and Abidji, spoken in Ivory Coast (Hager-Mboua 2014):

- (10) A Maria, domani, il tuo libro, glielo devi dare al più presto
 'To Maria, tomorrow, your book, you it-to him should give as soon as possible.'
- (11) kòfi éké òkókò é éké è pipjé nì.
 Kofi TOP banana DEF TOP ASPpeel RES PRON
 'Kofi, the banana, he peeled it.'

The Abidji case is particularly interesting in this connection, as the distinct topics all occur with the overt topic head *éké*, which strongly suggests that the proliferation of topics may be analyzed as a recursion of TopP (rather than as multiple specifiers attached to a unique Top head, or through multiple adjunctions to some left-peripheral constituent).

Contrary to topic, multiple left-peripheral focus seems to be systematically proscribed. The uniqueness of LP focus has been observed for Italian (Rizzi 1997), English, Armenian (Giorgi & Haroutyunian, talk, University of Siena, 2016), Hungarian (Puskás 2000), Hebrew (Shlonsky 2014), Jamaican (Durrleman 2008), Aboh (2004), Abidji (Hager – MBoua 2014). In the last three languages

the uniqueness is easy to determine, as these languages have overt focus markers, which can occur only once:²

- (12) Jamaican: * A di bami a di pikni im gi
 The bammy the child he give (Durreleman 2008: 75)
- (13) Gungbe: * wémà lɔ wè Sena wè zé
 THE BOOK SENA took (Aboh 2004)
- (14) Abiji: * òkókò_i é bɛ̀ kòfí_j bɛ̀ – pìpjé –
 banana_i Def. Foc Kofi_j Foc – PEEL.RES –
 « THE BANANA, KOFI – peeled – _ » (Hager-Mboua 2014)

In languages with null Foc, more care is needed to test the property, in order to distinguish LP focus from, e.g., contrastive topic, a notion that is sometimes confused with focus.

Consider the following discourse fragment in Italian, in which a multiple corrective focus could arise, but never is well formed. Speaker A produces (15)A; his interlocutor may want to correct two elements in this statement: perhaps it was Gianni, not Piero who won an important competition; moreover the competition was the world championship, not the Olympics. Nevertheless, speaker B cannot correct both elements in a single clause with two corrective foci: (15)B is ill-formed. The only possibility is to split his corrective statement into two sentences, each of which has a unique corrective focus, as in (15)B':

- (15) A. So che quest'anno Piero ha vinto le olimpiadi...
 'I know that this year Piero won the Olympics...'
- B. *Ti sbagli: quest'anno, GIANNI, I MONDIALI ha vinto, non Piero, le olimpiadi
 'You are wrong: this year, GIANNI, THE WORLD CHAMPIONSHIP won, not Piero, the Olympics.'
- B': Ti sbagli: quest'anno, GIANNI ha vinto una competizione importante, non Piero; e poi, I MONDIALI, ha vinto, non le olimpiadi
 'You are wrong: this year GIANNI won an important competition, not Piero; moreover, THE WORLD CHAMPIONSHIP he won, not the Olympics.'

Mirative LP focus also is unique. In (16)A the speakers expresses a situation that was unexpected given his previous beliefs: that a member of his family would buy an expensive car. In continuation (16)B, mirativity is associated with the subject,

2. In Jamaican the focus marker *a* precedes the focalized element, rather than following it, a state of affairs that Durreleman (2008) analyzes as involving head movement of *a* from Foc to an immediately adjacent higher head position.

the unexpected agent of a contextually given predicate, buying an expensive car; in (16)B' mirativity is associated with the object, the expensive car, in a context in which the topic is a member of my family, and the fact that he would buy a car is presupposed. Both choices are legitimate continuations of (16)A, which shows that there is some leeway, in a given context, in partitioning the structure between what is surprising and what is presupposed; but what is excluded is a double mirative focus, as in (16)B''.

- (16) A. Non avrei mai pensato che qualcuno nella mia famiglia avrebbe speso tanti soldi per una macchina...
'I would never had thought that anybody in my family would spend so much money for a car...'
- B. E invece, figurati un po', proprio MIO FRATELLO ha comprato una Ferrari.
'And then, could you believe it, precisely MY BROTHER bought a Ferrari.'
- B' E invece, figurati un po', mio fratello UNA FERRARI ha comprato.
'And then could you believe it, my brother A FERRARI bought.'
- B'' *E invece, figurati un po', proprio MIO FRATELLO UNA FERRARI ha comprato.
'Ad then could you believe it, precisely MY BROTHER A FERRARI bought.'

I proposed in Rizzi (1997) that Uniqueness of LP focus follows from the interpretive procedure associated to the structure, repeated in (17) for convenience: if a FocP was recursively embedded as the complement of a higher Foc, we would have that the complement of a higher Foc (underscored in (18)), a presupposition according to (17), contains a focus position, an inconsistent interpretive property.

- (17) [] Foc []
 "Focus" "Presupposition"
- (18) *[A MARIA] Foc1 [[IL TUO LIBRO] Foc2 [devi dare]]
 'To MARIA YOUR BOOK you should give

On the other hand, no interpretive requirement blocks recursion of topic – comment structures: the only requirement on the comment may be that it contains new information, but this is consistent with a (reiterated) topic – comment structure.

- (19) [A Maria] Top1 [[il tuo libro] Top2 [glielo devi dare]]
 'To Maria your book you it-to-him should give

So, recursion of FocP is generally excluded by the interpretive procedure triggered by the Foc head at LF, whereas no general interpretive incompatibility arises in the

case of TopP recursion: other factors may require uniqueness of Topics in some languages (see Rizzi 2013), but there is no general ban against topic recursion, and in fact multiple topics are possible in many languages.

4. Principles and parameters: A role for PF interface?

In Italian, the restriction to a single LP focus holds not only in simple clauses, but also in complex sentences (in fact, restrictions on co-occurrence of foci may hold more generally, but in this paper I will only look at the cases of LP focus). So, for instance, we can have a corrective focus in a main clause (as in (20)a), or in an embedded clause (as in (20)b), but not simultaneously in the main and the embedded clause (as in (20)c):

- (20) a. A GIANNI ho detto – che dovremmo leggere il tuo libro, non a Piero
 ‘TO GIANNI I said that we should read your book, not to Piero.’
 b. Gli ho detto che IL TUO LIBRO dovremmo leggere –, non quello di Franco
 ‘I said to him that YOUR BOOK we should read, not Franco’s.’
 c. *A GIANNI ho detto – che IL TUO LIBRO dovremmo leggere –, non a Piero, quello di Franco
 ‘TO GIANNI I said that YOUR BOOK we should read, not to Piero, Franco’s.’

In Rizzi (1997, fn. 15) I proposed that this restriction also follows from interpretive routine (17): the LP focus in the lower clause in (20)c is included in the presupposition of the higher focus (if the presupposition is the whole c-domain of the Foc head), therefore a clash arises also when the two foci are not in the same LP.

But comparative considerations become relevant here. If two LP foci in the same clause are systematically banned across languages, the co-occurrence of LP foci in different clauses of the same complex sentence is clearly permitted in some languages. A case in point is Gungbe (Aboh 2004). A $w\epsilon$ marked phrase can appear in a main clause and in an embedded clause in the same complex sentence:

- (21) a. Sena $w\epsilon$ _ sè dɔ Remi $w\epsilon$ _ zé hi lɔ
 Sena Foc hear-Perf that Remi Foc – take-Perf knife + def
 ‘SENA heard that REMI took the knife.’
 b. Sena $w\epsilon$ _ sè dɔ hi lɔ $w\epsilon$ Remi zé _
 Sena Foc hear-Perf that knife + def Foc Remi take + perf
 ‘SENA heard that Remi took THE KNIFE.’

So, some kind of parametrization must be at play here. One possibility that immediately comes to mind is that the parametrization could involve the calculation of the presupposition:

- (22) the presupposition associated to Foc extends
- (i) to the simple clause *c*-commanded by Foc (Gungbe)
 - (ii) to the whole complex sentence *c*-commanded by Foc (Italian)

If this assumption is made, the interpretive clash between being focal and being presupposed would continue to arise for complex clauses in Italian like (20)c, but not in the Gungbe examples (21), where the calculation of the presupposition would start anew in the embedded clause.

Nevertheless, this approach seems to raise serious learnability issues: how would the language learner come to determine the language-specific parametric value of (22)? A more promising avenue would be to try to connect the observed difference to some salient difference between the two languages, immediately accessible to the language learner.

A clear difference between the two languages exists in the properties of the PF interface of the focus constructions. We have seen that in Italian a very special intonational contour is assigned to structures involving LP focus, as shown by (8). The PF prosody is characterized, among other properties, by the flattening of the contour of the presupposition. This may be inconsistent with the assignment of another focal prominence in the flattened part, and this sole PF inconsistency may be what goes wrong in (20)c. This is not an obvious line of analysis (see Bocci 2013 for discussion), but it seems to me to be intuitively plausible enough to be pursued.

Contrary to Italian, no special contour assignment is operative in Gungbe. Aboh writes:

- (23) “...no stress mechanism arises in the Gungbe focus strategy. Focusing is realized only through movement of the focused element to the left-adjacent position to $w\epsilon$...” (Aboh 2004: 238)

How can we connect the contrast illustrated by (20)–(21) to the independent difference between Italian and Gungbe emerging from (23)? One natural possibility is to assume that the calculation of presupposition at the LF interface, contrary to approach (22), is not parametrized. Suppose that the calculation of the presupposition is always local, as in (22)i. In fact this is the expected state of affairs if the process is phase-based: the system would only ‘see’ the content of the local clausal phase, without penetrating more embedded clausal phases.³

3. If phase nodes are CP and vP, or, using finer distinctions, ForceP and vP, the system should be able to “see” ForceP + vP configurations. This would be consistent with, e.g., the mechanism

If the calculation of the presupposition can see the whole content of simple clauses, the double occurrence of a LP focal position in a single clause is systematically excluded by the interpretive clash that would arise at LF. So, the general state of affairs found uniformly in Gungbe, Italian and the other languages mentioned in Section 3 can be captured as a general property of natural language.

What about the variation observed in (20)–(21)? It could not be captured by the mechanism at the LF interface, now assumed to be invariant, but it follows from the independently observed difference at the PF interface: Italian has contour assignment rules that are incompatible with another focus in the flattened string following a focus position, no matter how distant the second focus is from the first,⁴ whence the ill-formedness of (20)c. On the contrary, in Gungbe, as no special contour assignment rule applies, nothing excludes the co-occurrence of a focus in the main clause and another non-local focus in an embedded clause, as in (22)a-b.

In conclusion, by assuming an invariant syntax and an invariant mapping to LF, the system captures the general property of the uniqueness of left-peripheral focus in each simple clause. By assuming variation where it can be naturally expected and is widely attested, in the mapping to PF, the system captures the observed difference between languages allowing a single LP focus per complex sentence, like Italian, and languages allowing LP focus positions in different clauses of the same complex sentence, like Gungbe.

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In the initial years of my studies in formal linguistics, at the *Scuola Normale Superiore* of Pisa in the early 1970's, I had the opportunity to share my newly developing interests with

postulated in Chomsky (2001), or with some mechanism of 'phase sliding' (Gallego 2010) making the content of a simple clause globally accessible to the computation.

4. An anonymous reviewer observes that the ill-formedness of examples like (20)c is significantly weakened if the higher focus is expressed through the cleft construction:

- i. ? E' a Gianni che ho detto che IL TUO LIBRO dovremo leggere, non a Piero, quello di Franco
 'It is to Gianni that I said that YOUR BOOK we should read, not to Peter, Franco's'

The reviewer observes that this improvement is expected under the PF interface approach to (20)c because the cleft construction does not seem to require the contour flattening that is enforced with focus preposing to the left periphery. Importantly, the contrast (20)c-(i) is captured by the PF account, but it would not be expected under the LF parametrization account in (22).

Leonardo Savoia, who was then *perfezionando* at the *Scuola*. Our discussions were nourished by the breadth of his interests, spanning from syntax to phonology, semantics, dialectology, and more. I hope Leonardo will find in these pages some echoes from these early exchanges and later interactions, and will enjoy reading an attempt to combine a formal syntactic analysis with the study of the interfaces of syntax with sound and meaning.

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