Luigi Rizzi   **Minicourse 2018 1**
University of Geneva, University of Siena   UFSC June 25-26, Florianopolis

Cartography and explanation

Program:
1. **The role of interface and locality principles in explaining properties of functional sequences.**
2. **Criterial freezing effects in the CP system and the role of labeling.**
3. **Freezing effects in subject positions and in low focus positions.**
4. **Locality effects in adults grammars and language acquisition.**

1. Cartographic sequences and explanation.

The fine structure of clauses and phrases has been charted for about 20 years. The emerging picture:

- each X-bar layer of traditional representations like (1) can be seen as an abbreviation for a much richer structural zone; for instance, the CP layer is split into finer components, and is expanded as in (2) (Rizzi & Bocci 2016);

(1) $[_{CP} ... C ... [_{IP} ... I ... [_{VP} ... V ...]]]$ (Chomsky 1986)

(2)   [Force [Top* [Int [Top* [Foc [Top* [Mod [Top* [Q_{emb} [Fin [$_{IP}$ …]]]]]]]]]]]
                                                                      (Rizzi & Bocci 2016)

- more generally, complex **functional sequences** emerge for each zone (see Rizzi & Cinque 2016, *The Annual Review of Linguistics*, 2 for an overview) .

The cartographic program turned out to have **a strong heuristic capacity**, which quickly led to a vast cross-linguistic coverage, and to the discovery of rich sets of properties of such sequences: ordering, mutual incompatibility between positions and other distributional constraints, freezing effects, etc.

(3) Cross-linguistic coverage: a rough overview. The initial empirical core for the analysis of the left periphery came from the detailed study of Italian, a language which offers rich positional evidence for a well-developed C-zone. The analysis initially involved limited comparative extensions to other Romance and Germanic languages, but this line of research quickly proved of general relevance, and was extended to other language families. On **Romance** see Rizzi (1997, 2000, 2004a-b), Belletti, (2004a-b, 2009), Poletto (2000), Laenzlinger (1997), Cinque (2002), Benincà and Munaro (2010), and on **Germanic** Grewendorf (2002), Haegeman (2004, 2013), among many other references. See Roberts (2004) on **Celtic**, Krapova & Cinque (2008), Garzonio (2005) on **Slavic**, Puskás (2000) (and also earlier work such as Brody 1990, Kiss 1998), on **Finno-Ugric**, Shlonsky (1997), (2014) on **Semitic**, Frascarelli and Puglielli (2008) on **Cushitic**, Aboh (2004), Biloa (2013), Bassong (2010), Torrence (2013), Hager M'boua (2014) on **African languages**, Durrleman (2008) on **Creole**, Jayaseelan (2008) on **Dravidian**, Tsai (2008), Tsai (2015), Paul (2005), (2014), Badan (2007), Badan Del Gobbo (2011), Si, ed. 2017 on **Chinese**, Endo (2007), Endo (2014), Saito (2010) on **Japanese**, on **Korean** (cartographic workshop at the National University of Seoul, June 2018), Pearce (1999) on

Austronesian, Speas & Tenny (2003), Nevins & Seki (2017) on **American Indian**, Legate (2001) on **Australian aboriginal**.

In addition, much research was produced in Romance and Germanic dialectology (e.g. Ledgeway 2004, Paoli 2007, Cruschina 2012, Grewendorf and Poletto 2009), and on Classical languages and diachrony (Salvi 2005, Danckaert 2012, Benincà 2006, Franco 2009), etc.

Volumes 1, 2, 3, 5, 7, 8, 9, 10, 11 of the subseries "The Cartography of Syntactic Structures" of the Oxford Studies in Comparative Syntax are devoted in part, or entirely, to the cartography of the left periphery. See Cinque & Rizzi 2010, Shlonsky 2010, Rizzi 2013, Rizzi & Bocci 2017, Rizzi & Cinque 2016 for general overviews. See also the site of the ERC project SynCart
http://www.unige.ch/lettres/linguistique/syncart/home/

(4) Functional sequences connect to the issue of linguistic explanation in two ways:

- A functional sequence may be taken as an *explanans,* a crucial ingredient entering into explanatory analyses of various morphosyntactic phenomena (e.g., in nanosyntactic work on constraints on syncretism: Caha 2009, Zompì 2017, Baunaz & Lander 2017, etc., in work on the fine-grained structure of that-trace effects: Rizzi & Shlonsky 2007, etc.).

- Reciprocally, a functional sequences should be looked at as an *explanandum*, a complex set of properties which in and of itself is in need of a further and deeper explanation.

(5) Why is it that we typically find certain orders and certain properties in the functional sequences, rather than others? It is unlikely that the hierarchy and its properties may be an absolute syntactic primitive: why should the human language faculty to have evolved to include complex precompiled structures like (2), or Cinque's (1999) clausal structure, or nanosyntactic hierarchies?

We have here the familiar tension between considerations of learnability and considerations of evolvability. Learnability considerations (or the logical problem of language acquisition) push in the direction of a richly structured UG, to capture acquisition in realistic conditions of time and access to the data: evolvability considerations push in the direction of a more impoverished UG, along minimalist lines. The tension can be resolved in this case (Cinque & Rizzi 2010) if the properties of the functional hierarchy (and whatever complex properties are observed) may be rooted elsewhere, and deductively connected to deep and simple principles, plausible elementary ingredients of the human language faculty.

(6) Functional sequences as *explananda*: Two kinds of principles may be invoked:

- **interface principles**: certain properties of the functional sequences may follow from requirements of the interfaces with sound and meaning: selection, interpretive principles for criterial configurations, properties of intonational systems, etc.

- **formal principles** constraining the syntactic machine: other properties of functional sequences may follow from formal principles of locality, labeling, economy, etc..

The cartographic enterprise involves a large descriptive and comparative dimension: in the first place, we want to know what the right maps are, and what kinds of invariant and variable properties of the maps we can find across languages.

Moreover, it involves a theoretical dimension: as soon as we ask questions on the deeper reasons for the arrangements we observe, cartography can become a powerful generator of empirical issues for syntactic theory, which can nourish theoretical studies and enlarge their empirical basis.

2. The Criteria

(7) The criterial approach: the LP is populated by a sequence of functional head (Top, Foc, Q, Rel, Excl,…) which have a dual function:

  1. In syntax, they trigger movement.

  2. At the interfaces with sound and meaning, they trigger interpretive procedures for the proper
      assignment of scope-discourse properties at LF, and the appropriate intonational contour at PF.

(8) a   Which book   **Q**   should you read __ ?
     b   This book   **TOP** you should read __ tomorrow
     c   THIS BOOK   **FOC**   you should read __, not Bill's book

This structural approach is made immediately plausible by the fact that many languages overtly express (some of) the criterial heads:

(9) 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 2001)
         'I   heard   that   snake the   **TOP**   Kofi   killed it'

    c Un sè   [do   [dan   lo   **wè**   [Kofi   hu   ____]]]   (Gungbe, Aboh 2001)
         'I   heard   that   snake the   **FOC**   Kofi   killed   '

Under uniformity assumptions, it is natural to make the hypothesis that all languages involve a system of criterial heads, and what varies is the morphological realization, a low-level spell-out parameter.

3. Are criterial heads part of the clausal spine or DP-internal case-like morphemes?

Wè, of only appear in the LP, can't appear *in situ* (e.g., in echo or multiple questions):

(10) a. fíté **wè** é yì?
        'Where Foc he went?'

    b. é yì fíté (*wè)?
       'he went where (foc)?'

(11)   Ik vraag me af [wie **of** wat (***of**) gezegd heeft]
       'I ask myself off who if what (*of) said has'

Moreover, in the relevant Dutch varieties, the Q head interferes with V2:

(12)   a. Ik weet niet [wie (of) [Jan gezien heeft]]
           'I know not who   Q   Jan seen has'

         b. Wie (*of) heeft Jan gezien?
            'Who has Jan seen?'

NB: incompatibility with markers such as *of* follows from a theory of V2 like the one in Samo (2018), in which the inflected verb moves to the relevant criterial head in a Spec-head configuration.

Some languages use prenominal, rather than post-nominal markers for focus, as in Jamaican Creole

(13)   **A** di bami   Piita nyam (…nutn muor)
       Foc the bammy Peter eats   (...nothing more)   (Durrleman 2008: 74)

Durrlemann analyses this as involving *a* in Foc head attracting the focused phrase to its Spec, and then moving up via head movement to the next higher head (see also Durrleman & Shlonsky 2015).

Maori has both topic and focus markers (in that order) preceding topic and focus, analysed by Pearce along similar lines:

(14) **Ko** te   hipi   **nā**   Pita   I   fihore
     Ko the sheep *nā*   Pita   T/A fleece
     'As for the sheep, it was Pita who fleeced it'   (Pearce 1999)

Pierce proposes, in essence, the analysis we just reviewed for JC.
Alternatively, could such markers be reanalyzed as attached to the nominal, kinds of "prepositions" indicating topicality/focus? A priori, this is not inconceivable: think of the recent discussion of a-topics (Belletti & Manetti 2017). An experiencer object with the *worry* class cannot be prepositional in standard Italian, but it can be marginally introduced by *a* when topicalized:

(15)a   Queste cose non spaventano (*a) Gianni
        'These things don't frighten (*at) Gianni'

    b (?A) Gianni, queste cose non lo spaventano
        '(?To) Gianni, these things don't frighten him'

But can e.g., *a* in (11) be analyzed in this way? if this were the case, one would expect the markers to admit (or even require) reduplication in case of conjoined foci, which in fact is not possible, whereas the uniqueness of the marker follows directly from Durrleman's analysis:

(16)a   A   di bwai an di gyal   mi si   lass nait
        'Foc the boy and the girl   I   saw last night'

b * A   di bwai an   a   di gyal   mi si laas nait
      'Foc the boy and Foc the girl I saw last night'

On the other hand, in case of the a-topic in Italian it is very plausible that *a* (corresponding to the preposition marking dative) forms a genuine PP with the topicalized DP; and in fact repetition of *a* in case of conjoined topic is possible (and even favored to my ears):

(17) ? A Gianni e a Piero, queste cose non li spaventano
      'To Gianni and to Piero, these things do not frighten them'

In fact, languages may opt for one or the other way of marking topics and foci, criterial head in the clausal spine and DP-internal marker. For instance, Durrleman argues that the topic marker in JC is expressed by the particle *de* (there), and that it is DP internal.

(18) [da   bwaai de],   mi laik im
        that boy [loc]   I   like him
        'A for that boy, I like him'

And in fact, in this case, the marker is replicated with conjoined topics:

(19)   Da pikni de, da buk de, dem piipl de, mi no wahn ha notn muo fi du wid dem!
     'As for that child, that book and those people, I don't want to have anything more to do with them!'

In conclusion, one should look at the language internal evidence to adjudicate between the two options, head of the clausal spine or DP-internal marker.

What is clear is that some cases do exist in which the markers must clearly be analyzed as DP-external heads belonging to the clausal spine, and this is enough to support the complex functional sequence that the criterial approach assumes.

3.1. Inversion of particle order yà … wè → wè yà in certain yes-no questions in Gungbe.

(20) Normal order Top Foc in Gungbe: Top …. Foc

a.   Kòfí yà   gànkpá mè wè   kpònòn lé   sú - ì   dó
     Kofi Top prison in Foc   policeman Num shut-Perf-3sg   Loc
     'As for Kofi, the policemen put him IN PRISON'
b.   *gànkpá mè wè Kòfí yà   kpònòn   lé   sú- ì   dó
     prison   in Foc Kofi Top   policeman Num shut-Perf-3sg   Loc

Special orders in yes-no questions:

(21) yes-no question is marked by a low tone on final word. In closely related Fongbe there is an overt clause final marker *a*.
Aboh (2004): IP moves to the spec of Spec Int, which determines special final tone:

a. Kòfí dù nú
   Kofi eat-Perf thing
   'Kofi ate'
b. Kòfí dù nû ?
   Kofi eat-Perf thing-QM
   'Did Kofi eat?'

(21) yes/no questions may end with focus, topic, or focus-topic marker, with final low tone manifesting Int:

a. Kòfí dù nú wɛ̀ ?
   Kofi eat-Perf thing Foc-QM
   'DID KOFI EAT?'
b. Kòfí dù nú yǎ ?
   Kofi eat-Perf thing Top-QM
   'Did Kofi eat [as it was planned]?'

c. Kòfí dù nú wè yǎ ?
   Kofi eat-Perf thing Foc Top-QM
   'DID KOFI EAT?' (as it was planned)
d. ùn kànbíɔ́ dɔ̀ Kòfí dù nú wè yǎ ?
   1sg ask-Perf that Kofi eat-Perf thing Foc Top-QM
   'I asked whether KOFI ATE [as it was planned]'

Aboh analyzes (15)a as an emphatic yes-no question, and (15)b as a kind of D-linked yes-no question, and (15)d has both emphatic and D-linked interpretive properties.

How does one get the reversal of ordinary yà – we order ? Aboh (2004): through roll-op movement.

(22)
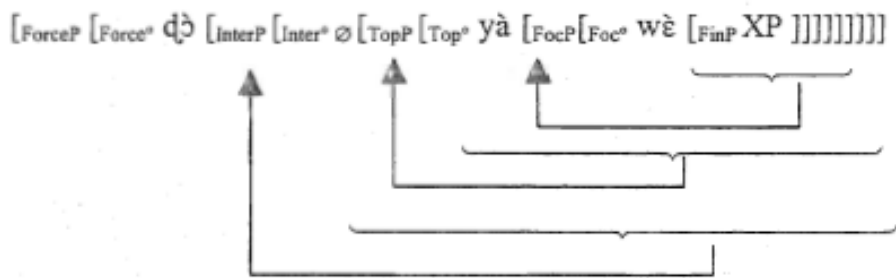
This possibility follows immediately from the derivational mechanism if Top, Foc are part of the clausal spine. If they were case-like phrase internal elements, there would be no natural way of predicting the reversal that one observes in this case.

(23) This construction raises many interesting questions, e.g.,
   - Why does it concern yes-no questions, not declaratives?
   - Why does it concern clauses, not DP's?

(24) As for the first question, one may think that the Q feature, presumably expressed on the highest sentential head makes the finite clause nominal enough to undergo processes typically characteristic of the nominal system.

(25) As for the second, perhaps roll-up movement cannot apply to nominal expressions because DP Foc does not form a constituent, whereas IP Foc forms a constituent (in fact, IP Foc __). So the limitation to clauses may also follow from the phrase-external character of the markers.

4. Interface properties of Top and Foc

(27)   [   ] Top   [   ]
           "Topic"   "Comment"

(28)   [   ] Foc   [   ]
           "Focus"   "Presupposition"

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, which make it possible to precisely express the appropriateness conditions. The identification of a clear repertoire of such discourse fragments is essential to compare discourse properties of left-peripheral elements across languages. E.g., a left-peripheral topic picks out a presupposed referent (in a sense that will be made more precise later) and makes a comment about it in discourse fragments like the following:

(29)   A: Secondo me non avranno mai il coraggio di partire da soli per le Maldive...
                'According to me, they will never have the courage of traveling alone to the Maldives…'

        B: Beh,   alle Maldive, ci sono andati in viaggio di nozze.
                'Well, to the Maldives, they went (there) on honeymoon.'

(30) Topic – Comment   (G. Bocci: see Bocci 2013, Rizzi & Bocci 2016 for discussion)
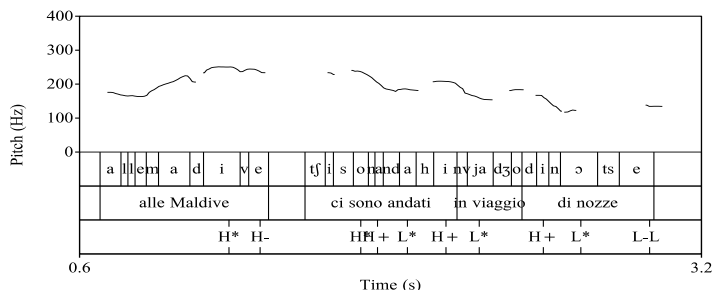

Figure (30) shows the pitch contour of the clitic-left dislocated structure. The topic is phrased as an independent prosodic constituent and bears a prominent H* pitch accent. Crucially, however, the comment of the sentence is not realized with a low and flat pitch contour as the presupposition in fig. (32) in a Focus – presupposition articulation. Unlike the presupposition, the comment is assigned full-fledged pitch accents and its rightmost constituent bears a nuclear pitch accent.

A left peripheral corrective focus singles out a piece of information attributed to the interlocutor (typically expressed by the interlocutor in the immediate discourse context) and corrects it.

(31) 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!'

(32)   (Corrective) Focus – Presupposition   (from Bianchi, Bocci, Cruschina 2014)
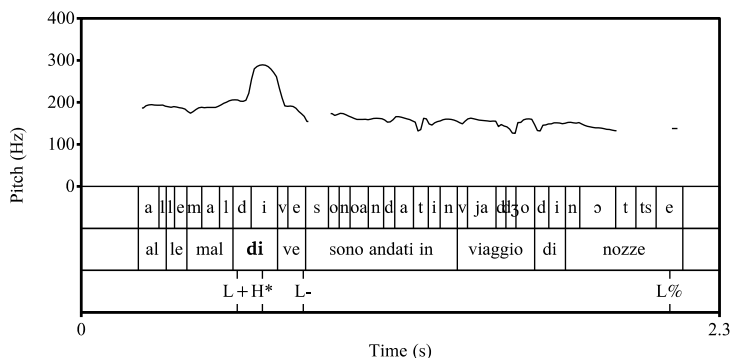

The focus element bears a prominent nuclear pitch accent and its right edge associates with a low phrase accent (L-), while the presupposition is realized with a low and flat contour or special compressed pitch accent. In Figure (32) the focus element is realized with a clear rise starting on the stressed syllable onset and culminating in a peak aligned within the stressed vowel. After the low phrase accent (i.e. L-) associated with the right edge of the focus constituent, no full-fledged pitch accent is visible on the presupposition.

A distinct kind of LP focus is mirative focus, which singles out a piece of information that is totally unexpected given the speaker's previous beliefs:

(33)   …E io che credevo che fossero dei poveracci! Figurati un po'...
       '…and I believed they were poor people! Can you imagine…

       ALLE MALDIVE sono andati in viaggio di nozze!
       'TO THE MALDIVES they went on honeymoon!

(34) Mirative focus (Bianchi, Bocci, Cruschina 2014):
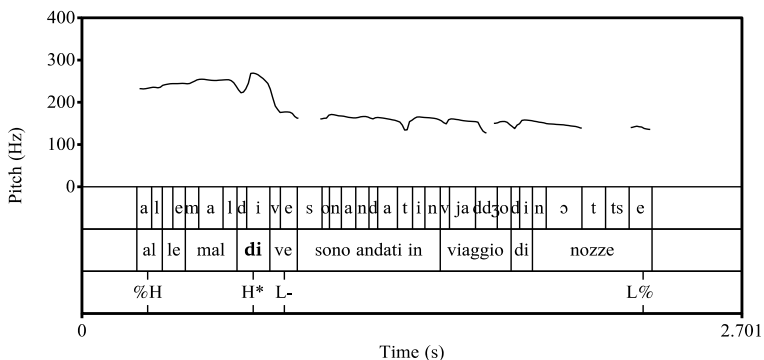
As illustrated in Figure (34), an initial focus endowed with the mirative import is realized with a high plateau that results from the interpolation between different tonal specifications: a high tone boundary (%H) associated with the left edged of the focus constituent and a nuclear H* pitch accent associated with the stressed syllable. The occurrence of the high boundary and the type of pitch accent associated with focus oppose mirative and corrective focus, as emerges from the comparison of figures (32) and (34).

New information focus does not allow movement to the LP in standard Italian (and many regional varieties), unless it can be contextually salvaged as a corrective or mirative focus:

(35) Q   Che libro hai comprato?
      'What book did you buy?'

   A   Ho comprato il libro di Gianni
       'I bought Gianni's book'

   A' # Il libro di Gianni, ho comprato
       'Gianni's book, I bought'

Belletti (2001, 2004): new information focus targets a low focus position in the vP periphery in standard Italian (but it may target a LP position in regional varieties such as Sicilian and Sardinian: Cruschina 2012).

5. 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 Abidji (Hager-Mboua 2014):

(23)   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'

(24)   kòfí **ɛ́kɛ́**   òkókò ɛ́   **ɛ́kɛ́**   è pìpjé nì.
     Kofi TOP   banana DEF TOP   ASPpeel RES PRON
     'Kofi, the banana, he peeled it.'

But multiple left-peripheral (corrective) focus seems to be systematically proscribed:

(25) Italian: * A MARIA (,) IL TUO LIBRO   devi dare (non a Giulia, il disco)
              'To Maria   your book   you should give, not to Giulia the record'   (Rizzi 1997)

(26) English: * TO MARY (,) YOUR BOOK you should give (not to Julie, the record)

(27) (E)Armenian: * YEREK   SALORN ê SiranƏ kerel   (Giorgi & Haroutyunian 2016)
               'YESTERDAY   THE PLUM has Siran eaten'

(28) Hungarian: * EMÖKE   ATTILÁVAL   beszélt
             Emöke-NOM Attila-INSTR talk-PAST-3SG   (Puskas 2000: 83)

(29) Hebrew: * le Maria (,) et ha sefer Sel-xa kedai Se titen (lo le Giulia et ha qaletet)
                        to M. acc the book of-2ms worthwhile that (you) give (not to G. acc the DVD)
                                                                    (U. Shlonsky, p.c.. See also Shlonsky 2015)

(30) Jamaican: * A di bami   a di pikni   im gi
                        The bammy   the child   he give   (Durrleman 2008:75)

(31) Gungbe: * wémà lɔ **wɛ** Sɛna **wɛ** zé
                        THE BOOK   SENA   took   (Aboh 2004)

(32) Abiji: * òkókò$_i$ ɛ́   **bɛ́** kòfí$_j$ **bɛ́** ___   pìpjé ___
                        banana$_i$ Def. Foc Kofi$_j$ Foc ___   peel.RES ___
                        « THE BANANA, KOFI ___ peeled ___ »   (Hager-Mboua 2014)

In languages with overt focus markers, the uniqueness of LP focus is very easy to check: only one LP focus marker can occur in a clause.

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

Consider the following discourse fragment in which a multiple corrective focus could arise, but never is well formed. I may want to correct two elements in a statement produced by my interlocutor, but I cannot do so in a single clause with two corrective foci:

(33)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:

(34)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'

Rizzi (1997): Uniqueness of LP focus follows from the interpretive properties of the structure: 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 (35)), a presupposition according to (34), contains a focus position, an inconsistent interpretive property.

(34)   [   ] Foc [   ]
            "Focus"   "Presupposition"

(35) * [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 is that it must contain new information, but this is consistent with a (reiterated) topic – comment structure.

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

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

In Italian, a single LP focus can appear in complex sentences:

(67)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 ILTUO LIBRO dovremmo leggere __, non a Piero, quello di Franco
        'TO GIANNI I said that YOUR BOOK we should read, not to Piero, Franco's'

Rizzi (1997, fn.15): this follows from (56). The LP focus in the lower clause is part of the presupposition. of the higher focus, therefore a clash arises also when the two foci are not in the same LP.

But if two LP foci in the same clause are systematically banned across languages, the co-occurrence of LP foci in different clauses is clearly permitted in some languages, e.g., Gungbe (Aboh 2004):

(68)a Sena **wɛ** __ sè   ɖɔ Remi **wɛ** __   zé   hi lɔ
        Sena Foc   hear-Perf   that Remi Foc __   take-Perf knife +def
        'SENA heard that REMI took the knife'

b Sena **wɛ** __ sè ɖɔ hi lɔ **wɛ** Remi zé __
  Sena Foc   hear-Perf that   knife +def Foc   Remi take+perf
  'SENA heard that Remi took THE KNIFE'

One could imagine that the computation of the presupposition is parametrized, perhaps along the following lines:

(69) the presupposition associated to Foc may be

    i. Local: the simple clause c-commanded by Foc (Gungbe)

    ii. Non-local: the whole complex sentence c-commanded by Foc (Italian)

But this approach seems to raise learnability issues: how would the language learner come to determine the language-specific parametric value? A more promising avenue would be to try to connect the observed difference to another salient different between the two languages. A clear difference exists at the PF interface.

(70) In Italian, a double LP focus may be inconsistent with the specific contour assigned to such structures (as in (32)): the obligatory flattening of the contour in the complement of Foc may be inconsistent with the assignment of another high focal prominence. This is not an obvious assumption (see Bocci 2013 for discussion), but it seems to be intuitively plausible, so I will pursue this possibility here.

(32)
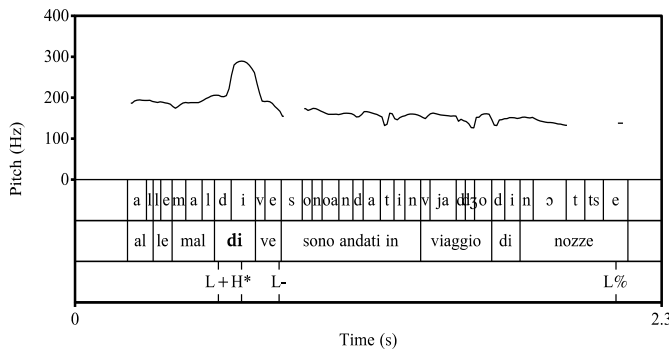
(71) "…no stress mechanism arises in the Gungbe focus strategy. Focusing is realized only through movement of the focused element to the left-adjacent position to **wɛ**…"   (Aboh 2004: 238)

So, these considerations suggest the following picture. The theoretical structure includes

(72)
    I.   A PRINCIPLE concerning LF: the presupposition associated to Foc necessarily includes the minimal clause c-commanded by Foc.

    II. A PARAMETER concerning PF: a language may assign special prosody to Foc structures.

(73) So, the system may work as follows:

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a. The calculation of the presupposition at LF is not parametrized, and is **local**: the presupposition necessarily includes the **immediate clause** under consideration. This captures the general incompatibility of two foci in the same clause.

b. The special contour assignment at PF to focus-presupposition is language-specific, as in (32). This captures the non-local constraint against two foci in languages like Italian

c. If a language does not have special PF requirements, like Gungbe, it is solely constrained by principle (72)a, which precludes local focus recursion, but not focus occurrence in different clauses.

Evidence for the local character in the calculation of the presupposition:

(74)A Dopo due ore di riunione, Maria ha detto che si doveva finire
   'After two hours of meeting, Maria said that we should finish'

   B. Ricordi male! GIANNI ha detto che si doveva finire, non Maria!
    'You don't remember well! GIANNI said that we should finish, not Maria!

   C. Ricordi male! GIANNI ha detto qualcosa, non Maria; e poi mi sembra che abbia semplicemente detto che voleva fare una pausa
    'You don't remember well! GIANNI said something, not Maria! Moreover, I think he simply said that he wanted to make a break.'

   D. # Ricordi male! GIANNI è andato via, non Maria!
    'You don't remember well! GIANNI went away, not Maria!

As (74)C sounds felicitous, it shows that the presupposition does not have to penetrate the embedded clause, as in (7)B; but the local predicate cannot easily be changed, as the dubious appropriateness of (73)D suggests.

This division of labor probably is not accidental: we expect few (if any) forms of parametrizatrion at LF, as the evidence to fix LF parameters would be scarce, whereas we expect parametrisation to be possible and normal at PF, where the evidence to fix a PF parameter would be abundant.

(75) Could the local character of the calculation of the presupposition be connected to the phasal architecture? One could speculate that the calculation necessarily involves the material of the current phase, and could optionally involve lower phases (which remain visible under an approach like Chomsky, Gallego & Ott 2017).

NB: If there are CP and vP phases, this requires a view of phase impenetrability à la Chomsky 2001, according to which when a phase head introduced, the system sees the material of two adjacent phases (CP and vP in this case), not just one. Or some mechanism of "phase sliding" (Gallego 2010) should be assumed.
Anyway, the fact of the matter is that corrective focus requires at least a minimal presupposition, the presupposition is clausal, so the minimal presupposition is the minimal clause where Foc occurs.

7. The ban against double topics: English vs Italian, and the relevance of locality.

The theory of locality can capture certain cross-linguistic differences in the organization of the sequence (Abels 2012, Haegeman 2012 , Rizzi 2013). English contrasts with Italian (and other Romance languages) in not allowing more than one topic DP:

(43)   A Gianni, la tua macchina, gliela darò domani
        'To Gianni, your car, I will it-to-him give tomorrow'

(44)a *? To Gianni, your car, I will give __ __ tomorrow
    b * Gianni, your car, I will give __ to __ tomorrow

(45)   Gianni, la tua macchina, lo ho convinto a comprarla
        'Gianni, your car, I him convinced to buy-it'

(46)a   John, I convinced ___ to buy your car
     b Your car, I convinced John to buy ___
     c * John, your car, I convinced ___ to buy ___

Similarly, for subject topicalisation

(48) Gianni, Maria, credo che *pro* pensi che *pro* vincerà la gara
      'Gianni, Maria, I believe that pro thinks that pro will win the race

(49)a John, I believe Mary thinks __ will win the race
     b Mary, I believe __ thinks John will win the race
     c * John, Mary, I believe __ thinks __ will win the race

This difference may be amenable to an independent difference between the topic constructions in the two languages and the theory of locality. In Italian, an object Topic is obligatorily resumed by a clitic (Clitic Left Dislocation):

(50) La tua macchina, *(la) comprerò ___ l'anno prossimo
      'Your car, I it-will-buy ___ next year'

Cinque (1990): clitic resumption is obligatory because otherwise a gap not bound clause-internally would be interpreted as a variable, and the topic, *per se*, is not an operator, hence a variable remains unbound in (50).

English has no clitics, so the language uses a null operator to connect the topic and the gap (Cinque 1990, based on Chomsky 1977):

(51)   Your car, Op   I will buy ___ next year

Null operators clearly are a grammatical options, used by many languages in such constructions as relatives, easy to please, parasitic gaps, etc., e.g. in French relatives:

(52) Pierre, Op que tu connais très bien __, est mon meilleur ami
       'Pierre, whom you know very well, is my best friend'

The operator, a kind of functional equivalent of the clitic, is null in English topicalization, but may optionally be overt in other closely related languages, like Dutch (Koster 1978):

(53) Die man, (die)   ken   ik __
       'That man, (whom) know I'

A well-known locality effect is that an element cannot move across another element of the same kind, for instance a wh-operator across another wh-operator:

(54)a   What do you think **John** said __?

   b * What do you wonder **who** said __?

(55) Relativized Minimality: in configuration   … X … Z … Y … a local relation between X and Y cannot hold if Z intervenes, and Z is of the same type as X.   (Rizzi 1990, 2004, 2014)

Under this analysis, a representation with a double topic in English would involve an Op crossing another Op, a violation of Relativized Minimality, as in (56). The Italian/Romance construction involves no Op, so a configuration with multiple topics does not violate RM:

(56) * John **Op**,   your car **Op**, I convinced ___ to buy ___

It is not the case that English systematically disallows multiple movements to the LP. A topic can co-occur with a preposed adverbial PP:

(57)   Words like that**,** in front of my mother, I would never say __ __ (I. Roberts, p.c.)

Here presumably the adverbial PP can target the Mod(ifier) layer dedicated to adverb preposing, and different from the genuine topic position:

(58)a   John rapidly left the room
    b   Rapidly, John left the room

among many other distinguishing properties, preposed adverbials alleviate that-trace effects (Bresnan 1977), whereas genuine topics do not:

(59)a * This is the man who I think that __ will buy my house next year

    b   This is the man who I think that next year, __ will buy my house

    c * This is the man who I think that my house, __ will buy__ next year

If adverbial phrases (including adverbial PP's) can selectively target Mod, the representation of (57) is

(60)   Words like that **Op,** in front of my mother **Mod** I would never say __ __

In which RM is not violated (Op and Mod belong to different feature classes, in terms of the system of featural RM in Rizzi 2004).

In fact, "in front of my mother" has the same alleviating effect for that-trace that adverbial have:

(61) Here is the man who I think that, in front of my mother, __ would never say words like that

Haegeman (2003) has showed that the adverb effect only arises if the adverb is moved clause-internally: an adverbial like *next year* can be extracted from an embedded clause, as in (62)a, but in that case it does not alleviate a that-t violation:

(62)a   Next year, Paul says that Bill will sell his house
     b * This is the man who I think that, next year, ___ says Bill will sell his house

Presumably in cases of extraction like (62)a-b the adverb is not preposed to Mod, a process which is clause-bound (Rizzi 2004), and it must target a topic position (which is naturally accessible to a referential adverbial like *next year*), a position which is too high to give rise to the adverb effect, as we have seen in the case of (59)c.

8. Haegeman (2012) on topics in adverbial clauses.

Assuming Cinque's analysis, Haegeman (2012) traces to the same explanatory scheme another distributional differences between English and Italian topicalization. In Italian a topic structure is possible in various kinds of adverbial environments which disallow the construction in English, e.g., in temporal adverbial clauses:

(61) Quando gli esami di primo anno li hai superati __, ti puoi iscrivere al secondo anno.
     'When the first year exams you them have passed, you can register for the second year'

(62) * When the first year exams you have passed __, you can register for the second year

Then, Haegeman argues, if the subordinator *when* is moved from an IP internal position, it necessarily crosses the null operator associated to the topic; as *when* itself plausibly belongs to the class of operators, the derived configuration violates featural Relativized Minimality:

(62') * When$_{Op}$ the first year exams Op you __ have passed __ you can register for the second year
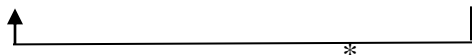
As the Italian topicalization construction involves no null operator, but only a topic (crucially, not a member of the operator class), no violation of locality arises in (61). So, another apparently unrelated distributional difference can be deductively connected to the fundamental difference between English and Italian topicalization, the involvement of a null operator in the former by not in the latter.

Again, Mod is different from Top, and is consistent with the adverbial clause context:

(63)   When, in a few years, Mary will apply for graduate school, she …

9. Locality would not be sufficient to rule out double focus

(64) * A MARIA, IL LIBRO devi dare __ __, non a Piero, il disco
    'TO MARIA, THE BOOK, you should give, not to Piero, the record

Certain PP's are base-generated in the LP (Reinhart 1982), where they "set the scene" for the state of affairs presented in the following clause:

(65)a   In this picture of John$_i$, he$_i$ looks sick

    b * In this picture of John$_i$, he$_i$ found a scratch

    b' * In this picture of John$_i$, he$_i$ found a scratch <in this picture of John$_i$ >

Let us now see what happens in constructions with scene-setting adverbials in case of corrective focalization. Double corrective focalization of the scene setting adverbial and of a clause-internal element is still excluded:

(66)a   NELLA FOTO, Gianni sembra il più alto, non nel ritratto
    'IN THE PICTURE Gianni looks the tallest one, not in the portrait'

    b   Nella foto, GIANNI sembra il più alto, non Piero
    'In the picture, GIANNI looks the tallest one, not Piero'

    c * NELLA FOTO   GIANNI sembra il più alto, non nel ritratto, Piero
    'IN THE PICTURE   GIANNI looks the tallest one, not in the portrait, Piero'

So, given a statement like (67)A, if the interlocutor disagrees both on who looks the tallest and in what image this happens, s/he will have to express his/her disagreement through two clauses, as in (67)B, while a single clause with two corrective foci, as in (67)c, is impossible:

(67) A: Nel ritratto, Piero sembra il più alto…
        'In the portrait, Piero seems the tallest one...'

    B: No, GIANNI sembra il più alto, non Piero; e NELLA FOTO si ha questa impressione, non nel ritratto.
        'No, GIANNI seems the tallest one, not Piero; and IN THE PICTURE one has this impression, not in the portrait'

If Reinhart's analysis is on the right track, the double focus in (66)c plausibly is not ruled out by locality:

(62)c' * NELLA FOTO Foc1   __ ... GIANNI Foc2 ...   __ sembra il più alto, non nel ritratto, Piero
    'IN THE PICTURE   GIANNI   looks the tallest, not in the portrait, Piero'

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