On Some Properties of Criterial Freezing

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1. Background

In an approach to syntax ruled by economy guidelines, it is natural to assume that movement is always motivated by the fulfillment of an interpretive requirement (Fox 1999, Reinhart 2006): there is no truly optional movement, and chains typically terminate in positions dedicated to particular interpretive properties. A'-chains fulfill these economy or "last resort" guidelines in a particularly transparent manner. They may be thought of as a device to assign two kinds of interpretive properties to a linguistic expression: *s-selectional* properties, or properties of semantic selection, typically theta role assignment for arguments; and *scope-discourse* properties (Chomsky 2000) such as the scope of an operator, and properties related to the informational structure and discourse articulation like topicality and focus. For instance, in a topicalisation structure like the following

(1) Your book, I intend to read next week

the expression *your book* must be interpreted as a thematic argument -- patient -- of the verb *read*, and as the topic of the clause. Natural languages typically assign this duality of interpretive properties to an expression by having the expression occur twice, in two positions dedicated to the assignment of such properties. This is the configuration traditionally referred to as "movement": the expression is inserted in the thematic position and then is moved to the scope-discourse position. In an approach reducing movement to internal merge, and adopting the copy theory of traces (Chomsky 1995, 2000), the element actually occurs twice in the two dedicated positions, both in the derivational history and in the derived representation.

How are "dedicated positions" expressed? As thematic assignment uncontroversially is a matter of a local relation between a head – the verb – and a local dependent, it seems reasonable to assume that also the other interpretive property, topicality, is determined by a head-dependent relation. So, one may think that there is a dedicated head in the left periphery of the clause, Top, which carries an explicit instruction for the interface systems of the kind: "my specifier is to be interpreted as a topic, and my complement as the comment", thus determining the topic-comment articulation (Rizzi 1997 and much related work), an assumption immediately supported by languages in which the Top head has an overt morphological realization (Aboh 2004). We thus end up with a complete representation for (1) like the following:

(2) Your book [Top [I intend to read <your book> next week]]

with the trace expressed as an occurrence within angled brackets, left unpronounced at

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PF but visible and interpreted at LF. I will continue to call the scope-discourse positions "criterial positions", assuming a family of functional heads Top, Foc, Q, Rel, etc. which attract a phrase to their Spec and carry explicit interface instructions of the kind that we have just informally characterized for topics. A "Criterion" (Topic Criterion, Focus Criterion, etc.) is the requirement demanding the creation of a local Spec-head configuration which is then passed on to the interface systems where the relevant interpretive instruction is triggered (see Rizzi 1996, 1997). Thus, the backbone of an A'- chain consists of these two positions which are of immediate relevance for the interpretive systems:

(3) …… ___ X_{Crit} …… ___ $X_{s\text{-}sel}$ ……

This configuration may extend to other kinds of chains: it is proposed in Rizzi (2005, 2006), Rizzi & Shlonsky (2007) that it may be desirable to analyze along such lines the core cases of A-chains, those which terminate in subject position (see below). As for head chains, while a major line of analysis (Pollock 1989) looks at the interface with morphology as the cause of movement, another traditional line (Den Besten 1983, Koster 2003) looks at certain cases of head movement as required for the proper assignment of scope properties, hence essentially assimilating head movement to a generalization of (3). Here I will not address the issues raised by these two, not necessarily incompatible, lines of inquiry, and will focus on phrasal movement starting from the A'-case.

2. On delimiting chains: S-selectional Merge and Criterial Freezing

In Rizzi (2006) it is argued that the two special positions in (3) also have two critical properties:

- they are unique;
- they delimit the chain

So, there is no more than one position of each kind per chain; and the two positions have a delimiting role, in that the chain includes no position lower than the S-selectional position, and no position higher than the Criterial position. On the other hand, the chain typically includes intermediate positions connecting the two interpretively crucial slots, a consequence of the fact that movement (internal merge) is constrained by locality principles.

It is quite generally assumed (even though the point is not uncontroversial) that an element must be externally merged in an S-selection position, and S-selectional properties cannot be "picked up" by movement.

As an illustration in the A' system, consider the following pair in German:

(4)a Wann hat Maria gesagt, dass Peter weggegangen war? (ambiguous)
'When has Maria said that Peter left had?'

b Wann hat Maria gesagt,__ war Peter weggegangen? (only lower construal)
'When has Maria said had Peter left?'

Example (4)a is ambiguous as its English counterpart, with the Wh operator *Wann*

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interpretable either as construed with the main clause (we ask about the time of Mary's saying something) or the embedded clause (we ask about the time of Peter's leaving). On the other hand (4)b is non ambiguous, the lower construal being the only admitted one; here *Wann* has been extracted from the lower clause, as is shown by the verb initial structure, which indicates that V-2 has been activated in the embedded clause: evidently, *Wann* moved to a Spec in the embedded C system where it satisfied V-2, and then successive cyclically to the main C system. The fact that only the lower interpretive construal is admitted follows if an element cannot be externally merged to satisfy some formal requirement (e.g. the V-2 constraint) and then "pick up" an S-selectional property (such as a theta role, or its equivalent for a temporal adverbial, plausibly in a local configuration with T as in Cinque (1999)) via internal merge, or movement. See Chomsky (2000) for a similar argument for A-chains. In other words, a principle like the following seems to hold (a slight generalisation of the principle assumed in Chomsky (2000: 103)):

(5) S-selectional Merge: S-selection is fulfilled by external merge.

This principle amounts to the assumption that the Theta-criterion applies at D-structure (as in classical GB: Chomsky 1981), translated into a system without a distinct level of representation like D-structure. S-selectional merge essentially claims that the satisfaction of S-selectional properties must be extremely local: the computation aimed at satisfying S-selection can only look at elements in the lexical array, or at whole expressions already built by merge and available in the computational space (e.g., a structurally complex subject which is externally merged with its Th-assigning vP, etc.), but does not allow any probe-goal search within the structures of the kind that formal features typically allow.

The connection between the S-selectional position and the Criterial position is normally ensured by successive applications of movement. Movement is local, and there is no way to guarantee that the Criterial position will be close enough to the S-selection position to relate them via a single application of move, so that the connection will normally be ensured via successive local applications of move (move, as a subcase of merge, is recursive, hence it can typically reapply on its own output).
What about the Criterial position? Building on much previous work going back at least to Lasnik & Saito (1984, 1992), Rizzi (2006) argues that there is a principle of Criterial Freezing, having the effect of terminating the chain as soon as the first Criterial positionis reached:

(6) Criterial Freezing (I version): A phrase meeting a Criterion is frozen in place.

So, the idea is that there is a kind of earliness principle, in Pesetsky's sense, which makes an expression available to the interface systems as soon as the expression reaches a scope-discourse position.

The most immediate kind of evidence for Criterial Freezing, dating back to Lasnik & Saito, op.cit.), is that a wh phrase satisfying the Q Criterion in an embedded interrogative cannot continue to the main complementizer:

(7) a Bill wonders [which candidate Q [you voted for t]]
b * Which candidate does Bill wonder [t' Q [you voted for t]]

While this case could be independently excluded as a violation of some interpretive

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principle (it's hard to come up with a sensible logical form for this structure), other cases discussed in Rizzi (2006) seem to require a syntactic principle like (6). Consider for instance a case in which the wh phrase is complex, and a subconstituent of it is contrastively focused, as the PP *di Gianni* in the following Italian example:

(8) Non sapevo [[quale libro DI GIANNI] Q avessi scelto t], (non di Piero)
'I didn't know which book BY GIANNI you had selected, not by Piero'

Here it is possible to subextract the focused PP *DI GIANNI* and move it to the left peripheral focus position of the main clause, but the whole phrase *quale libro DI GIANNI* cannot be moved:

(9) a DI GIANNI Foc non sapevo [[quale libro t] Q avessi scelto t]], (non di Piero)
'BY GIANNI I didn't know which book you had selected, not by Piero'

b *[Quale libro DI GIANNI] Foc non sapevo [t Q [avessi scelto t]], (non di Piero)
'Which book BY GIANNI I didn't know you had selected, not by Piero'

Sentence (9)b is completely excluded in spite of the fact that a focused PP is normally able to pied-pipe a larger DP to the main clause focus position, in cases like

(10) [Tre libri DI GIANNI] Foc pensavo [che avessi scelto t], non di Piero
'Three books BY GIANNI I thought you had selected, not by Piero'

Here there is no obvious interpretive problem: (9)b would presumably have the interpretation of (8) or (9)a, with the wh phrase reconstructed in the embedded C (actually, under the copy theory of traces, t in the Spec of Q already contains all the relevant information). Still (9)b is severely ill-formed. This seems to justify the postulation of a formal principle like (6).
Notice that the formulation of Criterial Freezing expressed in (6) seems to be too restrictive: the possibility of (9)a suggests that subextraction from the complex phrase satisfying the Q criterion is possible. That in this case we have genuine subextraction, and not a looser construal between an independently generated genitive phrase and a DP, as is often proposed for similar cases, is suggested by the fact that the example significantly degrades if the phrase satisfying the Q criterion is a PP, rather than a DP:

(11) a Non sapevo [[con quale libro DI GIANNI] Q [fossi partito], (non di Piero)
'I didn't know with which book BY GIANNI you had left, not by Piero'

b * DI GIANNI Foc non sapevo [[con quale libro t] Q [fossi partito]], …
'BY GIANNI I didn't know with which book you had left,…'

The contrast between (9)a and (11)b can be attributed to the islandhood of PP's, or to a kind of A-over-A effect (Kayne 1975 on similar cases in French), if we have genuine subextraction.

But if there is subextraction in cases like (9)a, we must conclude that Criterial Freezing does not freeze the whole phrase satisfying a criterion: the freezing effect must be restricted to the carrier of the relevant criterial feature, *quale* in (9).

Let us then adapt Chomsky's (2000) terminology to our case, and say that a

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Criterial Probe, a left-peripheral head endowed with a criterial feature, looks for a Criterial Goal, an element carrying the same feature and which will ultimately be attracted to the Spec of the Criterial Probe:

(12) ….. Q ……. [$_M$ …… quale …….]
Crit. Probe Crit. Goal

Once an agree relation is established between these two elements, the principles of Pied- piping determine which phrase M containing the Criterial Goal can be internally merged as the specifier of the Criterial Probe, and internal merge takes place, yielding a structure like the following:

(13) [$_M$ …… quale …….] Q ……. t …….
Crit. Goal Crit. Probe

We can now state Criterial Freezing as follows:

(14) Criterial Freezing (final): In a criterial configuration, the Criterial Goal is frozen in place.

So, in the criterial configuration, only the element carrying the crucial feature is frozen in place, while the other elements of the phrase pied-piped to the Spec of the Criterial Probe remain available for movement, and can be subextracted, if no other syntactic principle is violated, as in (9)a.

One can thus see in what sense Criterial Freezing can be construed as an economy principle. In a structures like (9) the interpretive requirements of the embedded C marked with a Q feature could in principle be fulfilled directly, as in (9)a, or indirectly, under reconstruction of the wh phrase moved to the main C system, as in (9)b; in fact, under the copy theory of traces all the relevant information would be locally available in the embedded C system:

(9)b *[Quale libro DI GIANNI] Foc non sapevo [<quale libro DI GIANNI>] Q [avessi...]]

and the appropriate logical form would be derivable by LF adjustment processes (deletion of some occurrences) which the copy theory of traces seems to require anyhow (Fox 1999).
Criterial Freezing rules out this derivational possibility by blocking pied-piping in this case, thus making the scope relations transparent on the surface order, and reconstruction or LF adjustment unnecessary (and impossible) in this case. In fact, as Valentina Bianchi (p.c.) has suggested, one kind of functional motivation of Criterial Freezing may consist precisely in the fact that it reduces LF computation by making a criterial requirement unsatisfiable through reconstruction.

3. Freezing Effects on LF movement

Boskovic (2005) observes that the freezing effects (which he refers to as "scope freezing") may extend to LF movement. He analyzes in this manner the observation due to Lasnik & Saito (1984, 1992) that in a multiple wh construction in English the

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second wh phrase cannot undergo topicalisation:

(15) a Who thinks that Mary hates which problem?

b * Who thinks that which problem, Mary hates t?

c Who thinks that this problem, Mary hates t?

If the wh phrase *which problem* is topicalized in the embedded clause, by Criterial Freezing it becomes unavailable to further movement; if this prohibition extends to covert LF movement, the impossibility of (15)b follows from the fact that further covert movement of *which problem*, necessary for the interpretation of the multiple question, is blocked here. The freezing analysis advantageously replaces the proposal in Rizzi 1996, 70ff., for such examples, in that it can dispense with the functional definition of operator assumed in that analysis. Some additional facts discussed in this connection in Rizzi (op.cit.. p. 71ff.) follow from the freezing approach.

First, the observation that the second element of a multiple wh question in German cannot undergo "long scrambling" (scrambling to a position preceding the subject), as pointed out by Grewendorf & Sternefeld (1990):

(16) a Warum hat Peter dieses / welches Buch gekauft?
'Why has Peter this / which book bought?'

b Warum hat dieses /*?welches Buch Peter gekauft?
'Why has this / which book Peter bought?'

If long scrambling involves movement to a topic-like Criterial position, the effect follows from the freezing approach.

Second, in French a quantifier like *beaucoup* (a lot) can be merged as the specifier of the direct object, or in an IP internal adverbial position from which it can "quantify at a distance" over the object (Obenauer 1977, 1994):

(17) a Il a mangé beaucoup de gâteaux
'He has eaten a lot of cakes'

b Il a beaucoup mangé de gâteaux
'He has a lot eaten of cakes'

As Obenauer notes, *combien* (how much/many) *in situ*, in a language normally allowing *wh in situ* as colloquial French, is possible in the first case, but not in the second:

(18) a Il a mangé combien de gâteaux ?
'He has eaten how much/many of cakes ?'

b * Il a combien mangé de gâteaux ?
'He has how much eaten of cakes ?'

If, as Laenzlinger (1998) proposes, adverbial *beaucoup* appears in (17)b in an IP-

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internal Criterial position expressing its scope as a quantificational element, the ill-formedness of (18)b follows from the freezing effect at LF: *beaucoup* should reach by covert movement a left-peripheral Q position, but it is frozen in its IP internal position. No problem arises in (18)a as *combien* is allowed to undergo covert movement from the Spec of the direct object, not a Criterial position (or, possibly, it can covertly pied-pipe the whole direct object).

Analogous (if weaker) contrasts are detectable with the well-known *ne-personne* construction in French, originally discussed by Kayne 1984, ch. 2. If *ne* acts as a scope- marker of *personne*, overtly marking the clause over which it has scope, *ne* can cooccur with *personne* in situ in an argument position of a lower clause, as in (19)b (for speakers for whom the scope of this kind of quantifier is not strictly clause-bound), but not with *personne* preposed to the left periphery (presumably to a focus position) in the lower clause, as in (20)b:

(19) a J'exige que tu ne parles à personne de cela
'I demand that you ne speak to no one of this'

b Je n'exige que tu parles à personne de cela
'I ne demand that you speak to no one of this'

(20) a J'exige qu'à personne tu ne parles de cela
'I demand that to no one you ne speak'

b ?? Je n'exige qu'à personne tu parles de cela
'I ne demand that to no one you speak'

The same kind of explanation can be adopted: *à personne* in the focus position of the embedded clause, cannot reach a scope position in the left periphery of the main clause via covert movement because of Criterial Freezing. Kayne's original examples, involving personne in an embedded subject position, also follow from the combined effect of the Subject Criterion and Criterial Freezing[1].

4. The Subject Criterion

Movement to the subject position has interpretive consequences: the argument selected as the subject is the starting point in the description of the event, which is presented as "being about" the selected argument. So, for instance, an active and a passive sentence

[1] Boskovic proposes that the freezing effects may be derived from inactivation, essentially modeling the analysis on Chomsky's approach to A chains. In this system, a DP is made "active" for A-movement by its uninterpretable Case feature; If the DP has its Case feature checked it gets "inactivated", and cannot undergo further A movement. A' freezing can be though of along the same lines, Boskovic argues, if A' moved elements are made active by an uninterpretable Operator feature (the A' equivalent of a Case feature). Once the Operator feature is checked, e.g. in the C system of an indirect question such as (7)a, the wh element gets inactivated and cannot undergo further A'movement. But the inactivation approach does not seem to be sufficient to deal with more complex cases such as (9)b, in which two distinct Criterial features (hence, presumably two distinct Operator features) are involved: once the operator feature going with the wh element is checked in (8), the focused element should still contain an operator feature making its carrier active and capable of pied piping the whole phrase. While there are imaginable ways to refine the inactivation idea, for instance by sharpening the principles permitting pied piping, here I will not pursue this possibility and will continue to assume Criterial Freezing as an independent syntactic principle.

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differ in that the agent or the patient are selected as the argument about which the event is presented. (21)a presents the event as being about an old man, and (21)b as being about a boy:

(21) a Un vecchio ha insultato un ragazzo
'An old man insulted a boy'

b Un ragazzo è stato insultato da un vecchio
'A boy was insulted by an old man'

The choice has consequences for the discourse structure. For instance, in a null subject language, the null pronominal subject of the following sentence in discourse is anaphoric to the aboutness subject, and cannot refer to the VP internal argument: the person who left is understood as the old man if (22) is uttered after (21)a, and as the boy if (22) is uttered after (21)b (as originally observed in Calabrese (1986), where the notion "Thema" is used for the aboutness subject):

(22) Poi, *pro* se n'è andato
'Then ___ left'

Psych-verbs show that the relevant notion of subject here is indeed the aboutness subject, not the one defined by the morphosyntactic activation of the Case-agreement system.
With verbs of the *piacere* (please) class in Italian, both orders Experiencer V Theme and Theme V Experiencer are possible, as in (23)a-b), and there are good reasons to assume (Belletti & Rizzi 1988, Cardinaletti 2004) that the dative experiencer can behave as a "quirky subject" in structures like (23)a:

(23) a A Gianni piaceva Maria
'To Gianni pleased Mary'

b Maria piaceva a Gianni
'Maria pleased to Gianni'

On the other hand, whatever order is selected, the verb always agrees is with the (nominative marked) theme, as is shown by the plural marking on the verb in examples like *A Gianni piacevano queste idee* 'To Gianni pleased-Pl these ideas). So, in these cases we get a clear dissociation between the element involved in the Case-agreement system (always the theme) and the aboutness subject, which depends on the selected word order.

Here *pro* in a following sentence always picks out the subject of predication, not the argument triggering the Case-agreement system, as is illustrated by the following discourse fragments. In (24)II the subject of *want* is necessarily understood as Gianni, in (25) II it is understood as Maria:

(24) I A Gianni piaceva Maria
'To Gianni pleased Mary'

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II … però *pro* non lo voleva ammettere
'…but ___ didn't want to admit it' (Gianni didn't want to admit it)

(25) I Maria piaceva a Gianni
'Maria pleased to Gianni'

II …però *pro* non lo voleva ammettere
'…but ___ didn't want to admit it' (Maria didn't want to admit it)

Therefore, the choice of the aboutness subject has interpretive consequences which affect referential dependencies in the following discourse structure.

Rizzi (2005, 2006) and Rizzi & Shlonsky (2007), building on Cardinaletti (2004), assume that this interpretive property is expressed in the format of the Criteria. There is a functional head Subj in the functional structure of the sentence (possibly overtly realized as a subject clitic in some languages such as the Northern Italian dialects) which carries an explicit interpretive instruction at the interface:

(26) [XP [Subj YP]]: YP "is about" XP

Syntactically, Subj is part of the obligatory backbone of the functional structure of the sentence, so the EPP in the traditional GB sense ("clauses must have subjects") amounts to the obligatoriness of Subj in the clause structure, on a par with the obligatoriness of T and other functional heads.

Subj, a nominal head (possibly D, as is transparently suggested by the formal similarity between determiners and subject clitics in the Northern Italian dialects, as pointed out by M.R. Manzini, see Manzini & Savoia 2005) attracts a nominal constituent to its specifier. The locality conditions on subject chains are notoriously very strong: basically, the closest nominal element gets attracted (in passive and psych-verb constructions like (23)b the theme can become the closest argument to Subj through some kind of VP-shell scrambling, a "smuggling" technique in the sense of Collins (2005)).

If there is a Subject Criterion specified along these lines, further movement of the subject will be prevented under Criterial Freezing. So, one gets an immediate explanation of the familiar subject-object asymmetries with respect to wh extraction:

(27) a * Who do you think [that [t Subj will come]]?

b Who do you think [that [Mary Subj will meet t]]?

In (27)a *who* moves to Spec-Subj of the embedded clause, and it is frozen there, so that further wh extraction is barred. Object extraction as in (27)b is freely available, as there is no object criterion. Criterial Freezing thus deals with the main empirical generalization expressed by the Empty Category Principle (ECP) of the classical GB framework. The ECP has no obvious status within the principled typology of UG principles proposed by Minimalism, as it is not straightforwardly amenable to either economy or interface requirements; moreover the class of "proper governors" licensing a trace in the ECP approach was never amenable to a natural characterization. A major effect of the ECP can thus be advantageously reduced to a principle with a clear economy flavor, as previously discussed.

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5. On certain subextractions from subjects

Subjects are harder to move than objects, but are not completely unmovable: natural languages invent strategies for subject extractions, some of which are illustrated in Rizzi & Shlonsky 2007. I will not review these strategies here. Rather, I will focus on one empirical argument favoring the freezing approach over the ECP approach, developing a suggestion due to Paul Hirtschbüler (p.c.).

In French, wh subject extraction gives rise to a strong ungrammaticality (unless one of the strategies referred to in the previous paragraph, such as the *que* > *qui* rule is used: see Rizzi & Shlonsky op. cit.):

(28) * Combien de personnes veux-tu [que [___ Subj viennent à ton anniversaire]] ?
'How many people do you want that come to your birthday ?'

Extraction of the whole subject DP in (28) gives rise to a straight violation of Criterial Freezing. There is another derivational option from the same lexical array, though. The wh operator *Combien* (how much/many) can be subextracted from the DP it modifies in certain positions: *combien* extraction is fully natural from object position, and at least marginally possible from subject position in cases like (29):

(29) ? 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 1984)

If (28) was ruled out by the absence of a proper governor for the subject trace, as in the ECP account, the specifier of the subject should also be non-properly governed, and (29) would be expected to be on a par with (28). But (29) is distinctly more acceptable then (28), its marginality being presumably related to the fact that *combien* extraction takes place from a left branch.

On the other hand, the criterial approach predicts the difference: (28) is a straight violation of Criterial Freezing, whereas in (29) the Criterial Goal of the Subject Criterion plausibly is the nominal part *de personnes*, also endowed with nominal and Phi features, whereas *combien* alone is not. So, the Criterial Goal remains in the criterial configuration in (29), and subextraction of *combien* does not incur a violation of Criterial Freezing, under the formulation in (14)[2].

A case which appears to be complementary to the French pattern is provided by certain observations of Menuzzi (2000) on Brazilian Portuguese (BP). Menuzzi argues that the distribution of floating quantifiers provides evidence that subjects are wh extracted from a position lower than the canonical subject position (in our terms, the Spec of Subj) in BP. Certain wh expressions can launch floated quantifiers in this language, which can surface in lower IP-internal positions, as in (30)a-b, but not in the subject position preceding the inflected verb, as in (30)c:

[2] That *combien* alone does not carry Phi features is shown by the fact that, when subextracted from the direct object, is unable to trigger past participle agreement (Rizzi 1990):
(i) Combien de voitures a-t-il mises t dans le garage?
'How many of cars has he put(+Agr) in the garage ?'
(ii) Combien a-t-il mis / *mises [t de voitures] dans le garage?
'How many has he put of cars in the garage ?'

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(30) a Que rapazes o Paulo desconfia que tenham beijado *todos* a Maria?
'Which boys Paulo suspects that have kissed all Maria?'

b Que rapazes o Paulo desconfia que tenham *todos* beijado a Maria?
'Which boys Paulo suspects that have all kissed Maria?'

c *Que rapazes o Paulo desconfia que *todos* tenham beijado a Maria?
'Which boys Paulo suspects that all have kissed Maria?'

Under Sportiche's (1988) analysis of floating quantifiers, according to which the quantifier is stranded in a position that the quantified DP moves through, this pattern suggests that the launching site of subject extraction is a lower IP internal position, but not the canonical subject position preceding the inflected verb. In our terms, the subject trace can occur in a lower position, highlighted by the floated quantifier in (30)a-b (possibly the thematic position, and/or other A positions in the low IP area, with Spec- Subj filled by expletive *pro*, which is a legitimate option in BP), but not in Spec-Subj, where further movement for a wh subject is prevented by Criterial Freezing.

In my variety of Italian, floating quantifiers connected to wh expressions don't sound natural, except in appositive relatives, where Menuzzi's BP pattern can be replicated:

(31) a Gli studenti di quest'anno, che hanno risolto tutti il problema più difficile, sono bravissimi
'This year's students, who have solved all the most difficult problem, are very good'

b Gli studenti di quest'anno, che hanno tutti risolto il problema più difficile, sono bravissimi'
'This year's students, who have all solved the most difficult problem, are very good'

c *? Gli studenti di quest'anno, che tutti hanno risolto il problema più difficile, sono bravissimi
'This year's students, who all solved the most difficult problem, are very good'.

(31)c is marginally acceptable with focal stress on *tutti*, a structure in which presumably the floated quantifier, stranded in a low IP position, is subsequently focus-moved alone to the left periphery (Giuliano Bocci, p.c.). But with an unmarked stress pattern the structure is clearly unacceptable. We thus have a new kind of argument in favor of the analysis of A'-movement of the subject from a lower position, basically along the lines of Rizzi (1982), as revised in Rizzi & Shlonsky (2007) (i.e.,with subject extraction normally taking place from a lower position distinct from the "inverted" subject position, a low focus position, according to the analysis of Belletti (2004), which is not directly connected to the strategy of avoiding that-trace effects; see also Nicolis (2005) for relevant comparative evidence).
The question arises, though, of why the stranded quantifier is not sufficient, in and of

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itself, for the satisfaction of the Subject Criterion in (30)c, (31)c. In this sense this case is complementary to the French pattern. *Mutatis mutandis*, both cases involve a configuration with a quantifier modifying a nominal expression in the Spec of Subj:

(32) …. [Q [nominal expression]] Subj …

If the whole Spec of Subj in (32) is further moved, a violation of Criterial freezing results, as is immediately visible from (28). If Q is subextracted from (32), the structure is fine (modulo the violation of some weaker principle, as in the French case (29)). If the nominal expression is subextracted from (32), we have a violation of Criterial Freezing, as in (30)c, (31)c. Why is well-formedness sensitive to the nature of the element which is subextracted? I think the effect may be understood in terms of the particular formulation of Criterial Freezing introduced in (14). What is crucial is that the Criterial Goal does not undergo further movement, while other elements may be subextracted. In configuration (32), the nominal part (endowed with nominal and Phi features) is the Criterial goal: so, if the quantifier is subextracted, no problem arises; whereas, if the nominal expression is subextracted, as in the BP and Italian cases, Criterial Freezing is violated, under formulation (14)[3].

Conclusion

This paper has discussed various kinds of empirical evidence supporting the view that some major kinds of chains are delimited by s-selectional and scope-discourse positions.

In particular, scope-discourse positions, expressed in the criterial format, have the effect of designating the final point of a movement chain, the point where the moved element is made unavailable to further syntactic computation ("Criterial Freezing"). This approach explains new facts, such as the freezing effects discussed in sec. 2, and permits an advantageous reanalysis of classical generalizations emerging from the study of overt and covert syntax.

In my concluding remarks I would like to address, in a rather speculative manner, the following question: why should Universal Grammar include principles like S-selectional Merge and Criterial Freezing? One possible line of answer is that such principles may make sure that core cases of chains, while fulfilling their function of connecting two types of positions dedicated to interpretive properties, remain relatively simple formal objects, easy to generate and parse on limited computational resources. Such principles make sure that the dedicated positions will be unique, one for each type of semantic property; moreover the dedicated unique positions will also delimit the chain downward and upward. These properties of uniqueness and delimitation may significantly facilitate computation. Consider the issue from the vantage point of the parsing system: when a phrase in a Criterial position is encountered, the parser "knows", because of Criterial Freezing, that there is no other

[3] Evidently, the quantifier alone is insufficiently specified to count as a possible Criterial Goal in (30)c, (31)c. Quantifiers like *tutti*, etc. are presumably richer in featural specification than *combien,* in that they are specified for number and gender, as the morphology transparently shows. Still, it can be plausibly assumed that they are not specified for person (Bianchi 2006). This may suggest that the Person feature plays a critical role in the satisfaction of the Subject Criterion; alternatively, the Subject Criterion may require a Criterial goal categorically specified [+N], and quantifiers may not be intrinsically specified as such.

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Criterial position to worry about for that particular chain; so, once the phrase is placed in an appropriate memory buffer, the only task the parser has is to look for a suitable S-selection position; as soon as an S-selection position is reached, the search may stop for that particular chain, which is sent to the interface systems. Parsing a chain in a system not constrained by such delimiting principles would require keeping the search open, for each chain and for both types of positions, till the end of the sentence. So, the specification of our delimitating principles may involve a considerable simplification of the task of the parser, and perhaps analogous considerations may hold for the generator. Moreover, in sec. 2 I hinted at the impact that Criterial Freezing may have on LF computation: by ruling out criterial satisfaction in passing, it severely limits the needs for reconstruction and LF adjustment in the computation of scope-discourse properties. In conclusion, the principles discussed in this paper may have the effect of keeping linguistic representations to a simple, straightforward format, in line with many other recent proposals in minimalist research.

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