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On the Form of Chains: Criterial Positions and ECP Effects.

0. Introduction

It is widely recognized that natural language syntax makes an extensive use of movement: elements are typically pronounced in positions different from those in which they receive some of their interpretive properties. *On Wh-movement* gave a major contribution to the study of the configurational properties of A'-movement, first and foremost its fundamentally local character, and its mode of application in recursive (successive-cyclic) steps. The identification of the basic configurational properties of movement was instrumental to abandon a construction-based conception of syntactic rules, and place syntactic analysis at a more abstract level, a more appropriate level for the identification of the basic computational ingredients of syntax. These configurational results also paved the way to a deeper understanding of the causes of movement, largely a contribution of more recent work, and of the Minimalist Program in particular. The present paper tries to follow this path backwards: it starts with a discussion of the functional motivations of movement, and then connects this level of analysis to the study of the form of chains, with special reference to the A'-system, and the formal principles which constrain possible chain configurations. The last part of the paper addresses another traditional research topic of A'-syntax, the subject-object asymmetries arising in A'-extraction, and the system of principles proposed in the first part is shown to provide an alternative to the classical analysis in terms of the Empty Category Principle.

The first section addresses the issue of movement as "last resort" and discusses the implementation of the operating mechanisms. The second section proposes a characterisation of A'-chains as connecting an s-selection position (for arguments, a thematic position) to a criterial position, a position dedicated to the expression of some scope-discourse property (Chomsky 2001a-b) through a Criterion, in the sense of Rizzi (1991) and related work. These two positions are relevant for the interface with semantics and form the backbone of A'-chains. Sections 3-6 try to determine if and under what conditions other positions are allowed to occur in well-formed chains, in addition to the two interpretively relevant positions. In particular, empirical evidence is provided for a principle according to which criterial positions terminate chains: a phrase meeting a criterion is frozen in place, and its chain cannot extend further (Criterial Freezing). This principle makes sure that the chain will be assigned a unique scope-discourse property, basically in parallel with the assignment of a unique theta role, thus contributing to a parsimonious definition of chains as constituted by unique occurrences of the elementary ingredients.

In the last part the issue of subject chains is addressed. It is observed that in classical Government-Binding analyses the subject position is singled out by two separate principles, the Extended Projection Principle (EPP), which makes clausal subjects obligatory, and the Empty Category Principle (ECP), which bars subject extraction in certain environments. An analysis of the EPP is proposed in terms of the system of principles motivated in the first part. A Subject Criterion is introduced, which requires a nominal expression in the higher part of the inflectional field of which the VP is predicated, and the interpretive properties of this position are investigated. The freezing principle can thus provide a new explanation for subject-object asymmetries classically ascribed to the ECP.

1. Background: Movement as last resort

Movement is pervasive in natural languages: it is quite typical that most or all of the pronounced elements in a given structure will have moved from the positions in which they were first merged. Take for instance a French interrogative clause like the following, illustrating OVS order:

(1) Qui rencontrera-t-il?
     'Whom will he meet ?'

Under current assumptions, this surface configuration is derived via three kinds of movement operations from the thematic nucleus expressed by the VP (or a more complex structure involving a vP layer, as in Chomsky 1995 and related references):

(2) [$_{VP}$ il [rencontre- qui]]

the lexical verb moves to the inflectional field to pick up its inflectional affixes of tense, agreement, etc., and then to the C field, possibly, in this case to pick up -t-, which may be analysed as an interrogative affix (alternatively, to check the relevant affixes: on the "building" vs "checking" approach to the syntax-morphology interface see Baker (2002)); the subject moves to the Spec of some inflectional head to pick up Case and satisfy the Extended Projection Principle (EPP); the wh-object moves (possibly through intermediate steps) to its operator position in the C system; we thus end up with a representation like the following, with the thematic nucleus entirely vacated:

(3) [$_{CP}$ Qui rencontre+ra+t [$_{IP}$ il t$_I$ [$_{VP}$ t$_S$ t$_V$ t$_O$]]]

A wealth of empirical evidence has accumulated over the years showing that movement is ubiquitous in natural language syntax. But why does movement exist? The Minimalist Program has come up with the hypothesis that movement is a device to satisfy certain interface requirements. Consider the movement of the verb to I and then to C in (3): following a line of analysis which goes back to *Syntactic Structures*, through Emonds (1978), Pollock (1989), Belletti (1990) and much related work, this kind of movement appears to be motivated by the need to form morphologically well-formed words, by associating such affixes as *-ra* and *-t-,* which cannot survive as independent words, to an appropriate verbal root (but see Koster 2003 for an alternative approach).

As for the movement of the object to the C system, a different requirement seems to be operative, involving the interface with semantic interpretation. Chomsky (2001)a-b suggests that (certain) natural language expressions may need to be associated to two kinds of semantic properties: argumental properties, a thematic role in the case of a direct object, and scope/discourse properties, clausal scope in the case of a wh-element. Linguistic expressions can receive both kinds of interpretive properties by "picking them up" from positions, as it were: they move from positions dedicated to properties of the first kind to positions dedicated to properties of the second kind.   So, *qui* receives the theta role "patient" from the verb in the position in which it is first merged, and then the scope-discourse property "interrogative with main clause scope" in its final position. Movement is a device to achieve this duality of interpretations.

This kind of teleological motivation seems to be required of movement: movement is a last resort operation, there is no free, or optional movement. I will assume the following informal version of the relevant economy principle (the concept goes back at least to Chomsky 1986; important elaborations, essentially along the lines assumed here, were introduced by Fox 1995, Reinhart 1997):

(4) Movement as last resort: Movement takes place to satisfy some interface requirement.

Where the interface level involved may be the syntax-morphology interface, internal to the narrow computational system (as in the head movement case), or the external interface with semantics, as in the case of left-peripheral A'-movement. As for the third kind of chain in (1), the one involving the movement of the subject from its thematic position to the Spec of an inflectional head, things are less straightforward. One standard assumption is that this movement is motivated by Case requirements on the subject, which would suggest again the relevance of the interface with morphology. On the other hand, if the subject position is endowed with special discourse properties (quasi-topicality, and the like: Chomsky 2002), and/or external systems require events to be expressed in subject-predicate format (Rothstein 1983), the interface with semantics may be relevant as well to motivate movement of the subject from the VP-internal position.

Curiously, if the case of A-chains is less straightforward than other chain types in terms of the teleological motivation of movement, it is also the case which has basically inspired the formal implementation of movement in general in Minimalism. Without entering into technical details here, I will assume that movement is formally triggered by a matching of features: a head X, endowed with feature F, acts as the Probe searching for a goal Y in its c-domain, endowed with the same feature. Y (or, more precisely, a phrase containing this element, selected in accordance with the principles responsible for "Pied-piping") is then remerged in the immediate structural environment of X: basically Y adjoins to X if Y is a head, and is merged as X's specifier if it is a phrase (see Chomsky 2000 and below for more detail and variants of these basic assumptions).

(5) X_F …… Y_F ……   ➔ Y_F X_F …… t ……

In the rest of this paper we will mainly focus on A'-chains, referring to the other chain types only occasionally.

2. Criterial positions.

In the following examples, the phrase *[D book]* must receive both the interpretive property "patient of the verb *read*" and the interpretive properties "interrogative", "topic", "focus", respectively:

(6)a   Which book should you read ___?
   b This book, you should read ___
   c THIS BOOK you should read ___ (rather than something else)

Natural languages express this duality of interpretive properties by having the phrase occur in two positions, each assigning one kind of property. In standard terminology, an element is moved from a position of one kind to a position of the other kind. If one adopts the copy theory of traces (Chomsky 1993), according to which "traces of movement" are complete but silent copies of the moved element, it is more appropriate to say that an element can be merged several times in a structure, i.e. its occurrences can multiply, i.e. in (6) *[D book]* occurs both as complement of *read* and as left peripheral focus, topic or interrogative operator, the unpronounced lower occurrence being represented within angle brackets:

(7)a   Which book should you read <which book>?
   b This book, you should read <this book>

c THIS BOOK you should read <this book> (rather than something else)

Departing slightly from Chomsky's terminology (2001)a-b, I will call the two kinds of interpretive properties "s-selectional" and "criterial", respectively. An element is first merged in a position in which it is semantically selected, and then it may be merged again in a position dedicated to scope-discourse semantics. The two positions (and other positions hosting occurrences of the same element, see below) form a "chain".

Typical s-selectional properties are thematic properties, which I assume to be assigned by lexical items in their immediate structural neighborhood. But the concept should be generalized to whatever interpretive properties license the insertion of a non-argument in the structure, adverbials of various kinds, modifiers, etc.. Following a rather traditional terminology, I call these properties s-selection (semantic selection, as in Grimshaw (1979), Pesetsky (1983), etc.). The case of s-selection for arguments is Theta assignment; the analogous case for, say, a temporal adverbial is s-selection by a T node, and similarly for modal and aspectual adverbs, according to much recent work on adverbial syntax, most notably in the systematic approach of Cinque (1999).

As for Chomsky's Scope/Discourse positions, I will assume that they are determined by a family of principles, the Criteria, which require Spec-head agreement with respect to features of the relevant class: Q, Top, Foc, R, etc. for questions, topic, focus, relatives, etc. (see Rizzi 1991, for an early formulation of this approach). As a first approximation, I will take the format of Criteria to be the following:

(8) XP_F and X_F must be in a Spec-head configuration, for F = Q, Top, Foc, R, …

That the preposing processes create local Spec-head configurations with dedicated heads is suggested by the fact that such heads are sometimes morphologically expressed. Some plausible cases of morphological expression of, respectively, Q, Top, Foc, R are the following (the criterial heads are italicized): <FN1>

(9)a Ik weet niet [wie *of* [Jan ___ gezien heeft]]   (Dutch, Haegeman 1994)
        'I know not   who Q   Jan   seen has'

  b Un sè   [do [dan lo   *yà* [Kofi   hu   ì]]]   (Gungbe, Aboh 1998, 2004)
      'I heard   that   snake the Top   Kofi killed it'

  c Un sè   [do [dan lo   *wè* [Kofi   hu   ___]]]   (Gungbe, Aboh 1998, 2004)
      'I heard   that   snake the Foc   Kofi killed it

  d Der Mantl [den *wo* [dea Hons   ___ gfundn hot]]   (Bavarian, Bayer 1984)
      'The coat   which REL the Hans   ___   found has'

So, a head endowed with the relevant feature attracts a phrase bearing that feature, and thus designates a position dedicated to the relevant type of interpretation. The information is then passed on to the interpretive system ("the phrase in this Spec is to be interpreted as an interrogative operator with scope on this clause, as a Topic, etc."). Such dedicated heads are sometimes overt, sometimes silent but, I will assume, systematically present across languages (as should be expected under Chomsky's (2001:2) Uniformity Principle, essentially along the lines commonly assumed for Case Theory).

A standard A'-chain therefore typically includes two positions both expressing some interface property, and both marked in the structure by the featural content of the local head:

(10) … criterial ……. s-selection …

In order to explore the form of A'-chains in some generality we should now determine what positions are required and what positions are allowed in a chain. Are there any other positions in addition to s-selection and criterial positions? This question breaks up into three subcases:

(11)a Is there any position lower than the s-selection position?
   b Is there any intermediate position in between criterial and s-selection positions?
   c Is there any position higher than the criterial position?

A negative answer is quite generally assumed for (11)a: arguments can't be first-merged in positions lower than their Th-position, and pick up their Th-role through movement (but see Kayne 2002 for a different view, in the context of his attempt to derive binding conditions from movement). As for question (11)b, the answer is clearly positive: there is rich and diverse evidence for intermediate traces in between s-selectional and criterial positions. As for question (11)c, it is rarely asked, and trying to address it in some generality is one of the main purposes of this paper.

Let us consider the different subcases in detail.

3. Chains start at s-selection positions.

Question (11)a does not concern A'-chains uniquely, it can be asked of phrasal chains in general, regardless of whether they stop IP internally, or they proceed to reach the left periphery of the clause. The question breaks up into two subcases (we will initially focus on arguments for simplicity):

(12)a Can an argument be merged in a non-Th-position, and then be moved to a Th-position to pick up its Th-role?
   b Can an argument be merged in a Th-position and then pick up another Th-role through movement?

The first case is addressed by Chomsky (2000). Why can't one derive (13)b alongside (13)a, given the choice of a lexical array appropriate for (13)a?

(13)a   I expected [a proof to be discovered t]
   b *I expected [t to be discovered a proof]

The critical point in the derivation is when the embedded T is merged, endowed with an EPP feature requiring its Spec position to be filled:

(14) T_{EPP} [to be discovered a proof]

If the pronoun *I* is part of the lexical subarray of the same phase, as per Chomsky's assumptions, why can't it be merged in Spec T, thus satisfying T's EPP requirement, and then be raised to the subject position of *expect*, thus receiving the theta role "experiencer of 'expect'", with representation (13)b? Why is movement of *a proof* the only viable option in (14), yielding (13)a?

The question is particularly relevant given the idea that merge, when possible, prevents move, which Chomsky uses to account for the following pair:

(15)a * There was expected [a proof to be discovered t]
     b   There was expected [t to be discovered a proof]

If the expletive *there* is part of the relevant lexical subarray, Chomsky suggests, it must be merged at stage (14), to fulfil the EPP requirement on T (on the derivation of the more natural order *…to be a proof discovered* see the discussion in Chomsky, op.cit.). Then the expletive raises to the main subject position yielding (15)b. (15)a is excluded because the availability of merge of *there* in (14) precludes the more complex operation of moving *a proof*.

But why is the pattern reversed in (13)? Chomsky introduces the following principle:

(16) Pure Merge in Th position is required of (and restricted to) arguments.

So, the argument *I* can't be introduced into the structure by pure merge in a non Th position in (14), and the only available derivational option is movement of *a proof* to yield (13)a.

The approach must clearly be generalized to first merge of non argumental material: an adverb could not be inserted in a position lower than the position which it is interpreted as a modifier of. For instance, in a V2 language a temporal adverbial cannot be first merged to satisfy embedded V2, and then be interpreted as construed with the main tense structure. Consider the following paradigm (provided by G. Grewendorf, p.c.):

(17)a Maria glaubte, Hans wuerde in zwei Jahren seinen 60. Geburtstag feiern.
      'Mary believed Hans would in two years his 60th birthday celebrate'

   b In zwei Jahren, glaubte Maria, t wuerde Hans t' seinen 60. Geburtstag feiern.
      'In two years believed Maria would Hans his 60th birthday celebrate'

   c *Vor zwei Jahren, glaubte Maria, t wuerde Hans seinen 60. Geburtstag feiern.
      'Two years ago, believed Maria would Hans his 60th birthday celebrate'

   d Vor zwei Jahren glaubte Maria, Hans wuerde bald seinen 60. Geburtstag feiern.
      'Two years ago believed Maria Hans would soon his 60. birthday celebrate'

(17)b shows that a temporal adjunct can be extracted from an embedded clause satisfying "in passing" the V-2 constraint in it, in which case the adjunct is interpreted as construed with the embedded clause. The deviance of (17)c shows that an adjunct satisfying embedded V-2 MUST be construed with the embedded clause: so, *Vor zwei Jahren* 'two years ago', semantically compatible with the main but not with the embedded tense, gives rise to ill-formedness in this case, while it is fine with main clause construal in (17)d, where embedded V-2 is satisfied by another element.

In conclusion, (12)a seems to require a general negative answer. Also subcase (12)b is quite generally assumed to require a negative answer. For instance, languages do not express reflexive readings by moving an argument from object to subject position, to pick up both Th-roles, and control structures can't be analysed through movement from the lower subject position to a main clause argument, as the lack of reconstruction effects typical of raising shows (the analysis of control as feature movement, whether right or wrong, is a different matter: see Hornstein (1999), Landau (2003) for discussion; and the unaccusative-like analysis of Romance reflexives, as in

Burzio 1986, Kayne 2000, ch. 8, does not involve the picking up of two theta roles through movement):

(18)a * John saw t (meaning: John saw himself)

   b * John wants [t to leave]

Consider, for instance, the familiar raising-control asymmetry with respect to the possibility of anaphor binding under reconstruction (Langendoen & Battistella (1982), Belletti & Rizzi (1988)). The anaphor *each other* can be bound by *the men* under reconstruction in the raising structure, a result immediately captured by the copy theory of traces, but not in the control structure:

(19)a   Friends of each other seemed [t to amuse (t') the men]
    b *Friends of each other wanted [PRO to amuse (t') the men]

(see also Burzio's (1986) discussion of the construal of *each* under reconstruction, excluded in control structures).

We can now try to generalize Chomsky's principle (16) to include these cases, and also to extend it to analogous patterns with non-arguments, adverbial material and the like.

We continue to refer to the traditional notion of s-selection to encompass theta marking of arguments and the licensing of adverbials (analysed along the lines of Cinque (1999)), and other non argumental material. Then,

(20) S-selection is fulfilled by first merge.

(we can understand "s-selection" here in a maximally general way, as involving both the selector and the selected element; note that principle (20) basically expresses and generalizes the GB assumption that the Theta Criterion applies at D-structure.)

So, the subject *I* cannot pick up its theta role of "experiencer of *expect*" by second merge in (13)b, *John* cannot pick up the theta role of "experiencer of *see, want*" in (18), the temporal adverb cannot pick up a selectional relation with the main clause T in (17)c, etc.

On the other hand, the expletive *there*, which is not subjected to s-selection, can be first merged in the subject position of (15) (and must be, according to Chomsky's analysis).

4. Is there any intermediate position in between criterial and s-selection position?

On Wh-movement forcefully argued for a stepwise application of movement, hence, in our terms, for a positive answer to this question. Quite diverse and compelling evidence has accumulated over the last 25 years or so in favor of this conclusion: in addition to the two positions relevant at the interface, chains must involve intermediate positions.

Intermediate positions can trigger morphosyntactic phenomena making them detectable in different languages. For instance, intermediate wh-movement to an embedded C-system triggers embedded I to C movement in Belfast English (Henry 1995):

(21)   What did Mary claim [t did [they t steal t]]?

French Stylistic Inversion is triggered by a wh-element in the local C system: intermediate movement triggers it, as in (22)d, with representation (22)f, while a non local wh-element *per se* is unable to trigger it, as in (22)e (Kayne & Pollock 1976):

(22)a Jean est parti
        'Jean has left'
     b * Est parti Jean
        'Has left Jean'
     c   Où est allé Jean ?
        'Where has gone Jean ?'
     d   Où crois-tu qu'est allé Jean ?
        'Where do you believe that has gone Jean ?'
     e * Qui croit qu'est parti Jean?
        'Who believes that has left Jean'
     f Où crois-tu [<où> que [est allé <où> Jean]]

Intermediate movement may trigger morphosyntactic processes like the notorious past participle agreement in French (Kayne 1989), or the C agreement of the Celtic (and many other) languages (Irish example from McCloskey 1996):

(23)a Jean a repeint les chaises
        'Jean has repainted the chairs'
     b Les chaises que Jean a t' repeint*es* t
        'The chairs that Jean has repainted+Agr'

(24)   Cén t-urscéal aL [mheas mé [aL duirt sé [aL thuig sé]]] ?
       'Which novel that thought I that said he that understood he]]] ?'
       'Which novel did I think that he said that he understood?'

Intermediate positions are not assigned special interpretive properties; nevertheless, they are visible at the interpretive interface, as is shown by reconstruction effects (Lebeaux 1988). So, a sentence like (25)d is ambiguous, admitting both *Bill* and *John* as antecedents of the anaphor *himself*. The latter interpretation must be made available by the intermediate trace in the embedded C system. Under the copy theory of traces, the relevant representation is (25)e:

(25)a   [John$_k$ thinks [that [Bill$_i$ likes this picture of himself$_{i, *k}$]]]

     b [John$_k$ wonders [which picture of himself$_{i, k}$ [Bill$_i$ likes ___]]]

     c [John wonder [which picture of himself [Bill likes <which picture of himself>]]]

     d [Which picture of himself$_{i, k}$] does [John$_k$ think [that [Bill$_i$ likes ___]]]?

     e [Which picture of himself] does [John think [<which picture of himself> [that [Bill likes <which picture of himself>]]]]

The evidence for intermediate positions in movement chains, in between s-selectional and criterial positions, is thus strong and diverse, ranging from purely syntactic, to morphosyntactic, to interpretive effects. See Chung (1998) for detailed review.

Why is it that chains involve such intermediate positions, positions which are not motivated by interface needs? The standard answer is that intermediate positions are enforced by the theory of locality: movement cannot be too far away, linguistic representations can be indefinitely extended due to the recursive nature of the system, but each step of the linguistic computation is local, can only cover a limited amount of structural ground. So, chains can be of unlimited length due to the reiterability of the operations, but each chain link is local. The fundamental intuition of *On Wh-movement* (and previous work within the Extended Standard Theory tradition, starting from Chomsky 1973) has kept all its force here.

Putting things in slightly more general terms, we can say that two competing forces determine the form of chains, both being construed as economy guidelines:

- movement as last resort: movement must be motivated, can only be performed to achieve an interface effect, there is no "free movement";
- locality: movement can't be too far away.

The Movement as last resort guideline would favor chains with just two positions, the positions motivated by interface effects; locality would favor a proliferation of positions very close to one another. So, permissible chains represent a point of equilibrium between these two desiderata.

5. On the implementation of A'-movement

One salient property that intermediate positions have in common is that they normally cannot function as final positions, rather they are gates, or escape hatches through which elements must pass to reach higher positions.

The paradox of these intermediate positions is that, on the one hand, they must autonomously cause a movement step (if we want to take seriously the idea that each step is locally determined, with no "look-ahead" to subsequent derivational steps), and at the same time we should make sure that movement will not stop there.

Let us make more specific assumptions on the implementation of movement in general, and then go back to intermediate movement. I will follow standard Minimalist assumptions on the fact that movement is guided by a system of morphosyntactic features: basically the attractor and the attractee are characterized by a certain shared feature specification.

In the system devised for A-chains in Chomsky (2000), uninterpretable features on the attractor and attractee play a crucial role: uninterpretable φ-features on T enter into an AGREE relation with a DP made active by uninterpretable Case features, thus establishing the configuration which is a prerequisite for movement.

(26) $T_{u\varphi}$ … $DP_{i\varphi, uCase}$ …

Consider now A'-chains. In questions, for instance, the question feature Q, expressed by special complementizers like *if* in English, *si* in French, and various question particles in different languages (sometimes limited to yes-no questions, sometimes generalized to all questions), is presumably interpretable, it enters into clause typing (Cheng 1991), and selection from a higher predicate. And the morphosyntactic feature characterizing a certain class of operators as question operators (wh- in English, qu- in French, etc.) also is visible to, and used by, interpretative systems.

So, the minimal morphosyntactic feature system required by questions (and other criterial constructions), does not seem to involve morphologically overt uninterpretable features.

We thus seem to have two theoretical options. Either one assumes abstract uninterpretable features associated to the interpretable features of attractor and attractee, and makes the system fully parallel to the A-system in Chomsky (2000) (much as in Pesetsky and Torrego's (2001) approach). Or the lack of direct morphosyntactic evidence for A'-uninterpretable features is taken at face values, and the criterial attraction is assumed to be done directly by the interpretable features, i.e. in configurations like the following, C attracts XP bearing a matching criterial feature:

(27) C_F …… XP_F ……

Not much hinges on this point in the context of the present paper. The critical need for the computational system to work is to formally identify the attractor and the attractee, and this is achieved in both ways. For concreteness, in what follows I will take the second path, which minimizes the feature specification to be postulated; so, I will assume that interpretable criterial features can perform the role of attractors of movement.

Whatever assumption one makes on the attraction to a criterial position, the issue of uninterpretability arises in a different form in A'-chains. Consider intermediate movement to a non-criterial position. How is movement, e.g., to an intermediate C, triggered?

(28)   I wonder [what C [you think [t' that [I saw t]]]]

One possibility is to allow the option of non-feature driven movement: movement is in fact free, but chains thus created must meet the requirement that the final site is marked with a criterial feature. An alternative more in line with current ideas, and argued for in detail in McCloskey (2002) is to assume that interpretable criterial features have purely formal counterparts (such as the "pseudo" wh-feature discussed by McCloskey), and intermediate movement is triggered by such purely formal features, which have the role of bringing the moved phrase closer to the target, in accordance with locality principles. If we write substantive criterial features in capitals (Q, Top, Foc, R, etc.), and the corresponding purely formal features in low case (q, top, foc, r, …) we would have the following representation for a sentence like (28):

(29)   I wonder [what C_Q [you think [t' $that_q$ [I saw t]]]]

We thus admit only one kind of movement, feature driven movement (cutting across the distinction between substantive and purely formal features). Evidence favoring this view over the alternative admitting intermediate non-feature driven movement is the fact that languages often manifest morphological reflexes on the heads hosting intermediate landing sites in their Specs, as shown in the work briefly reviewed in section 4 (see McCloskey, op.cit. for a detailed argument based on Celtic A'-constructions). Agreement type phenomena like past participle agreement in Romance, complementizer agreement in Celtic, the triggering of I to C movement in cases like (21), etc., are phenomena which would be expected if some feature is specified on the relevant head. <FN 2>

So, I will tentatively assume that intermediate movement is driven by features which are the purely formal counterpart of substantive criterial features. There is only one kind of movement, feature-triggered; the triggering features are sometimes substantive (criterial, interpretable), sometimes purely formal (uninterpretable). Natural language syntax includes the latter featural option in order to implement intermediate movement, so that a potentially distant criterial position can be reached in successive steps, each of which satisfies locality requirements.

Let us now take a quick look at other A'-constructions. Relatives also involve a (sometimes overt) relative head, and morphologically marked operators (if one assumes the head raising analysis of relatives, then the construction should work in a manner akin to topicalisation). Topic and focus constructions involve special heads, sometimes overt (see (9)b-c); I will assume that the head of the topicalized or focalized phrase is freely assigned the corresponding feature as it enters syntax, much as a Phi feature (so that no problem arises for the Inclusiveness Condition, see Chomsky (2000)). This marking makes the phrase suitable for attraction, and normally has PF effects reflected by the special intonational contours of topics and foci. So, the same derivational mechanisms can be uniformly assumed for all major A'-constructions, by and large the unification achieved by *On wh-movement* (but I continue to assume, in the spirit of the cartographic approach to the C-system (Rizzi 1997, 2000a-b, 2004), that distinct landing sites are involved in the left periphery).

6. Is there a position higher than the criterial position?

Can movement continue when the first criterial position is met, or does it have to stop there? In other words, can several criteria be met "in passing" by a single phrase? Analogy with what has been said on the s-selection position would suggest a negative answer. By symmetry, one would expect the following picture to hold: chains begin at an s-selection position and terminate at a criterial position, and such positions are unique, each chain has exactly (or at most) one position of each kind. Is the analogy correct?

We will now look at some empirical indications supporting the analogy and suggesting that, when a criterion is met, the phrase is frozen in place. This issue is rarely asked in the literature (if at all), so let us address it with some systematicity. There are four cases to consider:

(30) In principle, attraction of a phrase to two distinct criterial positions may involve:

I.   A single feature on the same element of the phrase: $[\ldots A_{+F} \ldots]$
II.   Two distinct features on the same element: $[\ldots A_{+F1, +F2} \ldots]$
III.   The same feature on two elements in the same phrase: $[\ldots A_{+F1} \ldots B_{+F1} \ldots]$
IV.   Two distinct features on two elements in the same phrase: $[\ldots A_{+F1} \ldots B_{+F2} \ldots]$

A straightforward instantiation of the first case is a structure involving both an indirect question and a main question: plainly, the same wh-element cannot fulfill the requirements of the indirect question (satisfy the Q Criterion in the embedded C system), and then move on to the main C system. Given (31)a as an intermediate step, it is not possible to derive (31)b, with representation (31)c in terms of the copy theory of traces:

(31)a   Bill wonders [which book C_Q [she read t]]
     b * Which book C_Q does Bill wonder [t' C_Q [she read t]]?
     c * Which book C_Q does Bill wonder [<which book> C_Q [she read <which book>]] ?

To the best of our knowledge, this is the only case of (30) discussed in the literature (e.g., Lasnik & Saito 1992). In the terms of our approach and terminology, it suggests that the creation of a criterial configuration freezes the structure, and the wh-phrase involved is not accessible to further movement, i.e. a constraint like the following holds:

(32) Criterial Freezing: A phrase meeting a criterion is frozen in place

Principle (32) can be thought of as an economy condition which contributes to minimize movement (hence a component of the formal implementation of the concept of "movement as last resort"), and determines optimally simple chains with unique occurrences of the fundamental ingredients: unique Theta role (or s-selection licensing), unique scope-discourse marking, etc.

Is (32) an independent formal principle, or does it follow from other properties of syntactic computations or of the interface systems? Case (31)b-c could be ruled out for purely interpretive reasons, as it does not seem to be amenable to any sound logical form. But if we turn to the other cases of (30), the interpretive approach doesn't seem to be generalizable.

Consider (30)II. A possible instantiation would be a phrase bearing both the Q feature and the (contrastive) focus feature. In languages like Italian, contrastive focus may be associated to an element *in situ*, as in (33)a, or may involve movement of the element to the left periphery, as in (33)b (contrastive stress is expressed by capitalization in the following examples):

(33)a   Pensavo che avessero scelto la RAGAZZA, non il ragazzo
        'I thought they had chosen the GIRL, not the boy'

   b La RAGAZZA pensavo che avessero scelto ___, non il ragazzo
      'The GIRL I thought they had chosen ___, not the boy'

Now, a wh-phrase in an embedded question can be contrastively focused in its criterial position, in the embedded C system, but it cannot be moved to the left periphery of the main clause:

(34)a   Mi domandavo quale RAGAZZA avessero scelto, non quale ragazzo
        'I wondered which GIRL they had chosen, not which boy'

   b * Quale RAGAZZA mi domandavo ___ avessero scelto, non quale ragazzo
       'Which GIRL I wondered they had chosen, not which boy'

As contrastive focus clearly is compatible with a wh-phrase (see (34)a), it does not seem plausible to assume that (34)b is ruled out for interpretive reasons. <FN 3>

Case (34)III is illustrated by a complex phrase whose elements bear two A'-features of the same kind, say two Q features, e.g. *[quanti libri di quale autore]*, 'how many books by which author'. Suppose this complex phrase is inserted in a structure involving both a main and an embedded question. I.e., given an abstract configuration like (35) (here and in what follows, for the sake of simplicity I use old-style derivations with movement applying on completely formed structures; nothing hinges on that):

(35) C_Q Ti domandi [C_Q siano stati censurati [quanti libri di quale autore]] ➔
        'You wonder   have been censored   how many books by which author'

the only (marginally) possible grammatical output here is the one in which the complex wh-phrase splits, and in a specific order: the whole wh-phrase moves to the embedded C system, yielding (36)a, and then the most deeply embedded phrase *di quale autore* is further extracted to the main C system, yielding the marginally acceptable (36)b:

(36)a C_Q ti domandi [[quanti libri di quale autore] C_Q [siano stati censurati t]] ➔
        'You wonder how many books by this author have been censored'

b ? [Di quale autore] C_Q ti domandi [[quanti libri t] C_Q [siano stati censurati t]]
   'By which author do you wonder how many books have been censured?'

The split of the complex phrase cannot take place in the opposite order from (35), i.e. by first extracting the most deeply embedded subphrase *di quale autore* to the embedded C system, and then moving the remnant of the complex phrase to the main C system, as (37)b is ungrammatical:

(37)a C_Q ti domandi [[di quale autore] C_Q [siano stati censurati [quanti libri t]] ➔
   'You wonder how many books by this author have been censured'

   b * [Quanti libri t] C_Q ti domandi [[di quale autore] C_Q [siano stati censurati t]] ?
   'How many books do you wonder by which author have been censured?'

That the splitting can take place in only one way is an interesting observation which calls for an explanation, a point which presumably bears on the constraints on remnant movement, and which I assume to be orthogonal to our discussion here. <FN 4>

But the relevant point here is that the splitting must take place. It is not possible to move the large phrase to the embedded C system, and then move it on to the main C system:

(38)a C_Q ti domandi [[quanti libri di quale autore] C_Q [siano stati censurati t]] ➔
   'You wonder how many books by this author have been censured'

   b * [Quanti libri di quale autore] C_Q ti domandi [t C_Q [siano stati censurati t]] ?
   'How many books by which author do you wonder have been censured?'

Why is this derivational option not viable? Notice that the lower wh-element is able to pied-pipe the whole phrase from an embedded declarative, at least marginally in Italian:

 (39) ? [I libri di quale autore] credi [t che [siano stati censurati t] ?
   'The books by which author do you believe have been censured?'

Again, the impossibility of (38)b suggests that Criteria cannot be satisfied in passing, hence something like constraint (32) is operative. No interpretive problem seems to arise here: (38)b should receive the same logical form as (36)b, obtainable under reconstruction (in fact, directly provided by the copy theory of traces).

Notice that the equivalent of (38)b significantly improves if the embedded C is filled by a yes-no complementizer:

(38)b' ?? Quanti libri di quale autore ti domandi se siano stati censurati?
   'How many books by which author do you wonder whether have been censured?'

In fact, (38)b' expresses a completely different structure from (38)b, with the Q criterion fulfilled by *se* (and/or a null yes/no operator) in the indirect question, and with the complex wh-phrase construed with the main C system as a multiple main question. Here the complex wh-phrase has passed through whatever escape hatch is available in the embedded C system in cases of extraction from a Wh Island, where it is not involved in criterial satisfaction; the marginality of the example is

due to the Wh Island and to whatever factor disfavours multiple questions in Italian (Rizzi 1982, ch. II), but Criterial Freezing is not involved.

The same argument provided by (38)b can be constructed with a complex phrase containing both an interrogative and a relative element *[quanti libri del quale]* ("how many books by whom(rel)"). Starting from a configuration like the following (40)a, and after moving the complex phrase to the interrogative C system, as in (40)b, it is necessary to split the complex phrase, as in (41a), whereas pied-piping of the whole phrase to the relative C system, as in (41)b, yields sharp ungrammaticality. For concreteness, I call R the feature attracting the relative phrase, hence I assume a Relative Criterion to cause movement in relative clauses (see Bianchi (1999) for a more fine-grained approach):

(40)a Gianni [C_R [mi domando [C_Q [siano stati censurati [quanti libri [del quale]]]]] ➜
     'Gianni   I wonder   have been censored how many books by whom'

  b Gianni [C_R [mi domando [[quanti libri [del quale]] C_Q [siano stati censurati t]]] ➜
     'Gianni   I wonder   how many books by whom   have been censored'

(41)a Gianni, [del quale C_R [mi domando [[quanti libri t] C_Q [siano stati censurati t]]]]]
     'Gianni, by whom I wonder how many books have been censured'

  b * Gianni, [[quanti libri del quale] C_R [mi domando [t C_Q [siano stati censurati t]]]]]]
     'Gianni, how many books by whom I wonder have been censured'

In the case of appositive relatives, the pied piping of complex phrases by a deeply embedded relative pronoun is quite tolerable in other structures, as in (42)b: <FN 5>

(42)a   Gianni, del quale credo che siano stati censurati [molti libri t]
     'Gianni, by whom I believe that have been censured many books'

  b ? Gianni, [molti libri del quale] credo che siano stati censurati t
     'Gianni, many books by whom I believe that have been censured'

So, what goes wrong in (41)b is not heavy pied-piping *per se*, but the attempt to satisfy a criterion in passing.

In fact, in some cases an even heavier pied piping is marginally tolerable, provided that no criterial configuration is undone. Consider the following paradigm:

(43)a Gianni, [del quale C_R [non è ancora stato chiarito [[quanti libri t_{PP}] C_Q [siano stati censurati t_{DP}]]]]
     'Gianni, by whom it has not been clarified yet how many books have been censured'

  b * Gianni, [[quanti libri del quale] C_R [non è ancora stato chiarito [t_{DP} C_Q [siano stati censurati t_{DP}]]]]
     'Gianni, how many books by whom it has not been clarified yet have been censured'

  c ?(?) Gianni [[[quanti libri del quale] C_Q [siano stati censurati t_{DP}]] C_R [non è ancora stato chiarito t_{CP}]
     'Gianni, how many books by whom have been censured, it has not been clarified yet'

14

Here, given an abstract representation like (44)a, after the complex phrase *quanti libri del quale* has moved to the Spec C_Q of the indirect question, yielding intermediate representation (44)b, it is possible for the complex phrase to split, with movement of *del quale* alone to the relative C system, which gives rise to sentence (43)a:

(44)a   Gianni [C_R [non è ancora stato chiarito [C_Q [siano stati censurati [quanti libri del quale]]]]]   ➔
    'Gianni,   it has not been clarified yet   have been censured how many books by whom'

    b Gianni [C_R [non è ancora stato chiarito [[quanti libri del quale] C_Q [siano stati censurati t_{DP}]]]]   ➔
    'Gianni, it has not been clarified yet how many books by whom have been censured'

It is not possible to continue the derivation from (44)b by pied piping *quanti libri del quale* to the C_R system; this would derive the sharply ungrammatical (43)b, a violation of Criterial Freezing. But there is another (marginal) derivational option from representation (44)b: the whole indirect question can be pied-piped to Spec C_R , thus yielding (43)c. The steps involved in the derivation of the latter are repeated below:

(45)a   Gianni [C_R [non è ancora stato chiarito [C_Q [siano stati censurati [quanti libri del quale]]]]] ➔

    b Gianni [C_R [non è ancora stato chiarito [[quanti libri del quale] C_Q [siano stati censurati t_{DP}]]]] ➔

    c Gianni [[[quanti libri del quale] C_Q [siano stati censurati t_{DP}]] C_R [non è ancora stato chiarito t_{CP}]

In this case, the complex phrase *quanti libri del quale* does not have to split because the question and relative criteria are satisfied by distinct phrases (the question criterion by the complex nominal phrase *quanti libri del quale* and the relative criterion by the whole indirect question *quanti libri del quale siano stati censurati* containing the complex nominal phrase): no satisfaction in passing is involved, and principle (32) is thus respected. Clausal pied-piping is a very marginal phenomenon in Italian (though quite common in other languages, e.g. Basque: Ortiz de Urbina 1989), whence the status (43)c. But the crucial point is that there is a clearly detectable difference between the marginality of (43)c and the full ungrammaticality induced by a violation of Criterial Freezing in cases like (43)b.

 Again, interpretive considerations seem to be irrelevant to rule out the crucial case (41)b, (43)b. <FN 6>

In conclusion, the evidence presented in this section supports the view that there is a certain symmetry between s-selection and criterial positions. Consider the principles we have introduced:

(20) S-selection is fulfilled by first merge.

(32) A phrase meeting a criterion is frozen in place.

In order to stress the symmetry with (20) we could restate (32) as

(32') A Criterion is fulfilled by last merge

Both kinds of positions appear to be unique in chains, and have the role of delimiting chains: s-selection positions initiate chains (of all kinds), criterial positions terminate (A'-) chains. <FN 7>

We should ask the question of why uniqueness is guaranteed in the way expressed by (20) and (32) (or (32')): couldn't natural languages work the other way around, with scope-discourse properties expressed in first merge positions and s-selection properties expressed by last merge? Notice that s-selection is typically a property of lexical elements, while scope-discourse, or criterial semantics is typically expressed by a system of functional heads. The particular way in which (20)-(32) ensure uniqueness thus seems to reflect the fact that lexical layers are generally embedded under functional layers, not the other way around. <FN 8>

7. EPP and the Subject Criterion

The classical Extended Projection Principle of the GB framework expresses the obligatoriness of the subject position of clauses.

(46) EPP: Clauses must have subjects.

Direct evidence for this principle is provided by the very existence of expletives of various kinds. In structures in which there is no external argument, the subject position must be expressed by a non-referential pronominal element (overt in non-Null Subject Languages):

(47)a   There came a man
     b   It seems that John left
(48)a   Il est entré une fille dans la salle
         'It has entered a girl (into) the room'
     b   Il semble que Jean est parti
         'It seems that Jean has left'

The EPP remained an isolated principle within the GB framework, and Minimalism has not significantly changed things (apart from the terminological choice of generalizing the label "EPP" to the c-selection of a specifier potentially targeted by movement, a property more perspicuously renamed OCC(urrence) in Chomsky (2001)b; in what follows I continue to use the term in its classical sense (46)). In this section I would like to capitalize on the results of the analysis of A'-chains to propose a new way to integrate the EPP within an independent theoretical structure. I would also like to use this approach to reanalyse the subject/object asymmetries, classically ascribed to the ECP.

Under the VP-internal subject hypothesis, the EPP position is typically filled by the external argument, if there is one, raised from its thematic position:

(49) John has [t seen Mary]

The EPP position differs from other A-positions, such as the position determining past participle agreement, in that the EPP position typically is a final target of movement, while the participial agreement position is not (see (50)d), and can only be the target of intermediate movement, with the

relevant phrase further moved to an A'-position (as in the relative construction in (50)a), or a clitic position (in (50)b), or the EPP position itself (e.g. in a passive construction like (50)c):

(50)a   La chaise que nous avons t' repeinte t
      'The chair that we have repainted+Agr'
   b   Nous l'avons t' repeinte t
      'We it have repainted+Agr'
   c   La chaise a été t' repeinte t
      'The chair has been repainted+Agr'
   d * Nous avons la chaise repeinte t
      'We have the chair repainted+Agr'

Under « movement as last resort » guidelines, the EPP position must be associated to an interface effect, morphological (Case-related), interpretive (some kind of criterial effect), or both. Nominative Case assignment is often offered as a morphological motivation for subject movement. But various considerations suggest an at least partial dissociation between the EPP position and the Case-Agreement system (here I rely in part on Cardinaletti's (2000) discussion). One is the existence of quirky (non-Nominative) subjects, with the preverbal subject position filled by an inherently Case-marked phrase, and with agreement construed with an internal argument, as in (51)a, alternating with the canonical nominative-dative order in (51)b:

(51)a   A Gianni piacciono queste idee
      'To Gianni please   these ideas'
   b   Queste idee piacciono a Gianni
      'These ideas please to Gianni'

That the dative experiencer actually is in a subject position is suggested by the fact that it does not induce any sort of island effect, contrary to the effect determined by a topic PP (the effect is mild in Italian, further weakened if the subject is null, but even in this case there is a detectable difference, e.g., between (52)a and (52)c):

(52)a   Le idee che a Gianni piacciono di più sono queste
      'The ideas that to Gianni please most are these
   b ?? Le idee che a Gianni Maria raccomanda sono queste
      'The ideas that to Gianni Maria recommends are these'
   c ? Le idee che a Gianni raccomandiamo sono queste
      'The ideas that to Gianni we recommend are these'

As the element satisfying the EPP and the agreeing element can be dissociated, I will assume two distinct heads, each related to a distinct DP position (under the natural assumption that a single head cannot carry a complex feature specification, allowing it to enter into an AGREE relation with a phrase and at the same time attract another phrase; that distinct subject positions should be postulated in different zones of the IP space is argued for by Belletti (2000, 2001), Cardinaletti (1997, 2000), Shlonsky (2000) for reasons independent from the EPP; I will not discuss here how the positions they argue for relate to the EPP; I use the label "Agr" to designate the head carrying the agreement features, without committing myself to the existence of an independent Agr head: see Chomsky 1995, 2001a-b for discussion):

(53)   … EPP … Agr …… DP1 ..... DP2

At this point one should ask the question how the two heads can relate to distinct nominals without violating locality (in the sense of Rizzi 1990, Chomsky 1995). Many options come to mind, but for concreteness I will assume that no minimality effect arises in the derivation of (51) because with the relevant verb class (the core of which consists of experiencing verbs) the small VP (containing the theme) can be scrambled past the (dative-marked) experiencer. <FN 9>

(54)a ... EPP ... Agr   ... [DP_{Exp} ... [V DP_{theme}]] ➔
     b... EPP ... Agr ... [V DP_{Theme}] ... [DP_{Exp} ... t]

As the two DP's now belong to disjoint c-domains in (54)b, AGREE can relate Agr and DP_{theme}, and DP_{Exp} can be attracted to EPP, which gives rise to no minimality violation. <FN 10>

If the EPP position and the Case/Agr system are dissociated along these lines, we are naturally led to explore the possibility that the EPP position is a criterial position. In fact, it is often mentioned in the literature that some special interpretive property goes with the EPP position (a conclusion supported, e.g., by the intuition that an active and a passive sentence do not sound as fully interchangeable).

What special interpretive property could be associated to the EPP position ? One often mentioned idea is that subjects are « topic-like » in some sense. A complete assimilation of subjects and topics is much too coarse for many reasons: even in a null subject language like Italian preverbal subjects are possible in "out of the blue" contexts (e.g., as answers to "what happened?" type questions), both in active and passive structures (B and B'), while in such contexts *bona fide* topics, expressed by Clitic Left Dislocation in Italian, are not felicitous (B''):

(55)A : Che cosa è successo ?
        'What happened ?'

    B : Un camion ha tamponato l'autobus per Roma
        'A truck has bumped-into the bus for Rome'

    B': L'autobus per Roma è stato tamponato da un camion
         'The bus for Rome has been bumped-into by a truck'

    B'': # L'autobus per Roma, un camion lo ha tamponato
          'The bus for Rome, a truck has bumped-into it'

Still, subject and topic have something in common: some kind of predication is involved in both cases, a process selecting an argument as the starting point of the event description, and expressing the event as somehow involving that argument. Following a rather standard terminology, we will call this relation "aboutness". So, the car-crashing event expressed in (55)B and B' is presented as being "about" a truck in B, and the bus to Rome in B', neither of which nominals has the full topic interpretation of a left dislocated phrase.

Subject and topic share aboutness, but the two notions differ in that D(iscourse)-linking is a necessary component of Topics (whence the ill-formedness of (55)B''), but not of subjects (on the notion D-linking see Pesetsky 1987, Cinque 1990 and much subsequent work). So, we have

(56) Top: + aboutness   (57) Subj: + aboutness
           + D-linking   +- D-linking

I will then assume that the EPP is a manifestation of a Subject Criterion. To implement this hypothesis, I will follow Cardinaletti (2000) in assuming a nominal head in the higher functional field, which attracts a nominal expression, and determines the Subject-Predicate articulation, much as other dedicated heads determine Topic-comment, Focus-presupposition, etc..

(58) [XP [Top YP]]

(59) [XP [Foc YP]]

(60) [XP [Subj YP]]

Subj occurs in the higher part of the inflectional field, higher than Agr, or whatever head carries the agreement features if independent agreement heads do not exist (Chomsky 1995):

(61) … Subj … Agr …………

One may speculate that a morphological realisation of the Subj head is the subject clitic, an obligatory component of the clausal structure in some systems such as certain Northern Italian Dialects, a position which appears to be distinct from, and higher than, the position occupied by the tensed verb also carrying agreement features: <FN 11>

(62) Le ragazze le son venute   (NID, adapted from Brandi & Cordin 1989)
     'The girls Scl have come'

The Subject Criterion may be satisfied in an interpretively vacuous way by the insertion (or movement) of an expletive as the Spec of Subj. The possibility of such a purely formal satisfaction is sometimes considered a stumbling block for any approach to the EPP based on special interpretive properties of the subject position. I don't think it is. It's typical of natural languages to introduce interpretively motivated devices which, as it were, acquire a formal life of their own and operate blindly in special cases even in the absence of the interpretive conditions. Grammatical gender is a case in point, related to natural gender, but extending well beyond natural gender in determining formal nominal classes. So, expletive insertion corresponds to the case in which the speaker chooses not to present an event as being about a certain argument (an option limited by formal conditions which vary considerably across languages). See Chomsky (2002:117) for discussion specifically related to the EPP.

8. EPP and ECP

EPP and classical ECP have the common property of singling out the subject position of clauses: the EPP says that the subject position is obligatory; the ECP says that the subject position is unmovable (in certain environments which permit object extraction, e.g. embedded clauses):

(63)a * Who do you think [that [t Subj will come]]?
     b   Who do you think [that [Mary Subj will meet t]]?

(64)a * Qui crois-tu [que [t Subj viendra]]?
          'Who do you think that will come ?'
     b   Qui crois-tu [que [Marie Subj rencontrera t]]?
          'Who do you think that Mary will meet ?'

We can now connect the two properties: if the EPP requirement can be reduced to a criterion, we expect subjects to be unmovable, under Criterial Freezing (32). *Who* must move to the Spec of Subj to fulfil the subject criterion, but then it is frozen there, and not available for further movement. Subject-object asymmetries thus reduce to the fact that there is a subject criterion, but no object criterion.

The possibility of moving the subject in certain environments now amounts to the possibility for the thematic subject to avoid moving to the EPP position, thus escaping the freezing effect. The most straightforward way to achieve this result is to fill the criterial subject position with an expletive, thus making the thematic subject free to move from a lower position accessible to movement. The traditional analysis of the lack of asymmetries in Null Subject Languages (Rizzi 1982, ch. IV) is straightforwardly interpretable in these terms: expletive *pro* fulfils the Subject Criterion in (65)c, hence the thematic subject remains available for extraction from a non-criterial position:

(65)a   Chi credi che verrà?
        'Who do you think that will come?'
    b   Credo che verrà Gianni
        'I think that will come Gianni'
    c   Chi credi [che [*pro* verrà t]]

This option is also available in non-NSL's, more marginally, though, due to the more stringent limitations on the occurrence of overt expletives like *there*:

(66)a   I think that [something is [t in the box]]
    b   I think that [there   is [something in the box]]

(67)a * What do you think that t is in the box?
    b   What do you think that there is t in the box?

The critical point of the derivation is

(68)   Subj   be [DP in the box]

If DP is raised to Spec Subj to satisfy the Subject Criterion, it is frozen there, under (32), and further movement as in (67)a is impossible. If the Subject Criterion is fulfilled by the expletive as in (66)b, the DP subject of the small clause is accessible to further movement. Adopting a theory of expletives as pro-predicates, *à la* Moro (1997), the result would be the same. <FN 12>

The strategies for subject extraction that different languages use can now be seen as strategies for avoiding the freezing effect connected to the Subject Criterion. See Rizzi & Shlonsky (in prep) for an analysis of some major cases.

Conclusions.

A'-chains consist of two privileged positions which express two kinds of interpretive properties relevant at the interface: the s-selection position and the criterial position. We have discussed evidence suggesting that these positions are unique, and initiate and terminate chains, respectively. So, expressions cannot "pick up" theta roles, or other s-selectional properties, through movement, and Criteria cannot be satisfied "in passing". In particular, a phrase satisfying a Criterion is frozen in place, and unavailable for further movement. The principles determining this state of affairs have

the effect of keeping A'-chains optimally simple, with unique occurrences of the basic essential ingredients.

If s-selection and criterial positions delimit the chain, excluding additional positions lower than the former and higher than the latter, chains can include indefinitely many positions intermediate between the two positions relevant at the interface. This is due to the operation of locality principles severely constraining the structural span of single chain links. In order to reconcile "movement as last resort" and locality, intermediate movement must be possible. We have assumed it can be triggered by purely formal equivalents of substantive criterial features, which have the role of making chain connections possible between s-selection positions and (potentially remote) criterial positions in accordance with locality.

In the final part we have addressed the question of why "subjects are special", in that they are singled out by both the EPP and the ECP. If the EPP is to be understood as a particular criterion, the Subject Criterion, selecting an argument as the starting point in the description of the event, the unmovability of subjects expressed by the ECP can be understood as a consequence of Criterial Freezing.

Acknowledgement.

Footnotes.

1. In this paper I will limit my attention to A'-Criteria involving the left periphery of the clause, hence to constructions subsumed under wh-movement in Chomsky (1977) and will not try to integrate IP-internal A'-position which have been analysed through criteria, such as negation (Haegeman 1995).

2. One could envisage the possibility that there is only one non-specific formal A'-feature, and the nature of the particular A'-chain is determined only when the moved phrase reaches a criterial head. Evidence against this hypothesis is provided by the fact that intermediate positions give rise to selective effects: e.g., embedded I to C movement in Belfast English is only triggered in questions like (21), not in topicalisation or other constructions in which the criterial head does not trigger I to C movement:

(i) * My car, Mary claimed [t did [they steal t]]

(Alison Henry, p.c.). This kind of evidence argues for separate formal features mirroring in part the properties of the respective criterial features.

One could still envisage the possibility that a non-specific A'-feature is "valued" by the attracted phrase as q, r, top, etc., and then gives rise to distinct morphological reflexes accordingly. But this would lead to the expectation of minimality effects across types of A'-extractions triggered by the non-specific feature (i.e., a Focus position should give rise to a minimality effect on Topic extraction, etc.) which are actually not found: locality effects are highly selective across A'-constructions (Rizzi 2000b).

3. It could be that the Q feature and the contrastive focus feature are assigned to two distinct elements within the phrase, the wh-operator *quale* and the lexical restriction *ragazza*, respectively. If so, the configuration would reduce to another subcase of case IV to be discussed directly, and the

conclusions would remain unchanged. A reviewer has pointed out that principle (32) has effects analogous to Muller and Sternefeld's (1994) Principle of Unambiguous Binding (at least for the cases of (30) in which distinct features are involved).

4. Starke (2001) proposes that wh-extraction of adnominal complements is only possible when they are specific, Discourse-linked. In the refined approach to Relativized Minimality in Rizzi (2000b), Starke (2001), such phrases are attracted by a C head with a complex feature specification, let us say +Q, +Top, for concreteness. As such a specification is needed for extraction from a wh-island in this system, extraction of the remnant in (37)b gives rise to a RM effect (attraction of +Q, +Top over a +Q, +Top element in the embedded C system). No such problem arises in the derivation of (36)b, as wh-movement to the embedded C can involve attraction by a "pure" +Q feature.
This approach may not be generalizable to the other cases discussed in Cecchetto (2001). Notice that the asymmetry in (37) also follows from the constraints on remnant movement proposed by Muller (1998), Grewendorf (2003): according to the latter reference, the remnant may only be attracted by a feature higher than the feature attracting the extracted element in a feature hierarchy.

5. With some degradation induced by the quantifier introducing the pied-piped phrase: compare (43)b with the more natural

(i) Gianni, i libri del quale credo che siano stati censurati
   'Gianni, the books by whom I believe have been censured'

The crucial point is that the degradation of (42)b is mild compared to the totally unacceptable (41)b; so, the status of the latter cannot be attributed to whatever factor determines a degradation when the pied-piped phrase has an operator in its Spec.

6. The simplest case of the freezing effect (31)b would seem to immediately follow from the view that an uninterpretable feature on the goal is required in A'-chains to make the element "active" and available for attraction, much as in A-chains according to the analysis in Chomsky (2000, 2001a) (see discussion in section 5): such a feature would be deleted when the wh-element is moved to the embedded C system in (31)a, hence the element would cease to be active for further attraction. This approach does not seem to be immediately generalizable to the more complex cases in which distinct elements in the same phrase are attractable to two distinct criterial positions. Consider for instance (40)-(41). Under the "inactivation" approach, both *quanti* and *quale* in the complex phrase would bear an uninterpretable feature, making them available for attraction. After *quanti* is attracted to the lower C (pied piping the whole complex phrase), *quale*, still "active", is attracted to the relative C. Why could it not, in turn, pied pipe the whole complex phrase to yield (41)b, an operation which it can perform in other structures, such as (42)b? The movement to the relative criterion position can involve pied piping of a phrase smaller than the phrase satisfying the Q criterion, as in (41)a, (43)a, or larger than it, as in (43)c, but not the pied piping of exactly the same phrase (as in (41)b, (43)b), a fact which does not follow from the inactivation approach unless auxiliary assumptions are made. Possible refinements may involve the sharpening of the notion "Pied-piping". We will not discuss the inactivation approach any further here.

7. One could perhaps understand the freezing effect of the latter principle in terms of Chomsky's cyclic Spell-out. It could be that as soon as a phrase meets a criterion, it is sent to the interfaces, thus becoming unavailable for further movement, a rather natural economy principle. Developing this view would require some care, though: we have seen that part of the phrase involved in the satisfaction of a criterion remains available for further movement, as in the splitting illustrated by examples like (41)a, (43)a. So the freezing effect is limited to the element actually carrying the feature involved in the satisfaction of the criterion (a more accurate wording of Criterial Freezing

would then be something like "In a Spec-head criterial configuration, the element bearing the criterial feature in the Spec position is frozen in place").

We will not try to integrate here "partial movement" constructions (e.g. McDaniel 1989) in which a wh-operator is allowed to stop in an intermediate, non-criterial position.

8. In many languages and constructions, Foc and Q appear to be associated. For instance, in Gungbe wh-phrases are moved to the overtly marked Focus position (Aboh 1998, 2004; the two positions can also be dissociated: see Rizzi (1997: 330, fn. 18)). I will assume that this is made possible by head movement of Q to Foc, creating the complex head Q+Foc, which then attracts the wh-phrase. This is only possible when Q and Foc belong to the same C-system (cf. the ill-formedness of (34)b, etc.) due to the strongly local character of head-movement.

The cleft construction clearly permits further movement of the focused element ('It is John that you saw t', 'Who is it t that you saw t?'). In order to make this compatible with the analysis in the text one could either assume that clefts are not to be assimilated to criterial constructions, or that the freezing effect is limited to peripheral criterial positions (see also fn 1; in view of the analysis to be developed in the following sections, the subject position should count as "peripheral" in this respect).

9. This derivational option is not available with agentive verbs if the small-VP scrambling takes place to a position lower than the one where the agent Theta role is assigned. The alternation in (51) is not available with psych verbs of the *preoccupare* (worry) class, which only admits the order of (51)b, if the inherent accusative case assigned to the experiencer with this verb class is stuck in the position of assignment (Chomsky 1986, Belletti & Rizzi 1988); the dative of (51) is more mobile, as the preposition/assigner can be pied-piped in this case. This analysis is akin to (and inspired by) Cinque's (2002) analysis of the right-peripheral position of adverbial PP's (in turn inspired by Kayne (2000), ch. 14, 15), which also involves leftward movement of a verbal projection, except that the movement proposed by Cinque affects a larger structure and targets a higher position, outside the thematic layers.

10. Note that the order between EPP and Agr could not be the other way around: in that case, the nominal closest to Agr would always be the one already attracted to the EPP position, and AGREE with another nominal could never be established. Much recent work suggests that person and number features of agreement have different roles, and may well occupy different structural positions (Bianchi 2003, Di Domenico 2003, Poletto 2000, Sigurdsson (2000)). We omit these (potentially very relevant) refinements here.

11. The text discussion should be refined in various respects. In particular, an unqualified reference to "subject clitics in NID" is an oversimplification in that different subject clitics seem to occupy different positions in different varieties according to their feature specification (Poletto 2000, Manzini & Savoia 2000).

12. In Raising constructions, an embedded subject moves to the main subject position: how can it escape the freezing effect in the embedded clause? Raising is clearly incompatible with the CP system (there is no raising from indirect questions, for instance) so it appears to take place from "truncated" clauses (undergoing "S' deletion" in classical GB terms): we can now assume that the "truncation" also involves the higher part of the IP system, the Subj head, so that no freezing effect arises (this is, in a sense, the analogue of Chomsky's (2001a-b) assumption on the "defective" character of the inflectional system in Raising). ECM clauses seem to be amenable to a similar analysis. Control clauses, on the other hand, are complete clausal structures with a C system and a full IP structure, hence PRO is always frozen as Spec of Subj of the control clause under Criterial Freezing, and never raises further.

Wh-extraction from finite complements in cases like *Who do you think came?* may in turn be amenable to a truncation of the CP+SubjP complex, in partial similarity to the cases of non-control infinitives. On French *que-qui* see the expletive analysis in Taraldsen (2001), which makes the case similar to subject extraction in Null Subject Languages.

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