Satisfying the subject criterion by a non subject: English locative inversion and heavy NP shift

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Introduction

This paper extends the approach to clausal subjects of Rizzi (2003) and Rizzi and Shlonsky (2006) to English Locative Inversion, a construction in which a locative PP seems to play a subject-like role, while remaining distinct in other respects from regular subject DP's. Section 1 summarizes the framework based on the Subject Criterion. Section 2 presents the salient properties of Locative Inversion, building on Stowell's (1981) analysis. Section 3 motivates the analysis of Locative Inversion in terms of indirect satisfaction of the Subject Criterion. Section 4 discusses one familiar subject-like property of inverted locatives, namely, their sensitivity to *that-trace* effects. Section 5 briefly discusses a variety of clause-initial locative PPs with genuine subject properties. Section 6 takes up the relationship between Locative Inversion and Heavy NP Shift, building on work by Culicover & Levine (2001). Section 7 tries to explain why locative inversion may not feed Raising and Section 8 is the conclusion.

1. Criterial Freezing and the Subject Criterion

Our point of departure, developed in the papers cited above, is that the Government and Binding notion of the EPP, "clauses must have subjects", should be thought of as a Criterial requirement in the sense of Rizzi (2003). It is assumed that a functional head Subj, distinct from and higher than T, must be locally c-commanded by an element (a specifier or a head) bearing the formal features of Subj, which we take to be Phi-features. Unlike feature checking or valuation, the satisfaction of a Criterion creates a freezing configuration: An element satisfying a Criterion can not be moved further (e.g., to satisfy another Criterion.) Thus, a subject DP moved to Spec,Subj to satisfy the Subject Criterion is expected to be frozen in place, unable to move on. This explains complementizer-trace effects, e.g., the *que*-trace effect in French, in a way alternative to the traditional Empty Category Principle approach:

(1) **Qui crois-tu que t Subj gagnera la course?*
'Who do you think that will win the race?'

The Subject Criterion straightforwardly captures the fact that subjects are harder to move than objects and other phrases. Still, (thematic) subjects are not generally unmovable: Languages can have subject interrogatives, relatives etc. all of which implicate subject movement of some sort. Rizzi & Shlonsky (2006) addresses this problem and argue that subject movement can be made licit if some other device can be found to satisfy the Subject Criterion. Put differently, subject DPs can move out of IP only if they can avoid moving into Spec,Subj, the freezing position. One familiar case of a subject extraction strategy along these lines is the one generally used by Null Subject languages (cf. Rizzi (1982), (1990)): word by word equivalents of (1) are grammatical in e.g., Italian, because the Subject Criterion can be satisfied by expletive pro, and the thematic subject can be extracted from a lower, non criterial position, thus escaping Criterial Freezing (the exact position of t is immaterial to our argument here).

(2) *Chi credi che pro Subj vincerà t la corsa?*
'Who do you think that will win the race?'

2. Properties of Locative Inversion

The following examples from Stowell (1981) illustrate Locative Inversion in English. In this construction, a locative PP occurs in clause-initial position, apparently satisfying the EPP requirement and allowing the thematic subject to remain in a lower, presumably predicate-internal position. (The original example number in Stowell (1981) is indicated as "St#")

(3) a. Into the room walked my brother Jack (St 31)
b. On the table was put a valuable book
c. Down the stairs fell the baby.

From the perspective of our analysis, a fundamental question raised by locative inversion is how the preposed PP can satisfy the Subject Criterion. One possibility is that the locative PP moves to Spec,Subj and satisfies the criterion directly. Another possibility is that criterial satisfaction is implemented indirectly, through the kind of devices which we postulate for subject movement in Rizzi & Shlonsky (2006). For example, it could be that the Fin(iteness) head in the left periphery of the clause satisfies the Subject Criterion, much as in cases of subject extraction. Movement of the locative phrase can be taken to serve the licensing requirements of the

special featural endowment which allows Fin to satisfy the Subject Criterion (see below for a more detailed illustration of this strategy of subject extraction).

Stowell (1981) provided clear evidence for the necessity of a more complex derivation of Locative Inversion than simple movement of the locative to subject position. In his terms, the locative PP could not occupy the EPP position at S-structure and had to be moved to a Topic position. One piece of evidence is distributional: Locative inversion is infelicitous in structures which disallow embedded topicalization. Sentential subjects are a case in point. The similar status of (4a) and (4b) is immediately explained if the inverted locative occupies a topic position, while it would be unexpected if the locative could remain in subject position.

(4) a. *That in the chair was sitting my old brother is obvious (St 38a)
b. *That this book, you should read is obvious

Locative Inversion is disallowed in ECM structures which lack a Top position in the left periphery as the C system is truncated in such environments. Compare (5a) and (5b),

(5) a. *I expect [in the room to be sitting my old brother] (St 35a)
b. *I expect [this book John to read]

Stowell also noted that the preposed PP, like topics in English, appears to create an island for wh extraction of the theme argument. If the locative PP were in subject position, no island effect would be expected.

(6) John says that near his house lies a buried treasure (St 33a)
(7) *What does John say that near his house lies t? (St 34b)

This argument in favour of the topic status of preposed locatives is perhaps less persuasive than the others because the ungrammaticality illustrated in (7) could be amenable to other properties which make the inverted subject unmovable, a possibility which is supported by the analogous impossibility of inverted subject extraction in the presentational *there* construction.[1]

[1] One possibility is that the post verbal subject in Locative Inversion constructions is focalized, as Culicover and Rochemont (1991) have argued and that new information focus is structurally encoded, see Belletti (2004). Extraction of *what* in

(8) *How many students did John say that there arrived t?

However, long extraction of other types of elements, a temporal adjunct for instance, is equally ill-formed over a topic and over a preposed locative while being perfectly grammatical over an embedded subject.

(9) a. *When did he say that into the room Jack walked t?
b. *When did he say that into the room walked Jack t?
c. When did he say that Jack walked into the room t?

We may add to these pieces of evidence the observation that I to C movement cannot apply across locative inversion. This would be unexpected if the PP were spelled out in subject position:

(10) a. *Is in the room sitting my old brother?
b. *Did down the hill roll the baby?

It should also be noticed that not just topicalization, but also other kinds of movement to the left periphery such as wh movement (11) or focus movement (12), license locative inversion:

(11) In what room is sitting my old brother?

(12) a. IN THE LIVING ROOM is sitting my old brother (, not in the bedroom)
b. IN THE LIVING ROOM, but not in the bedroom, were hanging portraits of GWB

So, in line with Stowell's analysis, the intermediate conclusion seems to be that the preposed locative plays a critical role in the satisfaction of the Subject Criterion, but that it can do so only parasitically, as it were, and in passing, when moving to a final destination in the left periphery.

Clearly, if the locative PP could directly satisfy the Subject Criterion, the necessity of further movement to the left periphery would be unexpected. Stowell dealt with this necessary further step by invoking the

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(7) would then violate criterial freezing: The focalized post verbal subject would be frozen in the VP-area focus position and could not undergo further movement.

Case Resistance Principle. In his analysis, the PP can move to subject position to satisfy the EPP because heads cannot select for specifiers belonging to particular categories, so that the inflectional head bearing the EPP feature could not restrict its specifier to the category NP (or DP); nevertheless, as P is itself a Case assigner, P and its projection cannot remain in a case assignment position due to Case Resistance. Since the EPP position is the locus of Nominative assignment, the locative PP must evacuate it.

3. Locative inversion and indirect satisfaction of the Subject Criterion

This Case resistance analysis is based on the assumption that Case assignment or checking apply at S-structure, after movement, so that the locative PP first moves to satisfy the EPP, and then evacuates the position, voiding a violation of Case Resistance. This particular ordering assumption was standard in various versions of the Government-Binding framework, but it is not naturally expressible in Minimalist terms.

In the Minimalist approach, Case properties are checked derivationally, as soon as the relevant configuration is created by Merge and Move. Therefore, if a constraint like Case Resistance were translated into this framework, it would amount to disallowing the creation of a configuration in which a Case assigner/checker ends up in a Case assigning/checking position. Let us implement and strengthen this conclusion by by means of the working hypothesis that in English, T moves to Subj (namely, the position checking nominative Case is incorporated into the Subject Criterion position). Thus, an XP moving to Spec,Subj must not only satisfy the Subject Criterion, it must also be able to check the nominative Case features of T. If PPs cannot check nominative (in English) then, *mutatis mutandis*, they are barred from Spec,Subj.

If movement of the locative PP to the EPP position is banned, then its contribution to the satisfaction of the Subject Criterion must be indirect, exploiting some other mechanism. The formal aspects of this mechanism are those developed for the analysis of subject extraction in Rizzi & Shlonsky (2006). Fin is the lowest head of the complementizer system, at the junction between the I and C systems (as in Rizzi (1997)). Normally, Fin is directly merged on top of the SubjP layer, which terminates the IP system. The Subject Criterion must usually be satisfied by moving a nominal expression to Spec,Subj before Fin is merged. Thus, the direct merger of the Fin layer on top of the Subj layer, with no nominal

expression satisfying the Subject Criterion in Spec,Subj gives rise to an ill-formed structure such as (13a), illustrated by (13b).

(13) a. *(I think that) Fin Subj will come a man
b. *(I think that) will come a man

Being non-nominal, Fin is normally unable to satisfy the Subject Criterion; hence movement of a nominal (argument or expletive) must take place to yield:

(14) (I think that) a man will come / there will come a man

There are, however, cases of nominal Fin, i.e., of Fin endowed with Phi-features. Elaborating on Taraldsen (2001), Rizzi & Shlonsky (2006) propose that such a nominal Fin is spelled out as the *–i* of *qui* in French. It can be directly merged on top of the Subj layer and can satisfy the subject Criterion in the absence of a nominal in Spec,Subj (assuming that the critical configuration for criterial satisfaction is local c-command, encompassing Spec-head and local head-head relations). The derivation of a subject relative construction like *l'homme qui viendra* ('the man who will come') in French goes through the following intermediate stage (OP being the relative operator, merged in the appropriate thematic position, the object position in (15), as the verb is unaccusative):

(15) -i_{Phi} Subj … *viendra* OP

The nominal Fin *–i* satisfies the Subject Criterion, so that the thematic subject OP can move without incurring a violation of Criterial Freezing (Rizzi 2003). However, the nominal features of Fin are uninterpretable, so they must be licensed (valued and checked, under standard Minimalist assumptions) by the subject OP passing through Spec,Fin, (viz. t' in (16)) on its way to its final destination, Spec,Rel or Spec,Force. (Here as elsewhere, we mark traces with the traditional "t". Everything we say is consistent with the copy theory of movement.)

(16) *L'homme* OP *qu-* t' –i_{Phi} Subj *viendra* t

This analysis can be extended to Locative Inversion, assuming that, in English-like languages, the relevant feature which renders Fin nominal is Loc, a particular kind of Phi-feature (though not one that enters into

agreement or nominative Case checking in English; see also Landau (2005)).

Consider the following derivational level:

(17) Subj T be [sitting [my old brother] [in the room]]

The argument *my old brother* can be moved to Spec,Subj, satisfying the Subject Criterion, and yielding the uninverted order *My old brother was sitting in the room*. But suppose that in this configuration, the two constituents *my old brother* and *in the room* are "equidistant" from an external attractor (either directly from their thematic position, or because of some "smuggling" mechanism of the kind proposed in Collins (2006); see below for discussion), so that either one could move. The PP cannot move to Spec,Subj, as we have tentatively assumed; but Fin with special nominal features ([+Loc] in this case) may be merged, satisfying the Subject Criterion.

(18) $\text{Fin}_{+\text{Loc}}$ Subj T be [sitting [my old brother] [in the room]]

Things cannot stop at this point because the Loc feature in Fin (or whatever other feature determines the nominal content of Fin) is uninterpretable, and must be valued. Thus, the locative PP moves to Spec,Fin and values the Loc feature:

(19) In the room $\text{Fin}_{+\text{Loc}}$ Subj T be [sitting my old brother t]

The derivation cannot stop at this point either, though. Fin is not a criterial head; it is not a head which assigns any special interpretive property to its Spec. In order to comply with the Last Resort guideline on movement which, following Rizzi (2003), we interpret in terms of criterion satisfaction (the formal expression of a scope-discourse interpretive property, in the terms of Chomsky (2004)), the PP must move to a Top position, or to any other criterial position (e.g., Q or Foc in (11)-(12)) which would determine a well-formed chain. We thus capture Stowell's observation that the locative PP must proceed to a left-peripheral position, Topic or the like. This accounts for the distributional properties of locative inversion, notably its absence from configurations characterized by a defective or truncated left periphery: (4a) and (5a) and its incompatibility with auxiliary movement to C (10a,b).

The revision of Stowell's analysis is now consistent with the derivational approach to Case: The locative PP can't move directly to Spec,Subj, but it can move to Spec,$Fin_{+Loc,}$ valuing the Loc feature which allows Fin to satisfy Criterial Freezing. The locative must move further from this position to a scope-discourse (criterial) position in the left periphery, in order to satisfy Last Resort guidelines. The interplay of these different factors accounts for the peculiar distributional properties of the construction.

4. Locative inversion and some ECP effects

Another important property of Locative Inversion is that it gives rise to *that-trace* type phenomena (cf. Bresnan (1977)), much as subject extraction does in uninverted clauses (at least in commonly analyzed varieties of English. See Sobin (2002) and the discussion in Rizzi & Shlonsky (2006) for the analysis of dialectal variations concerning this point). The pattern is illustrated by the examples in (20)-(22), adapted from Bresnan's work.

(20) In which villages do you believe (*that) can be found the best examples of this cuisine?
(21) In which villages do you believe (that) the best examples of this cuisine can be found?
(22) The best examples of which cuisine do you believe (*that) can be found in these villages?

In Rizzi & Shlonsky (2006), (22) is analysed on the basis of the assumption that the declarative complementizer *that*, expressing force as well as finiteness and functioning as the head of the embedded clause, is incompatible with the expletive-like status of nominal Fin in the successful cases of subject movement and extraction. As locative inversion also crucially involves the nominal Fin strategy, we expect it to be incompatible with *that*, as is the case in (20). No problem arises for locative extraction in uninverted clauses like (21) which do not depend on any special properties of the Fin head.

The parallel between locative inversion and subject extraction holds in other environments as well. Recall from the ungrammaticality of (10a,b) that I to C cannot move the auxiliary past the inverted locative, as is expected if the locative occupies a left-peripheral position. In fact, locative inversion is incompatible with I to C movement, whatever the order:

(23) a. *Did into the room walk my brother Jack?
b. *Into the room did walk my brother Jack?

The impossibility of (23b) is reminiscent of the incompatibility of I to C movement with subject questions, as in (24).

(24) *Who did come?

The similarity can be captured through the assumption that the nominal Fin head, acting as an expletive-like element which satisfies the Subject Criterion, is crucially involved in both locative inversion and wh movement of the subject (Rizzi & Shlonsky 2006). In I to C movement, on the other hand, Fin has the role of an attractor of a verbal element, much as the other functional heads of the inflectional space (Asp, T, Mood, etc.). It appears that Fin can be either nominal or verbal, but not both at the same time. Subject extraction and I to C movement, which require conflicting characteristics of Fin, are thus incompatible. In a similar vein, the impossibility of (24) is mirrored by the impossibility of (23b), if locative inversion also crucially involves the nominal Fin head. (23a) is independently excluded by the fact that the locative PP cannot occupy Spec,Subj in English, for reasons discussed previously.

5. A different "locative inversion" construction

As Stowell (1981) observed, none of the above facts hold for the locative subject PPs in copular constructions like the following:

(25) a. Under the stars is a nice place to sleep
b. How nice a place to sleep did John say that under the stars is?
c. The fact that under the stars is a nice place to sleep is obvious
d. I expected under the stars to be a nice place to sleep
e. Is under the stars a nice place to sleep?

In the examples in (25), the PP does not create an island to extraction (25b), it is compatible with contexts disallowing topicalization (25c), and ECM (25d), and it does not conflict with I to C movement (25e). So, it looks as if in this case the phrase *under the stars* really is in subject position.

Following Bresnan (1994), we may assume that the constituent *under the stars* in (25) is not a PP but a DP, headed by a null PLACE noun, a special structure presumably licensed by the copula in ways that remain to be elucidated (see also Kayne (2006)). This categorial difference would

allow *under the stars* to check nominative Case and control number agreement on the verb, the latter point illustrated by the following contrast between a locative 'subject' and an inverted locative PP (from Bresnan (1994) citing Levine (1989)).

(26) a. Under the bed and in the fireplace are/*is not the best (combination of) places to leave your toys.
b. Down through the hills and into the forest *flow/flows the little brook.

6. Heavy NP Shift and Locative Inversion

Heavy NP Shift can affect objects, but not subjects in English:

(27) Bill will give __ to John -- a book which I decided to recommend for the literary prize
(28) *__will give a book to John -- the author whom I decided to recommend for the literary prize

This asymmetry, ascribed to the ECP in Rizzi (1990), immediately follows from the Subject Criterion and the notion of Criterial Freezing: The DP *the author whom I decided to recommend for the literary prize* satisfies the Subject Criterion at some point in the derivation of (28), and is then rendered unmovable by Criterial Freezing. No problem arises for the object in (27) as there is no Object Criterion.[2]

In a recent paper, Culicover and Levine (2001) (henceforth C&L) argue that Heavy NP Shift may affect subjects in special constructions in English, such as Locative Inversion. In this section, we would like to show that this is expected under our analysis for the following reason: In the relevant construction, the Subject Criterion is satisfied by a preposed locative (in an indirect manner, as we have seen). Hence the 'subject' DP (the DP which

[2] If Heavy NP Shift is reinterpreted à la Kayne (1994), as involving leftward movement of the heavy constituent followed by further leftward movement of the remnant, the same conclusion should follow: the first step of moving leftward an element satisfying the Subject Criterion should be precluded by Criterial Freezing as before, and the further remnant movement could do nothing to salvage the structure. We will not discuss the exact mechanics of Heavy NP Shift here, and the auxiliary hypotheses that are needed (e.g., why no device normally permitting wh extraction of the subject is available if the subject undergoes Heavy NP Shift).

determines the agreement morphology on the inflected verb) is exempted from Criterial Freezing and can undergo Heavy NP Shift.

C&L argue that English Locative Inversion really corresponds to two distinct constructions: The first one is restricted to sentences with unaccusative verbs and is compatible with 'light' subjects which remain in situ in predicate-internal position (e.g., they can precede low adverbs, as in (29) vs. (30)); the second is also consistent with unergative verbs and requires heavy subjects which end up in clause-final position, following all predicate internal material, as in (31) and (32):

(29) Into the room walked Robin carefully
(30) *In the room slept Robin fitfully
(31) Into the room walked carefully -- the students in the class who had heard about the social psych experiment that we were about to perpetrate
(32) In the room slept fitfully -- the students in the class who had heard about the social psych experiment that we were about to perpetrate

C&L also show that the inversion construction with Heavy NP Shift may even involve some transitive sentences (see their (57)).

(33) a. Outside in the still upright hangar, were having deep sighs of relief the few remaining pilots who had not been chosen to fly in the worst hurricane since hurricanes had names.
b. *Outside in the still upright hangar, were having deep sighs of relief the pilots.

C&L plausibly argue that Heavy NP Shift of the subject is crucially involved in the derivation of (31), (32) and (33). But why is the light subject construction restricted to unaccusatives? And why is Heavy NP Shift instrumental in permitting the unrestricted kind of inversion?

Building on their analysis, and expressing it in terms of our conception of the clausal structure, we would like to propose that the configuration underlying (29) and its uninverted variant *Robin walked into the room carefully* is roughly as in (34). (The VP-final position of the adverb is presumably derived through leftward VP movement, see Cinque (1999)).

(34) Subj T_{+Phi} [Robin walk into the room carefully]

We assume, with Levin and Rappaport Hovav (1995:221), that manner of motion verbs like *walk* display an unaccusative behaviour when they select a directional PP. We bypass various questions concerning the details of the first merge position of the arguments by assuming that the subject and the PP are direct dependents of the same head V with these verbs, while with unergative and transitive verbs the subject is always first-merged as the specifier of a separate head, v (see Hale and Keyser (1993) and much related work). So, the subject of verbs which are incompatible with "light subject" locative inversion, e.g., *sleep,* is dependent on a little v head which does not itself select the locative. We also assume that dependents of the same head are equidistant from an external attractor in the sense of Chomsky (1995) and subsequent work.[3]

Phi in T can establish an AGREE relation with *Robin* in (29), thus determining the agreement morphology on the verb. The DP can be attracted to Spec,T and then to Spec,Subj, giving rise to the uninverted order *Robin walked into the room carefully* (recall that T_{+Phi} raises to Subj via head movement. This technical assumption is needed to explain why a (non-nominative) element like a locative PP cannot be attracted to Spec,Subj in English).

But there is another option: T_{+Phi} can agree with *Robin* without attracting it (see section 7 for how the lack of attraction may be permissible). While Subj is unable to attract the locative PP, as we have assumed following Stowell, locative preposing can be instrumental for the satisfaction of the Subject Criterion in the indirect way that we have proposed in the previous section: The nominal Fin is merged on top of the SubjP layer and it satisfies the Subject Criterion. The locative phrase is attracted to Spec,Fin and then continues to move to a Criterial position (Topic, etc.). This yields (29) from (34).

Verbs such as *sleep*, which are incompatible with this kind of locative inversion, are associated with an underlying structure in which the subject is merged in the specifier of a higher verbal head. (30) is underlyingly roughly as in (35).

(35) Subj T_{+Phi} [Robin v [sleep in the room fitfully]]

[3] Alternatively, accessibility of the subject to an external attractor may result from a "smuggling" operation, in the sense of Collins (2005), scrambling some sort of small VP over the locative, as in Rizzi's (2003) proposal for certain quirky subject constructions.

The uninverted order can come about through AGREE between T_{+Phi} and *Robin*, and attraction of the latter to Spec,Subj (possibly via Spec,T_{+Phi}), just as in (29). The inverted order, however, cannot be derived from (35). To see why this is so, consider what happens at the point at which the nominal Fin, endowed with Loc features is merged with (35) to yield (36).

(36) Fin_{+Loc} Subj T_{+Phi} [Robin v [sleep in the room fitfully]]

While the Subject Criterion can be satisfied by the nominal Fin, the nominal Fin_{+Loc} is unable to attract the locative across the thematic subject. Assuming Rizzi (2004)'s conception of Relativized Minimality, according to which locality effects arise between positions bearing features of the same class, and continuing to hold that Loc belongs to the class of Phi-features, it follows that attraction of the locative is blocked by Relativized Minimality in (36): *Robin* intervenes between Fin_{+Loc} and the locative PP as it asymmetrically c-commands the locative and is the dependent of a higher head. An AGREE relation cannot be established and movement of the locative to Spec,Fin fails to take place.

This analysis requires that the movement of the locative PP to Fin_{+Loc} be assimilated to A-movement. If it were not, no locality effect would be induced by an intervening subject in ((36)). In fact, C&L provide interesting evidence that the position targeted by the locative PP in Locative Inversion (Spec,Fin in our analysis) is indeed an A-position. They show that Locative inversion eliminates a Weak-Crossover effect that arises in an uninverted structure. Contrast the examples in (37).[4]

(37) a. *Into every dog_i 's cage its_i owner peered
(Topicalization,WCO)

[4] C&L argue that the locative PP occupies distinct landing sites in the light and heavy subject constructions (29) and (31), but they rely on subtle weak crossover evidence which is not uncontroversial (see their fn. 8). They also argue that the preposed PP cannot undergo further movement in the light inversion construction (their point vi, p. 301), while it can be extracted from an embedded clause in the heavy inversion construction. The data don't seem to straightforwardly point in this direction. For instance, their example (iv)a, fn. 20 *Out of which room did you claim came who?*, appears to allow wh-extraction, and still plausibly involves inversion with a light subject. In our discussion we adopt C&L's finding that two separate inversion constructions should be distinguished, but will continue to assume the same landing site for the locative PP.

b. Into every dog_i 's cage peered its_i owner
(PP-preposing, no WCO)

We know that Weak-Crossover effects are alleviated when the variable of the operator c-commands the pronoun. If the PP *into every dog's cage* moves through an A-position higher than the pronoun, Spec of Fin_{+Loc}, under our assumptions, the WCO alleviation is explained.

Consider now the 'heavy' subject examples in (31) and (32). (31) is derived exactly like (29), except that the heavy subject DP is shifted to the right periphery. In (32), the subject DP first enters an AGREE relation with T_{+Phi} and, differently from (29) moves to Spec,T:

(38) Subj [the students of the class who had heard…] T_{+Phi} [t v [sleep in the room fitfully]]

At this point, it is possible to satisfy the Subject Criterion by moving the heavy NP to the Spec,Subj where it would be would be subject to Criterial Freezing. Alternatively, the Subject Criterion can be satisfied by directly merging the nominal Fin_{+Loc}, which would yield the following:

(39) Fin_{+Loc} Subj [$_{DP}$ the students of the class who had heard…] T_{+Phi} [t_{DP} v [sleep in the room fitfully]]

The next step in the derivation is the valuation of the uninterpretable Loc feature in Fin, achieved by moving the locative PP to Spec,Fin.

(40) [$_{PP}$ in the room] Fin_{+Loc} Subj [$_{DP}$ the students of the class who had heard…] T_{+Phi} [t_{DP} v [sleep t_{PP} fitfully]]

Why does this step of movement not violate locality, as it crosses the subject in Spec, T? To answer this, we must take a position with respect to the landing site of Heavy NP Shift. For concreteness, let us assume that the shifted phrase is right-adjoined to FinP (but see note 2); giving:

(41) [$_{PP}$ in the room] Fin_{+Loc} Subj t'$_{DP}$ T_{+Phi} [t_{DP} v [sleep t_{PP} fitfully]] – [$_{DP}$ the students of the class who had heard…]

With Chomsky (2001), we assume that the traces of the heavy NP-shifted nominal, namely t'_{DP} and t_{DP} in (41) are not "visible" and don't count in the computation of locality on the locative PP chain (in the room, t_{PP}). Alternatively, and perhaps more plausibly, we can consider only "whole chains", and not just positions as relevant for the calculation of locality. The possibility, indeed, the requirement that chains cross -with apparent multiple violations of locality - is also suggested in Chomsky (2001) and extended to the A'-system by Krapova and Cinque (2004). So, no intervention effect is determined on the chain (in the room, t_{PP}) by intervening traces t_{DP} and t'_{DP} because only part of the chain of the shifted phrase intervenes, but not the whole chain, the heavy subject ending up, by our current assumptions, in a position higher than Spec,Fin.

It should be noticed that this analysis crucially requires a representational view of locality, with Relativized Minimality evaluated after movement (at the interface or at the end of each phase). In a strictly derivational view, Relativized Minimality would be violated in step (40), because the subject would intervene when the locative is moved to Fin.

The aspect of this analysis which we would like to stress is that a subject (at least in the sense of an element which enters into an AGREE relation with T_{+Phi}) can undergo Heavy NP Shift when it is allowed *not* to move to Spec,Subj. This happens when the Subject Criterion can be satisfied by the nominal Fin, which is in turn valued by the locative PP under Locative Inversion. If the subject itself has to move to Spec,Subj to satisfy the Subject Criterion, as in (28), it could not subsequently undergo Heavy NP Shift because of Criterial Freezing. Locative Inversion and Heavy NP Shift thus interestingly interact in the derivation of (31) and (32): Locative inversion indirectly satisfies the Subject Criterion (through the intermediary device of nominal Fin), thus freeing the subject DP (the DP entering into an AGREE relation with the inflected verb) from Criterial Freezing and making it available to undergoing Heavy NP Shift. Conversely, Heavy NP Shift of the subject DP is instrumental in rendering the locative phrase accessible to attraction from the nominal Fin without violating locality. No circularity or chicken-egg problem arises if a representational view of locality is adopted.

7. Locative Inversion and Raising

There is another aspect of C&L's analysis which is immediately relevant to us. They observe that the locative PP is unable to undergo Subject to

Subject Raising in the light subject construction. Compare the simple and the raising case:

(42) a. Into the room walked Robin slowly
b. *Into the room appeared to be walking Robin slowly

C&L's suggestion that this may be a semantic effect (cf. their fn. 4) remains unclear to us. The set of assumptions we are working with offers a structural explanation for this contrast.

Under the Subject Criterion approach, Raising must involve a defective clausal complement, truncated below Subj. Otherwise, subject raising would never be allowed because of Criterial Freezing. Consequently, the clause embedded under a raising predicate is just the following reduced structure, with some sort of defective Phi associated to T (Chomsky (2001), (2004)):

(43) T_{+Phi} be [Robin walking into the room slowly]

Locative inversion cannot take place in (43), as it critically requires the nominal Fin head and Fin is not expressed in the structurally defective Raising infinitive, which lacks the C-system altogether.

Following the establishment of the AGREE relation between T_{+Phi} and *Robin*, the latter moves to Spec,T_{+Phi}, yielding (44). (See our discussion below on why movement of the DP is obligatory here, while it appears to be optional in (34)).

(44) Robin T_{+Phi} be [t walking into the room slowly]

At this point, the raising verb is merged and the main clause VP is constituted. Then, the main Subj- T_{+Phi} complex is merged. From (45), the only possible candidate for movement into the main Spec,Subj is *Robin*. Direct attraction of the locative is blocked by *Robin* in the Spec of the embedded T_{+Phi}. (42b) is hence underivable and the only possible output is the uninverted order (46):

(45) Subj T_{+Phi} appear [Robin T_{+Phi} be [t walking into the room slowly]]
➔
(46) Robin Subj T_{+Phi} appear [t' T_{+Phi} be [t walking into the room slowly]]

C&L also observe that the equivalent of (42b) with a heavy subject DP moved to the right edge is grammatical:

(47) Into the room appeared to be walking a very large caterpillar

In our terms, (47) is derivable as follows: *a very large caterpillar* enters into an AGREE relation with T_{+Phi} in the embedded clause and then it is attracted to its Spec. Successive merger of the main clause material yields the following representation:

(48) Subj T_{+Phi} appear [a very large caterpillar T_{+Phi} be [t walking into the room ~~slowly~~]]

At this point, *a very large caterpillar* enters into a second AGREE relation with the main clause T_{+Phi}, and possibly moves to its Spec. The crucial point is that, being sufficiently heavy, it can undergo Heavy NP Shift and end up in the right periphery of the main clause:

(49) Subj t'' T_{+Phi} appear [t' T_{+Phi} be [t walking into the room ~~slowly~~]] -- a very large caterpillar

Now, nothing prevents the direct merger of Fin+Loc, satisfying the subject criterion in the main clause:

(50) Fin_{+Loc} Subj t'' T_{+Phi} appear [t' T_{+Phi} be [t walking into the room ~~slowly~~]] -- a very large caterpillar

Finally, Fin_{+Loc} can directly attract the locative phrase (neither t', t'' nor the heavy shifted DP count as interveners under the adopted approach, see the discussion around example (41)), yielding (47) (and incorporating further movement of the locative to Top), as desired.

We are now left with the following question: The ill-formedness of (42b) requires that T_{+Phi} in the embedded clause attract the nominal it agrees with, yielding (45). If the DP could remain in situ in the embedded VP, main clause Subj should be able to directly attract the locative under equidistance, and (42b) would be incorrectly derived.

The obligatoriness of attraction by the embedded T_{+Phi} is in apparent contradiction with the fact that main T_{+Phi} can choose to attract the DP it agrees with in the simple case (29), (structure (35)): if attraction of DP were obligatory here, one could not derive the inverted order at all, since

the DP *Robin*, moved to Spec,T_{+Phi}, would block attraction of the locative to Spec,Fin, a necessary step for the licensing of the inversion structure under our analysis.

One obvious difference between (35) and (44) is that the former has a SubjP layer which the latter crucially lacks (the hallmark of Raising, to recall, is a truncated clausal complement, as in (37)). One could, then, attempt to explain the difference between optional DP movement to Spec, T_{+Phi} in (35) and its obligatoriness in (44), by relating it to this independent difference. Yet it is not clear that this structural difference harbours the key to this mystery. In both (35) and (44), AGREE is established with the DP in situ after the merger of T_{+Phi}. In (35), Subj is then merged, T_{+Phi} head-moves to Subj, Fin_{+Loc} is merged to satisfy the Subject Criterion and finally, the locative PP is moved to Spec, Fin_{+Loc}. Note, now, that there is no obvious reason why, after the establishment of AGREE in (44), the DP could not also remain in situ and wait until the main clause Subj layer is merged. Then, (42b) would be incorrectly derived. Put differently, nothing in the system introduced thus far can force movement of a nominal to Spec,T.

We would like to propose that the embedded subject must move to Spec,T in (44) because if it didn't, the main clause heads T_{+Phi} and Fin_{+Loc} would be unable to attract either the subject or the locative from the embedded clause. Our suggestion is that the embedded T, endowed with a (defective) Phi specification would constitute an intervener for attraction by a higher head. The structure would then be ill-formed because there would be no way to satisfy the Subject Criterion in the main clause.

On the other hand, if the embedded subject is attracted to the embedded T_{+Phi}, as in (44), the Subject Criterion in the main clause can be satisfied in one of two ways: Either by continuing to move the embedded subject, which ultimately yields the uninverted structure (46), or through heavy NP shift of the subject followed by attraction of the locative to the main Fin_{+Loc}, yielding the inverted structure (47). Crucially, movement of the DP to the Spec of the embedded T_{+Phi} checks the (defective) Phi-features on T, thus eliminating it as a potential intervener.

This analysis still assumes an asymmetry between the defective Phi specification of a raising structure, which gives rise to a Relativized Minimality effect and the full Phi specification of T in a complete clausal structure, which does not prevent an AGREE relation from being established between Fin_{+Loc} and a predicate-internal locative. If it did, no case of simple locative inversion with a light subject would ever be possible.

This is somewhat counterintuitive: Why should a defective Phi specification in a raising construction count in the calculus of locality from a main clause Fin_{+Loc}, while the full Phi specification of the main clause would not? We believe a possible answer to this question may be based on Chomsky's (2006) idea that the complete Phi specification on T in a full clause is a mere duplication of a specification in the C system: T displays a "second occurrence", as it were of the Phi specification occurring in the C-system. So, if the locality restriction only arises from the intervention of distinct elements, not from different occurrences of the same element, we do not expect Phi in T to block Phi attraction from an element in the adjacent C-system. On the other hand, the defective Phi specification of a raising infinitive is not inherited from a C system, which is radically absent from that kind of structure. Therefore, it clearly involves distinct features from the C-system of the main clause, and as such it gives rise to Relativized Minimality effects, along the lines we have assumed.

8. Conclusion

Inverted locatives in English possess a number of subject-like properties: they suffice to satisfy EPP requirements, give rise to that-trace effects, alleviate Weak-Crossover effects, and seem to be able to undergo subject raising; on the other hand, preposed locatives have other properties which show that they cannot occur in subject position, and must reach one of the scope-discourse related positions in the left periphery: they are incompatible with different contexts not licensing left-peripheral positions (sentential subjects, ECM environments, etc.), and with T to C movement. We have tried to show that these apparently mixed subject and non-subject properties can be reconciled under an analysis which capitalizes on a device for subject extraction independently argued for in Rizzi and Shlonsky (2006). If, in the relevant structures, the Fin head can satisfy the Subject Criterion by being endowed with appropriate nominal features, locative features in this case, it will not be necessary to move the thematic subject to the criterial position; preposing of the locative will be required to check the locative features in Fin, and further movement of the preposed locative to a criterial position will be required by Movement as Last Resort guidelines. Heavy NP shift of the thematic subject, normally blocked by Criterial Freezing as other kinds of subject movement, becomes possible if the Subject Criterion is indirectly fulfilled by the preposed locative (via the locative Fin), a configuration which liberates the thematic subject and makes it available for undergoing Heavy NP Shift.

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