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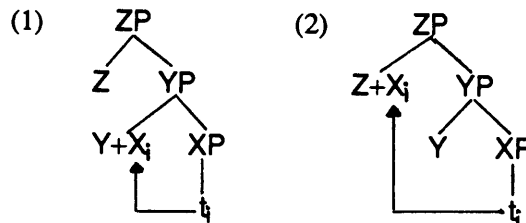
LONG HEAD MOVEMENT:
ECP vs. HMC.

JOSÉ LEMA AND MARÍA-LUISA RIVERO

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0. Introduction*

The versions of the Head Movement Constraint (HMC) proposed by Travis (1984), Baker (1985, 1988) and Chomsky (1986), coincide in two main respects. First, movement by a 0-bar level element X must be to the position of the head Y directly above it, as shown in (1); this implies that movement by X to Z skipping the intervening head Y, as in (2), is not possible. Second, Head Movement must satisfy proper government, which leads Baker and Chomsky to propose that the HMC derives from the ECP.



We will argue that the ECP is the only condition that X⁰-movement must fulfil, and that the structural stipulation that limits Head-movement to the situation in (1) must be abandoned, for it is not descriptively adequate. We will show that if the ECP is satisfied, the version of Head Movement represented in (2) –which we call Long Head Movement (LHM)– is a licit option in natural language.

In section 1, constructions involving LHM by a verb over an intervening auxiliary are introduced. Section 2 provides four arguments in favor of LHM as in (2). Namely, LHM is restricted to root constructions; it does not interact with negation; it is local; and it is licensed by temporal auxiliaries exclusively. Section 3 shows that LHM constructions satisfy the ECP by the formation of a chain of coindexation between the raised verb, the intermediate auxiliary and the trace of the verb. However, they violate the HMC. As a consequence we conclude that Head-movement of verbs and auxiliaries is most often of type (1), because of morphological requirements on affixes needing support, and not because of the independent constraint on movement known as the HMC, which seems redundant.

1. Long Head Movement

To account for the position of the auxiliary in (3a), Chomsky (1988:11) proposes the LHM analysis in (3b), with the negation treated as the head of NegP, corresponding to Y in (2). The derivation in (3) violates the HMC, and Chomsky concludes that if the HMC reduces to the ECP, then the first can be dismissed as a descriptive artifact.

- (3) a. John has not read the book.
 b. John [TP has_i [_{NegP} not [_{AgrP} t_i [_{VP} t_i read the book]]]]

However, if English not is in the specifier position of NegP rather than being the X° element heading that projection, as Pollock (1989) suggests, then the auxiliary in (3) can move through the head of NegP on its way from AgrP to TP, without violating the HMC. In other words, under this alternative treatment of the English negation, (3) no longer provides evidence that the HMC may be inoperative. In this paper we argue that the LHM constructions in (4), with the capitalized non-finite V moving to C by-passing the finite underlined Aux, provide the needed evidence to dispense with the HMC.

- (4) a. B: PROČEL sūm knigata
 READ have+Pres+1s book+the
 'I have read the book (completely)'
 b. C: PŘEDSTAVIL jsem se mu
 INTRODUCED have+Pres+1s me him
 'I have introduced myself to him' (Toman 1986: 124)
 c. EP: SEGUIR- te- ei por toda a parte
 FOLLOW- you- will+1s by all the part
 'I will follow you everywhere' (O Bobo, Herculano: 110)
 d. OS: DARte he un exemplo
 GIVE+you will+1s an example
 'I will give you an example' (Calila e Dimna: 291)
 e. R: SPUNE mi va ?
 TELL me will+3s
 'Will she/he tell me?'

LHM is found in Old Romance (Early Italian, Provençal, Old Spanish and Catalan), in European Portuguese until the XIXth C., in Modern Rumanian, and in present day Southern and Western Slavic languages (Bulgarian, Serbo-Croatian and Czech). As a case in point, in the B sentence (4a), the capitalized participle

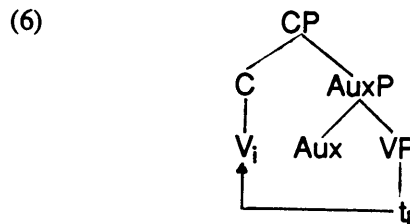
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PROČEL appears in initial position after having skipped the intermediate tensed auxiliary sum. Notice that the Direct Object knigata does not move along with the Verb, but maintains its basic VP-position, providing evidence for V^o-raising. The OS example (4d) is parallel to B (4a) in the relevant respects: the infinitive DAR skips the tensed auxiliary he, and the object un exemplo remains stranded.

In OS and EP, the elements undergoing LHM are infinitives. In B and C, they are participles. In R, LHM applies to both participles and infinitives. The two essential factors for LHM are 1) that the V or Aux undergoing the movement be non-finite, and 2) that the skipped element be a temporal auxiliary, as discussed in 2.4. In these respects, LHM contrasts sharply with 'short' Head-movement in Germanic, where the tensed element goes to C, and the non-finite V remains in VP, as in English (5).

(5) Has_i she _{t_i} read the book?

The analysis we propose for LHM (4) is schematized in (6): the non-finite V moves to C over the intervening auxiliary. More detailed representations, expressing the differences between the languages under consideration are given in 2.2.2. below.



The derivation in (6) violates the HMC, as this constraint requires that V move to the position occupied by Aux prior to its movement to C. However, we will claim that the ECP is satisfied in (6), because LHM is licensed by auxiliaries having Tense properties which permit the formation of an extended head-chain between the verb in C and its trace in VP. Temporal auxiliaries have a semantic content equivalent to that of Tense affixes, but differ from them in being syntactically independent items which do not require morphological support. As a consequence, Head-movement with these auxiliaries is not restricted to operate in the manner determined by the HMC in (1), but can apply under a less strict version of locality, as in (2) and (6).

LHM is triggered by different factors. Briefly, in R, V moves to C when there is an illocutionary operator: constructions such as (4e) always represent questions or exclamatives. In this respect, R LHM constructions and English Subject-Aux Inversions are parallel. In B, OS and EP, the trigger is a constraint against the occurrence of clitics and/or auxiliaries in CP-initial position, thus LHM is one of the means available to obtain Wackernagel's effects (and see (Lema and Rivero 1989) for a more detailed discussion of this difference and its consequences).

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2. Motivation for LHM2.1. Root effects

The application of LHM is restricted to root contexts, just like Germanic V-second and English Subject-Aux Inversion. In non-root contexts, two patterns exist. In B and R the V remains in situ, while in OS and EP the V incorporates into Aux, giving a synthetic form. In brief, in OS and EP V must always raise out of VP, which is not the case in B and R. In section 2.2.2. we account for this difference.

The non-finite verbal element can move over the temporal auxiliary into a higher X^o-level position only when an empty C is available. If C is filled by a complementizer, as in B (7a) and R (8a), the capitalized participle remains in its canonical position to the right of the auxiliary and next to its complement, in contrast to (4) where LHM has positioned it CP-initially. Notice that (7b) and (8b), with the participle or infinitive preposed in an embedded sentence, are ungrammatical. Thus LHM places non-finite verbs or auxiliaries in C.

- (7) B: a. Znam će sŭm PROČEL knjigata
 Know-1s that have+1s READ book+the
 'I know that I have read the book'
 b. *Znam će PROČEL_i sŭm t_i knjigata

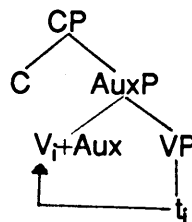
- (8) R: a. Am intrebat daca mi va SPUNE
 Have+1s asked if me will+3s TELL
 'I asked if she/he will tell me'
 b. *Am intrebat daca SPUNE_i mi va t_i

In non-root structures, LHM does not apply. We just saw that V remains in situ in such situations in B and R. By contrast, in OS and EP the non-finite element incorporates into the auxiliary. In EP (9a) the compound thus formed in the relative clause corresponds to a synthetic future; in OS (9b), the result of the incorporation in the complement clause is a synthetic conditional. OS and EP V-incorporation into Aux is represented in (10).

- (9) a. EP: Uma historia ... onde me REFERIR_{ei} de espaço a elle
 A history ... where me REFERwill+1s of space to her
 'A history where I will refer to it at length' (Vasconcellos, Cartas: 65)
 b. OS: Semejame que vos ESCUSAR_{iedes} bien
 Seems+me that yourself EXCUSEwould+2pl well
 'It seems to me that you would excuse yourself well'

(Zifar: 90)

(10)



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2.2. Negation and LHM

2.2.1. LHM is not possible in negated contexts. We propose that NegP, with Neg as head, is located between CP and IP (i.e. dominating both TP and AgrP), and projects a barrier preventing V from reaching C.

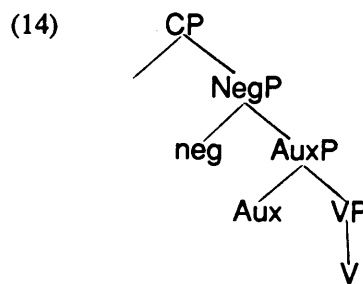
In R and B, V remains in situ in the presence of the negation, as in (11a–12a). These patterns are parallel to the embedded sentences in (7a–8a). Raising the verb PROČEL over the negation ne in B (11b), results in ungrammaticality. Example (11c) shows that placement of the verb between the auxiliary and the negation is also barred; therefore the landing site of LHM must be above the negation. The same argument holds for R (12b–c).

- (11) B: a. Ne sŭm PROČEL knigata 'I have not read the book'
 b. *PROČEL ne sŭm knigata
 c. *Ne PROČEL sŭm knigata
- (12) R: a. Nu mi va SPUNE ? 'Will she/he not tell me?'
 b. *SPUNE nu mi va ?
 c. *Nu SPUNE mi va ?

However, in OS and EP negative patterns, the V moves and forms a compound by incorporating into the auxiliary, as in (13). This option is unavailable in B and R: *Nu mi SPUNEva.

- (13) a. EP: Não nos ACONTECER_a como nos outros jornaes
 Not to+us HAPPEN_{will} as in+the other journals
 'It will not happen to us as in the other journals'
 (Vasconcellos, Cartas: 78)
- b. OS: Aqui non vos FAR_{an} si non todo plazer
 Here not to+you MAKE_{will} if not all pleasure
 'Here they will not give you anything but pleasure'
 (Zifar: 85)

V-movement over not is possible in English, as seen in (3); but negation is a barrier in LHM constructions because it is the intervening head of NegP between AuxP and CP, as shown in (14), (and see (Rivero 1988) on NegP in R and B, which extends to OS and EP, and (Zanuttini 1989)). The blocking effect of negation on X^o-movement has also been noted by Kayne (1989) in Romance Clitic Climbing. For him, clitics are X^o-elements and Clitic Climbing cannot proceed over an intervening negation. This analysis is compatible with (14) and parallel to our account of LHM.



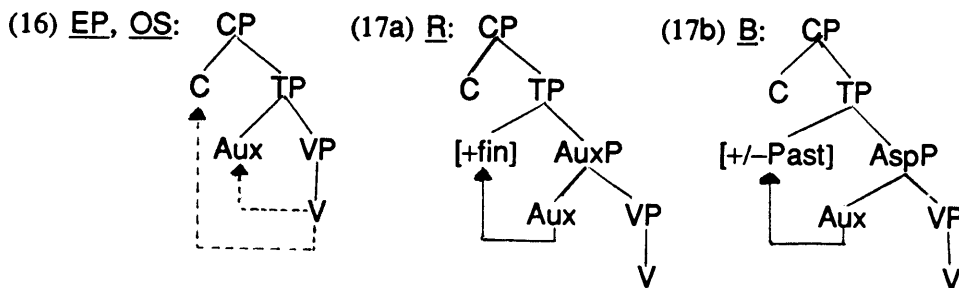
In comparison to LHM, VP-preposing (movement of a phrase rather than a head) over negation is possible, as seen in (15). In VP-preposing, a negative head does not act as a minimality barrier. Thus VP-preposing and LHM differ formally, and this predicts that the constructions in (4) are not amenable to a VP-preposing treatment. For additional differences between VP-preposing and LHM see 2.4.

- (15) a. OS: [_{VP} Desalabar su ferrosura]_i; non puede t_i
 Disdain her beauty not can
 'Disdain her beauty, she cannot' (Corbacho: 139)
- b. R: [_{VP} Citi cartea]_i; Maria nu poate t_i
 Read book+the Mary not can
 'Read the book, Mary cannot'

2.2.2. Before presenting a third argument in favor of LHM, we account for the asymmetric behavior of the verb when LHM does not apply in the languages under examination. Recall that while in OS and EP V moves and incorporates into Aux, as seen in (9) and (13), in B and R it remains in situ, as evidenced by (7–8) and (11–12).

Pollock (1989) proposes that Tense is an operator which must bind a variable at LF; in French finite sentences, V-movement must apply to leave a trace acting as variable. We propose that in OS and EP, the temporal auxiliaries head TP, as shown in (16), and as a consequence, V-movement applies obligatorily to create a variable for temporal-interpretation. The landing site for V varies: it is C when Wackernagel's effects need to be satisfied and when LHM is possible, in all other cases it incorporates into T. The mechanisms responsible for coindexing the Tense operator and the variable in LHM, are discussed in 3.1. and 3.2.

Although B and R differ between themselves in terms of the motivation for LHM, V-movement is not related to the requirement that a tense operator bind a variable. In B, LHM applies solely to satisfy Wackernagel's effects, and in R, it creates a variable for an illocutionary operator in C. We propose that in R and B, the auxiliaries head a projection different from TP, as shown in (17a) and (17b), and that movement by Aux to T is the mechanism by which the variable required by the tense operator is created.



In R (17a), T is [+finite] and the auxiliary has the features [\pm Past, \pm Posterior] (but see (Dobrovie-Sorin 1989) for a different approach). The Conditional, Future and Perfect "tenses" do not correspond to affixes, but to distinct lexical items which allow LHM: Conditional ar, Future va, and Perfect a. In B (17b), T contains the feature [\pm Past], and the auxiliary heads the lower projection Asp(ectual) P(hrase). When AspP is headed by aspectual affixes, Perfective and Imperfective

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simple tenses, such as Aorist and Imperfect, are obtained. When AspP is headed by the Aspectual Aux, as in (17b), the result is the Present Perfect with *e* 'has', and the Past Perfect *beše* 'had', which allow LHM. *Beše* is the general past form for both Aorist and Imperfect, because it occupies the aspectual layer and cannot be further inflected for aspect.

To conclude, LHM is structurally identical in EP, OS, R and B. However, when LHM cannot apply because C is filled or Neg is present, these languages follow two different strategies depending on the structural properties of their temporal auxiliaries, and the manner by which the variable for Tense interpretation is formed. In the R and B structures under examination, temporal auxiliaries head a projection distinct from TP, and regularly move to T to create the variable in question; thus, when LHM does not apply, V remains in situ. In contrast, the OS and EP temporal auxiliaries head TP, and V-movement regularly creates the variable required by the Tense operator. In the absence of LHM, short V-movement to T must apply.

2.3. Locality of LHM

LHM is local, so both the element that can move and its landing site are strictly constrained. The X° that undergoes LHM must be the head directly below the temporal auxiliary –i.e. V or Aux–, and its landing site must be a head-position directly above it –i.e. C–. Therefore, within the three forms of long movement schematized in (18), only (18a) is permitted. Intuitively speaking, LHM gives the equivalent of Have; I will t_i been singing from I will have been singing.

- (18) a. $Y_i - Aux^{\circ} - t_i$
 b. * $Y_i - X^{\circ} - Aux^{\circ} - t_i$
 c. * $Y_i - Aux^{\circ} - X^{\circ} - t_i$

The option (18b) –i.e. movement over a temporal auxiliary and another head above it–, is essentially LHM over a negation, which was shown to be impossible in 2.2. The alternative (18c) corresponds to movement by an element not directly below the temporal auxiliary, which is excluded too, as we show.

To this effect, consider the Renarrated Mood in B, used to report opinions of a third party. Tenses in this Mood are formed on the Perfect Indicative, and show sequences of parallel auxiliaries, since they are "perfects of perfects", so to speak. For instance, the emphatic renarrated Present in (19) contains a Present have followed by have and read as Participles. The emphatic renarrated Future in (20) contains the Present have, followed by have and a Future Aux as Participles, and a clausal complement with the main V, as shown in (23).

- (19) B: a. Az sŭm BIL četjal knjigata
 I have+1s have+Pcpl read+Pcpl book+the
 b. BIL sŭm četjal knjigata
 '(According to someone) I am reading the book'

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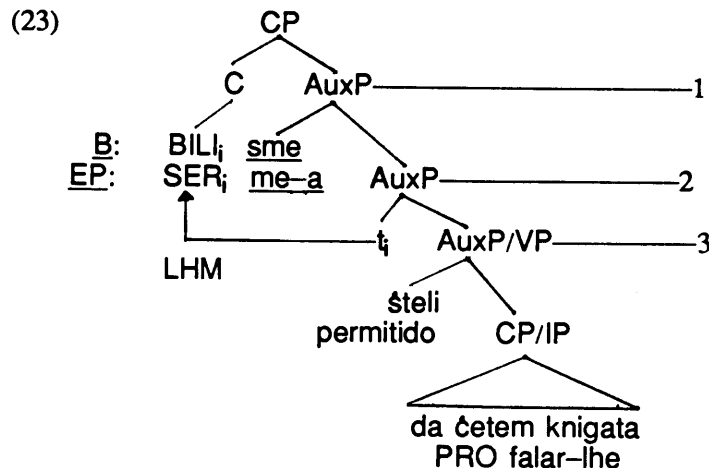
- (20) B:
 a. Nie sme BILI šteli da četem knjigata
 We have+1pl have+Pcpl will+Pcpl PRTC read+Pres+1pl book+the
 b. BILI sme šteli da četem knjigata
 '(According to someone) we will read the book'

In (19) and (20), the b sentences show LHM and no subject, while those in a show canonical order, with preverbal subject. The only auxiliaries that may undergo LHM are those directly below the tensed auxiliary, bil in (19b) and bili in (20b), as shown in (23) corresponding to (20b). Further evidence that LHM must be local is provided by the fact that extraction of an element not directly below such auxiliary, is ungrammatical, as shown in (21).

- (21) a. *Četjal_i sūm BIL t_i knjigata
 b. *Štel_i sme BILI t_i da četem knjigata

Similarly, with sequences of auxiliaries and verbs in EP and OS, only the local alternative of LHM (18a) is applicable, as seen in (22). In both examples, the passive auxiliary corresponding to English 'be' is raised to C, over a temporal auxiliary; the participle below or the more remote V do not undergo LHM, as shown in (23) for (22a).

- (22) a. EP: SER_i me- a t_i permitido falar-lhe?
 BE to+me-will allowed speak-to+him
 'Will I be allowed to talk to him?'
 (Herculano, O Bobo: 174)
 b. OS: SEER_i uos an t_i perdonados u<uest>ros pecados
 BE to+you will forgiven your sins
 'Your sins will be forgiven'
 (Picatrix, 25r79-80)



On the other hand, VP-preposing must move the phrase containing the verb with argument structure, hence, in sequences of auxiliaries it produces an apparently unbounded effect, as in (24), where several heads are by-passed.

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- (24) a. German: [Einen Kuchen backen] wird er doch wohl koennen
 [A cake bake] will he presumably can
 'Presumably, he can bake a cake'
- b. Spanish: [Leer el libro] no ha debido poder
 [Read the book] not have may can
 'He may not have been able to read the book'
- c. OS: [Absuelto] non puede ser ninguno de sus pecados
 [Pardoned] not can be anybody of his sins
 'Nobody can be absolved of his sins' (Set: 220)
- d. R: [Citi cartea] nu am putut
 [Read book+the] not have can
 'I have not been able to read the book'

2.4. LHM Auxiliaries vs VP-Preposing Auxiliaries

The discussion in 2.2. and 2.3. shows that LHM and VP-preposing differ in two main respects. First, in languages where NegP stands between TP and CP, VP-preposing can apply over negation, while LHM cannot: (11–12) vs. (15). Second, VP-preposing can skip several auxiliaries, as in (24), but LHM is a local operation skipping only a temporal auxiliary, as seen in (19–23).

The differences between VP-preposing and LHM stem a) from the fact that the first is X^{\max} -movement to an A-bar position and the second is X° -raising, and b) from the contrasting properties of the auxiliaries licensing each process, as we show.

There is a clear syntactic distinction between two classes of auxiliaries, which we attribute to a difference in the lexical structure of the Aux itself. LHM-auxiliaries have functional or temporal values exclusively (conditional, future, perfect), and disallow VP-preposing, as seen in (25):

- (25) a. B: *Petur iskaše da pročete knjigata, i [pročel knjigata]
 Peter wanted to read book+the, and [read book+the]
 (toj) {e/ beše}
 (he) {has/had}
- b. R: *[Citi cartea] Maria va
 [Read book+the] Mary will

By contrast, the type of auxiliaries that can license VP-preposing disallow LHM. They have additional lexical content of a modal nature, like OS poder 'can' in (15a) and R a putea 'can' in (15b). In B, modal auxiliaries take clausal, rather than VP-complements (and see (Rivero 1988) for discussion), so in this language there is no VP-preposing, although temporal auxiliaries do allow LHM.

Because VP-preposing auxiliaries have semantic content other than the purely temporal one, we assume that they Theta-mark their VP-complement, establishing a head-government relation with it. Thus, lexical auxiliaries partially resemble verbs with argument structure, such as those of propositional attitude. Notice that VP-preposing shares some of the properties of long movement of arguments, but differs from adjunct extraction, as expected from our proposal. Also, it can be argued along the lines of Rizzi's Relativized Minimality (1989), that LHM over Theta-marking auxiliaries is impossible, because a Theta-marker X° must not

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intervene in the movement path of another Theta-marker.

As discussed in section 3, functional or LHM-auxiliaries are not Theta-markers, and thus cannot properly govern a VP-trace. Instead they allow LHM because they are Tense-markers.

From the above perspective, all English auxiliaries fall into a single class. They have an aspectual or modal content which prevents them from acting as purely functional or temporal auxiliaries. They belong to the VP-preposing type, and disallow LHM for the reasons given above, and see (26–27).

- (26) a. I had earned a living.
 b. *Earned_i I had t_i a living.
 c. [Earned a living]_i, I had t_i.
- (27) a. I must earn a living.
 b. *Earn_i I must t_i a living.
 c. [Earn a living]_i, I must t_i.

2.5. Temporal Auxiliaries are not Specifiers

The evidence in the previous sections eliminates a potential analysis of temporal auxiliaries as specifiers of VP, as in (28). Notice that under this alternative, V-movement out of VP may comply with the HMC, as the process need not cross an intervening head, in contrast with our proposal in (6).

- (28) [_{VP} AuxP [_V V°]]

First, if LHM fails to apply, V incorporates into Aux in EP, and OS, as shown in (10). Incorporation is Head-to-Head and not Head-to-Specifier movement, as the analysis (28) would require.

Second, the auxiliaries in (4) carry Tense/Agr features which are characteristic of heads. To stand, the analysis (28) would require a rule of Specifier-into-Head raising, or an Affix Hopping rule into the Specifier to reflect this fact.

Third, the emphatic renarrated B tenses in (19–20) contain two Perfect auxiliaries, and may contain a third element such as the future šteli in (20). Under the analysis in (28), the Spec-of-VP must be recursive, as these auxiliaries are all functional in the sense of 2.4. (that is, they form tenses). However, within this approach, it must be stipulated a) that the main V cannot raise across its recursive specifier, in view of (21a), and b) that only the second of the specifiers may raise, rather than the third, in view of (21b) and (23).

In short, (28) cannot account for the properties of (4) and more complex patterns of LHM, whereas (6) can.

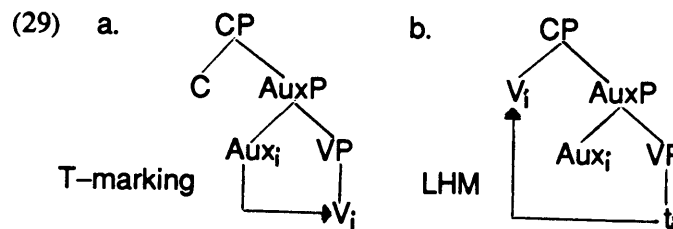
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3. Complying with the ECP in LHM

In this section we outline two alternative solutions to satisfy the ECP in LHM. The first relies on Tense-marking, the second on LF-incorporation by functional auxiliaries.

3.1. Tense-marking

LHM violates the HMC but yields grammatical structures, so it must be that compliance with the ECP is the only condition that the trace of the moved X° must observe. Proper government of the LHM-trace must obtain via antecedent government; it cannot be by head government, understood as Theta-government, since functional auxiliaries do not permit VP-preposing. We propose that temporal auxiliaries Tense-mark the X° element directly below them, as in (29a), coindexing the two immediate heads. When the Tense-marked head moves to C, as in (29b), the result is an extended chain of coindexation providing proper government for the V-trace.



Tense-marking is strictly local: it is possible only under government, and resembles Theta-marking in this respect. In OS and EP, the functional Aux heads TP, as in (16), for reasons given in 2.2.2, and licenses a VP-complement. R functional auxiliaries are lexical items with inherent temporal content, and they also govern a VP-complement as in (17a). We have suggested that B tenses have an AspP in general (and see (Rivero 1990) for the parallel Modern Greek situation). In simple tenses, AspP and TP surface in the affixes providing the contrast between Aorist and Imperfect. In Perfect tenses, TP is an affix and AspP an Aux, and we assume that the Tense+Aspect complex Tense-marks as a unit in (17b).

This analysis accounts for the locality of LHM seen in 2.3. With a series of auxiliaries or verbs, as in (23), only the head directly below the tensed auxiliary will be T-marked, and able to undergo LHM. Lower auxiliaries or verbs will not receive the appropriate index, and their movement will leave traces not antecedent governed, as in (21).

Similarly, the effects of negation discussed in 2.2. are accounted for. The movement by V to C in (11–12) does not result in an extended head-chain because the intervening negation does not share the Tense index, as shown in (30).

(30) * $[_{CP} V_i [_{NegP} neg [_{AuxP} AUX_i [_{VP} t_i]]]]$

The contrast between (29b) and (30) shows that the temporal auxiliary alone cannot properly govern the trace even though it governs it. Rather, the Aux is the intermediate link in the chain where V provides proper government. Since proper

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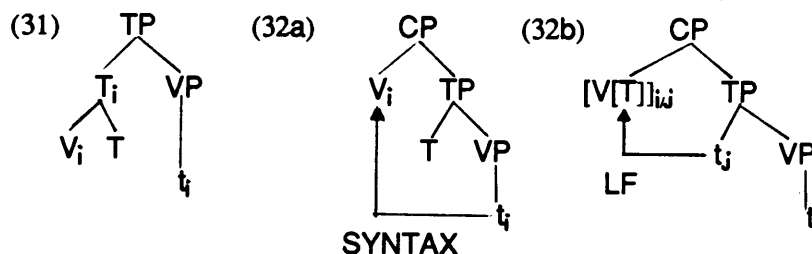
government for head-movement must be antecedent government, V-movement in (29b) ensures the appropriate relation, and the functional auxiliary transmits proper government from the verb to the trace. Government transmission is interrupted by elements not sharing the Tense-index, such as those in (21) and (30).

The extended chain proposed for LHM is based on Tense-marking, as motivated by the properties of the B renarrated tenses in (19–20); these indicate that Agreement is not involved in the formation of the chain, as we show. B Participles must agree in Number with the finite Aux, so that in (19) the two Participles are Singular (and Masculine too), while those in (20) are both Plural. Then, Agreement extends to the main V in (19), and to the Future Aux in (20). If Agreement played a role in the LHM chain, the examples in (21) should be grammatical, contrary to fact. Using English patterns to make this point, the Agreement hypothesis makes the incorrect prediction that the B equivalent of Reading; I have been t_i the book should be possible. In fact, only Been_i I have t_i reading the book is found, as the Tense-chain proposal leads us to expect.

3.2. LF-incorporation: an Alternative Solution

An alternative to the Tense-marking analysis in 3.1., involves free LHM of V-to-C in Syntax followed by LF-incorporation of the auxiliary into V, with LF-incorporation restricted to temporal auxiliaries.

3.2.1. As discussed in 2.2., in EP and OS V-movement is obligatory in order to create the variable the tense operator must bind at LF. Then movement can be short, with incorporation into the TP-auxiliary, as in (10) and (13), or long, as in (4). In short movement, the complex in T c-commands the coindexed trace counting as variable for T, as in (31), much like Pollock proposes for French (1989).



However, after LHM applies in (32a), V and the tense operator are not coindexed, so the V-trace cannot count as an appropriate variable. Nevertheless, it can be proposed that the temporal auxiliary incorporates via adjunction to V in LF, as in (32b). Then, the tense operator sharing the index with the verb binds the V-trace as variable, and the quantificational requirement is satisfied.

By Baker's (1988) Government Transparency Corollary, when a head X incorporates into a head Y, Y becomes the governor of the government domain of X prior to its movement. In (32a), T governs VP as well as its head; in (32b), when T-LF-adjoints to V, the governing domain of V is extended to include VP and its head. Therefore, the verb properly governs its trace in VP, and the ECP is satisfied, without appeal to Tense-marking.

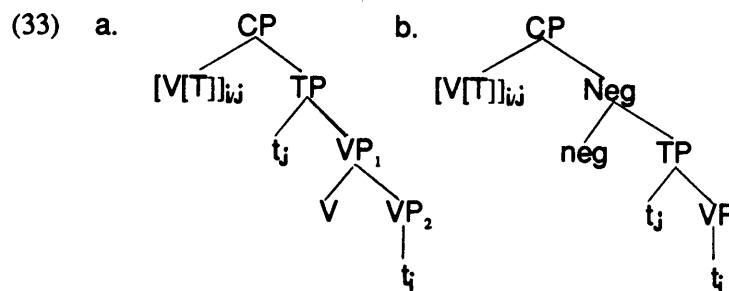
In brief, under this alternative the EP and OS tense-variable always results

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from Incorporation, namely a) of V into Aux after short head movement, and b) of Aux into V at LF, to complement the application of LHM in the syntax.

3.2.2. B and R lack syntactic incorporation of V to Aux, as mentioned before. Furthermore, we propose that Aux raises to T to provide the variable for tense-interpretation in LF, as in (17). However, LF-incorporation by the temporal auxiliaries into the verb in C could be extended to these languages if the process was triggered not only by requirements of quantification theory, but also in order to extend the governing domain of V to satisfy the ECP. Under this perspective, LF-incorporation appears less general a proposal than Tense-marking.

The LF-incorporation and the Tense-marking solutions make identical predictions as far as the locality of LHM is concerned. For example, in (33a), the auxiliary (T) has adjoined to a verb originating in VP₂, which is a position not belonging originally to its government domain. Because VP₂ is not included in the government domain of the incorporated auxiliary, the Government Transparency Corollary does not allow the verb in C to govern the trace in VP₂, and as a result the ECP is violated.



Similarly, the blocking effects of negation in structures like (33b), are directly explained. Although the trace t_i of V is in the government domain of the auxiliary (T), the compound in C cannot govern the trace t_j in TP, because NegP intervenes.

3.2.3. Finally, under the LF-incorporation approach, two classes of auxiliaries are also distinguished. LF-incorporation must be restricted to the functional class whose characteristic is Tense-marking. It cannot apply to Theta-marking or lexical auxiliaries, if the properties of LHM and VP-preposing previously discussed, are to be accounted for. In this respect, tense-marking appears to be an essential characteristic of LHM in both approaches.

4. The HMC: Morphological Condition

Temporal auxiliaries and temporal affixes are functional categories with similar semantic content. However, they differ as to syntactic and morphological properties. On the one hand, affixes require a morphological base at S-Structure, and must trigger operations of the V-movement and Affix-Hopping types. On the other hand, temporal auxiliaries do not require this support since they are free forms from a syntactic perspective. When a V incorporates into a functional Aux, as in EP and OS (i.e. short head movement), the process is triggered by syntactic and semantic factors independent of the morphological status of the Aux itself.

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The distinction between (simple) tenses with affixation, and (compound) tenses with auxiliaries may be drawn differently for the same "tense" in two languages, but this determines whether LHM will be possible or not. A comparison between B and R from this point of view is revealing. B uses the functional Aux have for the Present and Past Perfect, and allows LHM in both. The Present Perfect appears in (4a), and the Past Perfect in (34); the movement is optional in the latter case, because bjax 'I had' is not clitic-like and may stand in initial position:

(34) B: PROČEL_i bjax t_i knigata
 Read I-had book+the 'I had read the book'

R, on the other hand, counts the Present Perfect among LHM functional auxiliaries, as in (35a), parallel to (4e). However, the Past Perfect is expressed by an affix, so short Head-movement or "incorporation" of V into the affix is the only available option, irrespective of the syntactic environment, as in (35b):

(35) R: a. SPUSU_i mi-a t_i 'He/she has told me ?/!'
 b. Mi spuseraŋi
 Me tell-Past-Perfect-2pl 'You had told me'

Under the previous perspective, the HMC as a restriction on movement by an X° to the next head above it, as in (1), not only appears problematic in view of LHM in (6), but seems unnecessary, as it can be derived from two independent principles.

First, an X° will not by-pass intervening heads with Theta-structure. In the case under consideration, a V° cannot skip an Aux, Modal, or V with more content than Tense. As we saw, LHM cannot apply with Theta-marking items. More generally, the same principle lies behind Incorporation. For instance, although an N° may incorporate into the V° that Theta-marks its NP, it will not be able to skip this V°, for Relativized Minimality would be violated, and its trace will not be properly governed.

Second, Head-Movement will not leave an affix stranded in S-structure, but will give it morphological support. In this case, the HMC derives from a morphological requisite of the type suggested by Lasnik (1981).

Because temporal auxiliaries a) are heads with no Theta-structure, and b) they do not require morphological support, they escape the conditions behind the strict locality of the HMC. As a result, they allow LHM, or a less local Head-movement derivation complying with the ECP exclusively, as in (2) and (6).

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