

Deficient Heads and Long Head Movement in Slovak*

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1. Introduction

This paper examines the following auxiliaries/clitics in Polish and Slovak (the clitic forms are in italics).¹

(1) a. Polish:

- *m* [m]: 1sg. preterite ending, e.g. *zabilem* 'I killed'
- *ś* [ɕ]: 2sg. preterite ending, e.g. *zabileś* 'you killed'
- *śmy* [ɕmi]: 1pl. preterite ending, e.g. *zabiliśmy* 'we killed'
- *ście* [ɕtɕe]: 2pl. preterite ending, e.g. *zabiliście* 'you killed'
- *by* [bi]: 'would', e.g. *zabil by* 'he would kill'

b. Slovak:

- *som* [som]: 1sg. active form of the verb *byt* 'to be'
- *si* [si]: 2sg. active form of the verb *byt* 'to be'
- *sme* [sme]: 1pl. active form of the verb *byt* 'to be'
- *ste* [ste]: 2pl. active form of the verb *byt* 'to be'
- *by* [bi]: 'would', e.g. *napisal by* 'would have written'

The Slovak and Polish *by* 'would' is not inflected for person or number. The 1st. and 2nd. person forms of the copula verb *byt* 'to be' appear in various Slovak tenses. However, I will examine only the auxiliaries appearing in the formation of the past tense. Consider:²

(2) past indicative constructions (I/you/she/we/you/they called):

Slovak			Polish	
Prs.	Singular	Plural	Singular	Plural
1	volal+a <i>som</i>	volal+i <i>sme</i>	wolal+a+m	wolal+i+ <i>śmy</i>
2	volal+a <i>si</i>	volal+i <i>ste</i>	wolal+a+ <i>ś</i>	wolal+i+ <i>ście</i>
3	volal+a	volal+i	wolal+a	wolal+i

1.1 Past tense person-number markers in Polish and Slovak are clitics

The Polish preterite person-number markers listed in (1a) are considered to be clitics (Booij & Rubach 1987, Borsley & Rivero 1994). Phonologically they are enclitics forming a single phonological word with their host (see: Szczegielniak 1993, 1995a). They also behave like affixes in terms of Polish phonological rules (see: Booij & Rubach 1987, Szczegielniak 1991, and Embick 1995 for a different account). However, their syntactic behaviour indicates that they are not part of the verb's inflection, since they can attach within a clause to elements preceding the verb, or to the verb itself.

- | | | | | |
|-----|----|-----------------------------|----|-----------------------------|
| (3) | a. | Ty zabila+ <i>s</i> Janka | | ' You killed John' |
| | | you kill+fem+be-1sg. John | | |
| | b. | Ty+ <i>s</i> zabila Janka | c. | Ty Janka+ <i>s</i> zabila |
| | d. | Janka+ <i>s</i> ty zabila | e. | Janka ty+ <i>s</i> zabila |
| | f. | * Ty zabila Janka+ <i>s</i> | g. | * Zabila ty+ <i>s</i> Janka |
| | h. | Zabila+ <i>s</i> ty Janka | i. | Zabila+ <i>s</i> Janka ty |
| | j. | Ty Janka zabila+ <i>s</i> | k. | Ty+ <i>s</i> Janka zabila |

The contrast between (3f, g) and (3h, i) indicates that the ungrammaticality of (3f, g) is a result of the clitic being attached to an element following the verb. In unmarked constructions the auxiliaries attach to verbs, however, they may also attach to other constituents that precede the verb. Booij & Rubach (1987:34) give examples of the clitic being hosted by pronouns, particles, conjunctions, complementisers, adverbs and nouns provided they precede the verb.

De Bray (1969), Mistrík (1983:133), Short (1993) and Starke (1993) indicate that in Slovak the particle *by*, and the forms of the verb *byť* 'to be' (*som, si, sme, ste*) when used as auxiliaries are enclitics and that they follow the first element in the clause in a fixed order.³ Consider the following example, where the 1st. person singular of 'to be' is used as an auxiliary forming the past indicative.

- | | | | |
|-----|----|----------------------------|--------------------|
| (4) | a. | Ja <i>som</i> napísal list | 'I wrote a letter' |
| | | I be-1sg. write letter | |

- *b. *Som* napisał list
- *c. Ja napisał *som* list
- d. Napisał *som* list
- *e. Napisał Ja *som* list

2. *By* in Slovak and Polish

The restrictions on the distribution of the *by* clitic in Polish and Slovak are the same as those on the auxiliary clitics. *By* cannot be clause initial (5g) and cannot attach to elements which on the surface follow the verb (5f). When *by* and the auxiliaries appear in the same clause they behave like a single lexical item (i.e. they can never be separated). The properties of *by+aux.* seem to be more consistent with that of *by* than with those of the preterite clitics in Polish.

- (5) 'he wanted Andrew to do it/ he knew Andrew would do it'
- a. On *chcial*/**wiedzial*, *zeby* Andrzej to zrobil
he wanted/knew that+CL Andrew it did
 - b. On *chcial*/**wiedzial*, *by* Andrzej to zrobil
he wanted/knew CL Andrew it did
 - c. On **chcial*/*wiedzial*, (*ze*) Andrzej *by* to zrobil
he wanted/knew (that) Andrew it did
 - d. On **chcial*/*wiedzial*, (*ze*) Andrzej to zrobil*by*
he wanted/knew (that) Andrew it did+CL
 - e. On **chcial*, (*ze*) Andrzej to zrobil
he wanted/knew (that) Andrew it did
 - f. On **chcial*/**wiedzial*, (*ze*) zrobil Andrzej *to**by*
he wanted/knew (that) do Andrew it+CL
 - *g. *By* on zabil go
would he kill him

The above data indicate that the distribution of *by* is either in INFL or COMP, depending on the main clause verb. The verb *chciec* 'to want' requires *by* in COMP. The verb *wiedziec* 'to know', on the other hand, selects a CP complement with the complementiser *ze*, and *by* has freedom to move within the subordinate clause because it is selectionally independent of the main clause verb.⁴

Slovak *by* like the Slovak auxiliary clitics is limited to the second position within a clause, however, when both are present, *by* always precedes the auxiliary clitic.

- (6) a. Napísal *by som* list 'I would have written a letter'
 wrote cond. be-1sg. letter
 * b. Napísal *som by* list
 c. Spýtal sa či *by som* napísal list 'He asked if I wrote a letter'
 asked refl if cond be-1sg. wrote letter
 * d. Spýtal sa či *som by* napísal list
 asked refl if be-1sg. cond wrote letter

3. Long Head Movement analysis of Slovak and Serbo-Croatian

Borsley & Rivero (1994), henceforth B&R, give an account of second position phenomena in Slovak and other languages. They propose that Slovak exhibits Long Head Movement (LHM) of the verb to C⁰.⁵

- (7) [C" Napísal₁ [IP" *som* [V" [V t₁][D" list]]]]

The auxiliary clitic *som* is the head of IP and the verb undergoes apparent LHM, skipping the position occupied by *som* and going directly to C⁰. Slavic LHM is a root phenomenon hence verb-aux. combinations are restricted in their occurrence to main and independent clauses.

- (8) a. Vie [SPEC-COMP čo *som* napísal] 'He knows what I wrote'
 *b. Vie [SPEC-COMP čo napísal *som*]
 *c. Vie [SPEC-COMP čo Ja *som* napísal]

Examples (8b, c) indicate that auxiliary clitics in embedded clauses cannot be preceded by either an NP Subject or the verb. Example (8c) indicates that this phenomenon cannot be solely accounted for by an analysis employing LHM, since the subject cannot intervene between a filled COMP and the auxiliary clitic (Wilder & Čavar 1994, Embick & Izvorski 1996). However, it is not the case that the auxiliary clitics cannot be preceded by complex elements in main clauses.

- (9) a. Ja, ktory *som* bol unaveny, *som* Petrovi napisal list
 I who be-1sg. be tired be-1sg. Peter wrote a letter
 'I who was tired, wrote Peter a letter'
 b. Ten dlhy list *som* napisal včera večer
 this long letter be-1sg. wrote yesterday evening
 'This long letter I wrote yesterday'

B&R's LHM analysis of Slavic languages like Serbo-Croatian (SC) also runs into certain difficulties. Bošković (1995a) argues that SC has no fixed second position for SC clitics and that participle movement across auxiliary clitics is not LHM but participle adjunction to Aux. Consider:

- (10) a. Jovan *je* istukao Petra 'Jovan beat Petar'
 Jovan is beaten Petar
 b. Istukao *je* Petra 'He beat Petar'
 beaten is Petar

It has been generally assumed that the position of the clitic in (10a) is the same as in (10b). However, Bošković points out that if we insert a sentential adverb, which SC participles cannot cross, we obtain:

- (11) a. Jovan *je* nesumnjivo istukao Petra 'Jovan undoubtedly beat Petar'
 Jovan is undoubtedly beaten Petar
 * b. Istukao *je* nesumnjivo Petra 'He undoubtedly beat Petar'
 beaten is undoubtedly Petar

Bošković (1995a:248), following Watanabe (1993), proposes that sentential adverbs are located between AGR_S and T, hence the clitic *je* (11a) is positioned higher than the sentential adverb *nesumnjivo*. He shows that if the participles cannot move to a position higher than the adverb as in (11b), then the clitic in example (10b) must be located in a position lower than that of sentential adverb adjunction.⁶ Hence, there is no fixed second position in SC.

4. Polish Incorporation and Cliticization

Polish clitics do not exhibit second position phenomena. According to B&R, Polish does not have LHM. Instead the verb/participle raises to the clitic and undergoes Incorporation, as in Baker (1988). This movement is optional and when the verb fails to raise to the position of the clitic, elements which are scrambled in front of clitic serve as its host.⁷ B&R distinguish this process from Incorporation by calling it "PF cliticization" (PFC). Note that PFC can create discontinuous constituents.⁸

- (12) a. (Ty) [DPEwy+ś książkę]₁ czytał t₁
 (you sg.) [Eve's +be-2sg. book]₁ read t₁
 b. (Ty) [DPEwy książkę]₁+ś czytał t₁
 (you sg.) [Eve's book]₁+be-2sg. read t₁

PFC is a phonological process, which simply encliticizes the clitic to its host and is insensitive to the syntactic properties of the host. Let us generate (12a) along the lines proposed by B&R:

- (13) [IP[D Ewy]₁[AUX ś] [DP [D t₁[NP książkę]]₂ czytał [NP t₂]
 Eve's be-2sg. book read
 'You (sg) read Eve's book'

First the Object DP *Ewy książkę* 'Eve's book' is scrambled in front of the VP. Then the D *Ewy* "Eve's" is scrambled in front of the clitic. At PF the clitic cliticizes onto the D *Ewy* generating *Ewyś*. Example (12b) is generated by scrambling the DP *Ewy książkę* 'Eve's book' up to IP. The clitic later cliticizes to the first element to its left which in this case is the head Noun *książkę* generating *Ewy książkęś*.

B&R argue that Incorporation in Polish is a process where the verb moves up and left-adjoins to the preterite clitic, forming an X⁰. This explains why the cluster verb+clitic behaves like a single unit syntactically. The movement of the verb to the clitic is optional and hence cannot be considered as feature driven in the sense adopted by Chomsky (1993, 1995b).

5. Problems with B&R's account of Polish and Slovak

If we describe the basic displacement operation in terms of Attract and not Move, it is possible to say that the head of C^0 has some abstract feature which must be checked overtly and hence triggers LHM. However, this new feature would be strong only if there is a clitic in IP and only if there is no overt material preceding the clitic which could satisfy its second position properties. Hence, it would be difficult to construe LHM as an instance of Attract, since it is not clear what triggers verb/participle raising and, at the same time, blocks further raising of the subject or any other material. Additionally, Embick & Izvorski (1995) and Tomić (1996) show that some languages with second position clitics also allow optional verb/participle-aux. and aux.-verb/participle configurations, provided the auxiliary is not a clitic. Consequently, LHM must be triggered when there is a second position clitic clause initially. When there is no clitic, LHM is optional.⁹ This would mean that the feature triggering LHM, and making raising obligatory, would be tied to specific lexical elements which exhibit Wackernagel effects. However, this entails that in constructions involving auxiliary clitics in Slovak there must be a functional head, probably C^0 , containing a feature which triggers LHM (call it a W-feature). This feature could be checked via LHM, or wh-movement (see: example 8), which indicates that elements in SPEC-C as well as in C^0 can satisfy it. It can also be checked by material below C^0 as in the case of constructions involving a subject - auxiliary - verb - object order, where the raising of the verb/participle is blocked (see examples 4a, c, e).¹⁰

Within the recent minimalist framework this would require that the Merger of C^0 with the verbal projections (i.e. INFL) be constrained by the formal feature specifications of both, which would imply that Merger can be feature driven not only in order to check the EPP but also to check the W-feature.¹¹ This is not technically impossible. Chomsky (1995b) allows instances where the same feature is checked more than once, the provision being that it disappears before SPELL-OUT. However, the EPP which can be checked via Merge, stands out from the other feature groupings in Chomsky (1995b), where he assumes that Merge cannot be feature driven and cannot, for example, check case or agreement features. Moreover, a model where a W-feature can be checked through the merger of C with INFL, or to be more exact with Tense, and then later can be checked

optionally via head movement like LHM, or XP movement to SPEC-C or SPEC-T, is inconsistent with the Minimalist framework, which has no instances where the same feature can be checked via head movement, phrase movement and Merger.

I will not explore here the possibilities resulting from the assumption that the EPP is universal, and does not pattern with other features like case. However, it is worth noting that this in theory could be considered an argument for adopting a proposal that the W-feature, like EPP, somehow differs from features like case.

Note that the proposed in B&R raising and Incorporation of V to INFL is also problematic, since whatever feature is responsible for raising to the clitic can be checked in two different configurations: one being that of head incorporation, and the other some sort of locality configuration, such as Spec-Head agreement. Polish would have to allow for both kinds of checking configurations for the same feature. This again is not impossible in the Minimalist framework, however, it would mean postulating a third kind of feature which can be checked either via phrase movement or head movement. Additionally, if such features exist, then answering why certain features cannot be checked by head movement (why doesn't the subject DP check agreement via head movement) and others by phrase movement (why doesn't the verb check Tense via XP-movement to SPEC-T) becomes a crucial problem for the framework.¹²

Moreover, in the case of wh-movement and subordinate clauses, the feature responsible for the movement and incorporation of the Verb can also be checked by elements in COMP. B&R assume that the clitics are generated below COMP, and hence a feature checking configuration would have to also be non-local and extend across phrases.¹³

Finally, the proposals in B&R raise the question of what blocks in the movement of the verb to aux. in Slovak? The difference between Slovak and Polish in their model is based on a stipulation that in two closely related languages one allows only LHM, whereas the other permits only incorporation.

Consequently, I will reject B&R's framework and propose that the difference between Polish and Slovak is in the type of heads which clitics can license. It is important to note that I am not arguing against the

existence of LHM in general. However, I am arguing against the assumption that second position phenomena are a result of LHM.

6. Clitics as deficient elements.

Cardinaletti & Starke (1994, 1996) (C&S), propose a cross-language analysis of pronouns by grouping them in three distinct categories: strong, weak, clitic. The difference between the categories lies in their structure. Weak pronouns are structurally deficient compared to strong ones, whereas clitic pronouns are structurally deficient when compared to weak ones. C&S assume that the non-deficient structure of a pronoun is:

$$(14) \quad [{}_{CP} [C] [{}_{\Sigma P} [\Sigma] [{}_{IP} [I]]]]$$

The representation in (14) brings the structure of Noun phrases closer to that adopted for Verb phrases. CP is considered to be a locus of features which differentiate strong from weak pronouns. The lack of the highest CP node is responsible, among other things, for weak pronouns occurring in a functional projection prior to Spell-Out, for the occurrence of prosodic restructuring and phonological reduction rules, and for the fact that weak pronouns cannot be co-ordinated.¹⁴

Clitics are even more deficient than weak pronouns, compared to weak and strong pronouns they lack an overtly realised morpheme and word stress and they can only undergo X⁰ movement.¹⁵ As C&S point out, following Toman (1981), the support morpheme in Czech for clitic auxiliaries similar to Slovak ones is *je*. Hence, clitic auxiliaries differ from copulas in Czech in their overt phonological and morphological realisation, the copula having *je* and the clitic lacking it. Polish in that respect is similar to Czech, since historically, the auxiliary preterite clitics also had a support morpheme *je* (see note 2).

The *je* support morpheme also differentiates weak and strong pronouns in Slovak: *ho-jeho; mu-jemu*, Polish: *go-jego; mu-jemu* and Serbo-Croatian (with the slight difference of having an initial *n*): *ga-njega; mu-njemu*. Additionally, Serbo-Croatian, just like old Polish, also differentiates its copulas from clitic auxiliaries with the help of the *je* support morpheme.

I will propose, contrary to C&S who do not consider verbal clitics as structurally deficient elements, that clitic auxiliaries in Polish and Slovak also have a deficient structure, since they exhibit the enumerated by C&S clitic properties: lack of co-ordination, lack of stress, ability to undergo only X^0 movement. However, I am not assuming that the auxiliaries are deficient in the same sense as the pronominals are, and I leave open the question of what precisely the nature of their deficiency is.¹⁶ This allows me to adopt a unified approach to pronominal and verbal clitics.

C&S (1994:87) propose that clitic pronouns recover their missing features resulting from the lack of an Σ^0 head by associating with the prosodic features of Σ^0 - a head c-commanding T. This is achieved through the clitics surfacing in a local relation to a c-commanding Σ^0 .

Consequently, since Slovak, Polish and most probably Czech and Serbo-Croatian auxiliary clitics behave like clitic pronouns which lack not only CP, but also ΣP (which, according to C&S contains focus features), we can conclude that the auxiliary clitics in both Slovak and Polish must also surface in a local relation to a c-commanding Σ^0 .¹⁷ However, the clause structure adopted in Chomsky (1995b) lacks a head like Σ^0 . Hence, modifying the proposals of C&S and of Chomsky (1995b), I propose that there is an abstract head Σ positioned between C and T.¹⁸

(15)[C"[C⁰] [Σ " [Σ^0][T" [T⁰][\underline{V} "[\underline{V}^0][V"[D1"SUBJECT][V[V⁰]][D2" OBJECT]]]]]

The clitic auxiliary is able to raise to Σ (if present) via head movement, allowing it to recover its missing features. The nature of ΣP is that of a Focus phrase, consequently elements which move up to SPEC- ΣP create a marked (Focused or Topicalised) structure.¹⁹ This correlates with the fact that for constituents other than the verb to host the auxiliary clitic is considered marked. Hence, in the Polish and Slovak constructions below, the subject is marked. Note that in (16b) the subject can be considered less marked than in (16a). This can be accounted for by assuming that in (16b) the subject is in SPEC-T, whereas in (16a) it is in SPEC- Σ . The judgements, however, are not clear which leads me to assume that some speakers adopt the structure in (16c).

- (16) a. $[_{COMP}[_{SPEC-\Sigma} Ty [\Sigma s'][_{T} zabil][\dots Janka]]]$ 'You killed Janek'
 You be-2sg. killed Janek
 b. $[_{COMP}[_{SPEC-T} Ty[_{T} zabilés'][\dots Janka]]$
 c. $[_{COMP}[_{SPEC-\Sigma} Ty [\Sigma zabilés'_1][_{Tt_1}][\dots Janka]]]$
 d. $[_{COMP}[_{SPEC-\Sigma} Ja [\Sigma som][_{T} napísal][\dots list]]]$ 'I wrote a letter'
 I be-1sg. wrote a letter

Example (16b) shows that when there is no Σ , the auxiliary clitic overcomes its structural deficiency by incorporating into the verb. Consequently, I propose that when Σ is in the Numeration the auxiliary clitics must raise via head movement and adjoin to it. Note that Σ must license Topic/Focus constructions when present in the Numeration. This can be captured by either assuming that Σ can have strong/weak [focus] features which when strong force the auxiliary to raise to its head and an XP to its SPEC, or we can assume that Σ is only present in the Numeration when it licenses Topic/Focus constructions. I will adopt the latter approach and assume that like T^0 which universally has a categorial D feature to be checked, Σ^0 has universally a strong [focus] feature which can be checked via head or XP movement.

The question arises then what happens when there is no Σ in the Numeration? I propose that the auxiliary clitics are forced then to incorporate into the verb which is in T^0 . Incorporation in this case entails the creation of one prosodic unit consisting of the verb and clitic(s). I will argue that this process allows the clitic to compensate for its deficiency.

7. A tentative minimalist account

Following Chomsky (1995b), I will adopt a Bare-Phrase model of phrase structure.²⁰ Consequently, I propose that syntactic structure is built with the help of two distinct operations: Merge and Move/Attract, which leaves behind a Copy. Chomsky (1995a,b) proposes that items which are to undergo syntactic processes are listed in the lexical Numeration $\langle N \rangle$ and that in order for the derivation to converge all the items must be used. Let us consider a possible representation of *Ty zabilbyś Marka* 'You would have killed Mark'

- (17) [CP[SPEC-TPTy₄ [T zabil₃+by₂+s'₁] [MP t₂ [AUXP t₁ [SPEC-vP
[DP t₄] [vt₃][VP [v t'₃] [DP1 Marka]]]]]]]]]

The Numeration <N> consists of the following elements, N= {C, T, v by (=MP), s' (=Aux), zabil (=V), ty (=DP), Marka (=DP1)}. Merge selects *zabil* and *Marka* and merges them to form VP, which is merged with v forming vP, which is then merged with *Ty* in SPEC-v forming vP. Afterwards, Merger selects *s'* and merges it with vP forming AUXP, which is merged with *by* giving MP.²¹ Once MP is formed, T is selected and Merged with MP giving rise to TP. Then the operation Move/Attract selects *ty* and moves it to check the EPP to SPEC-TP forming TP. TP then merges with C forming CP. All the movements leave an identical copy behind.²² Note that Σ is not present in <N> and the clitics cannot raise any further than T. Consider a derivation with Σ present:

- (18) [C' [SPEC- Σ Ty₄ [Σ by₂+s'₁][SPEC-T t'₄[T zabil₃ t'₂+t'₁] [MP t₂
[AUXP t₁ [SPEC-v t₄ [vt₃][VP [v t'₃] [DP Marka]]]]]]]]]

The existence of Σ forces the subject to raise to its SPEC so that its Focus/Topic features are checked and forces the clitic complex *by+aux.* to counter its structural deficiency by raising to Σ . Note that in (18) and in its Slovak counterpart the subject is considered to be marked.²³

7. 1 Head movement of the verb, auxiliary and of by

In (17) and (18) the verb raises to v, then to T via head movement. This kind of movement is not structure building, but, according to Chomsky (1995b), extends X⁰.²⁴ Chomsky (1995b) proposes that verb raising is feature checking and must be carried out in overt syntax. I will not go into the details behind the motivation of raising V to v, (see Chomsky 1995b), but will concentrate on V+v raising to T.

I will argue that in Polish and Slovak in examples like (17) where there is an auxiliary, the verb is not a participle. This is because it has overt tense morphology (*-l-* in Polish (see: Booij & Rubach 1987) and *-l-* in Slovak (see: Rubach 1993) are both past tense markers). Consequently,

the verb in Slovak and Polish past constructions can be assumed to have tense features which force it to raise to T.²⁵

The auxiliary also has tense features, since it is used only in the formation of (certain) tenses. Moreover, it has agreement features which it must check, hence it also raises to T.

Consequently, the verb+aux constructions are derived in the model adopted by Chomsky (1995b) by independently motivated feature driven movements (see Bošković 1995b;ch. 5 for a slightly different account).

The raising of *by* to a T which contains aux. is different, since it is motivated by the need to overcome the structural deficiency of the auxiliary clitic (just as the raising of the clitics to Σ). This movement, which is triggered by the auxiliary already present in T, is not sufficient to overcome the deficiency of \acute{s} for the simple reason that *by* is also a clitic, hence *by+aux.* raises to Σ if both are in $\langle N \rangle$. The order of the movements is crucial here. Only when the auxiliary raises first, followed by *by* and later by the verb will the derivation converge, otherwise it will crash at PF, since the resulting verb+*by*+aux. construction has to become at some stage a single lexical item (provided *by+aux.* does not raise further) whose structure conforms to the principles of word formation.²⁶ Note that if we assume movement to be in terms of Attract, then we can deduce that the auxiliary moves first to T, because there is no other element c-commanding the auxiliary which could potentially satisfy the Tense features in T. The raised auxiliary then attracts the closest element which can overcome its structural deficiency -*by* is such an element if present. In the case where there is no *by*, nothing can raise to the auxiliary (located in T) to overcome its deficiency (the verb moves to T for feature checking reasons).

An important question to ask here is whether the above head movements take place in overt syntax or they are in fact PF operations. The difference between head and phrase movement is crucial in Chomsky (1995a, b), since only the latter is structure building, i.e. it creates SPEC-positions and is subject to cyclicity. Chomsky (1995c), following Ura (1994), proposes that head movement is a different process from XP-movement, since the latter has strong interpretive effects on LF (binding, specificity, scope) whereas X^0 movement seems to exhibit affixal

properties and results from the fact that affixes are scattered within the phrase marker.²⁷

Let us postulate that all head movement takes place in PF and that PF movements are not feature driven, but, following Chomsky (1995c), are an instance of category conflation, resulting from a tendency to fuse all the verbal projections via head movement (note that the same holds for N raising to D). This super-category formation can be considered the result of a more general need to erase morphological information represented in structural terms at PF. If so, verb raising patterns with head movement in order to satisfy the structural deficiency of clitics, be it raising of *by* to aux., or raising of clitics to Σ . All these movements are motivated now by the need to eliminate deficiencies which are morphological in their nature but which are expressed in structural terms. This would also explain the fact that head movement is sensitive to morphological rules which permit only *verb+by+auxiliary* orders.

7.2 Deficient heads - the difference between Polish and Slovak

When the verb moves up to T and adjoins to the auxiliary, or auxiliary and *by*, such a structure will leave the clitic(s) lacking certain features as the result of it missing a Σ node. I propose that languages like Slovak and Polish have two options if Σ is present:

- (19) a. The verb and clitic(s) form a single lexical item at PF and move up to Σ^0 (if present).
b. The clitic(s) raise at PF to Σ (if present), leaving the verb in T.

(19a) covers the cases of alleged LHM in Slovak and verb movement to AUX and incorporation in Polish. However, (19a) does not exclude the possibility of elements being in SPEC- Σ P, or in COMP, and the clitics in Σ , hence permits the violation of second position effects in Slovak.

I propose that in Slovak auxiliary clitics and *by* can be overtly adjoined only to a head position which has to be realised as a structurally deficient element (a clitic pronoun or auxiliary) at PF. Note that this requirement applies only to the head of the chain, hence the intermediate

traces resulting from clitic head movement are not required to be in deficient heads.

For X^0 to be a deficient head it must:

- Merge only once with an X^0/XP containing PF features.

I propose that the head of the chain containing a Slovak clitic can only be present only in a deficient head. Following the above restriction concerning deficient heads a clitic in Slovak can be adjoined to a head which either:

- has Merged with a C^0 which has PF features (20a, c),
- has Merged with an XP in its SPEC (in which case it can merge only with a C^0 which does not contain PF features, as in (16b)).
- has merged with a non-deficient Y^0 (verb+aux. in T).

Polish, on the other hand, has no deficient heads and allows multiple SPEC's and has no restrictions on the application of Merge. Consequently, second position effects result when a language licenses the existence of deficient heads.

The above typology accounts for the grammaticality of (20c) where we have Σ projecting once when merging with C^0 . Since there is no restriction on what PF features are in C^0 , the apparent violation of the second position requirement, resulting from the clitic being preceded by a wh-word and a complementiser, does not lead to ungrammaticality.²⁸

- (20) a. Co *som* napísal 'What did I write?'
 what be-1sg. wrote
 *b. Co napísal *som*
 what wrote be-1sg..
 c. Co že *som* napísal
 what that be-1sg. wrote

7.3 The EPP and subject raising

Chomsky (1995a, b) argues that the EPP can be considered a universal feature requiring a categorial D feature to be overtly checked by T. This implies that in Polish and Slovak overt subjects raise overtly to SPEC-T. This poses a problem in accounting for data like Polish (21):

- (21) a. Zabíleš Janka ty 'You (sg.) killed John'
 Kill+be-2sg. John you
 b. On wie že zabíleš ty Janka 'He knows that you killed John'
 he knows that kill+be-2sg. you John

I propose that in (21a) the verb+aux. *Zabíleš* moves up to Σ after the subject *ty* and the object have raised in that order to SPEC-T (the subject moves to check the EPP, and the object undergoes scrambling).

- (22) [C" [Σ verb2+ \acute{s} 1] [SPEC2-T object [SPEC1-T subject [T t'2+t'1]]]]

I will assume that the outer SPEC2-T is an A-bar position, since all the features of T have been checked in the first SPEC1-T).

In (21b) the object *Janka* stays in VP. Note that Slovak examples like the one below can also be analysed as having the Verb+auxiliary in Σ^0 , the subject in SPEC-T, and the object in VP.

- (23) [C" [Σ Napísal₂ som₁] [SPEC1-T ja [T [t'2+t'1]]] [VP.,list]]
 Wrote be-1sg. I letter
 'I wrote a letter'

Example (23) additionally shows that a deficient Σ head in Slovak is incapable of licensing a SPEC if the verb+aux. has raised to it (otherwise we obtain ungrammatical structures like those in (4c)). However, note that in (23) T licenses two SPEC positions since the trace of verb+aux. does not require a head to be deficient (which supports the idea that the deficiency of a head is a PF property). However, in constructions like (6a), where the verb+aux. is in T, Tense is a deficient head and does not license a SPEC, which blocks any subject raising. Note that examples like (6a) are problematic since it seems that the EPP is not universal. However, this is not a problem for this specific account of cliticization but is a general problem concerning all null subject languages. In constructions like (23) where the subject is overt, I assume that the [focus] feature can be checked by the verb+auxiliary and that the Subject is in SPEC-T.

This creates an interesting problem, which unfortunately, I will not address here, namely that if we assume that head movement takes place in PF, then how does Σ 'know' it cannot project in syntax? A tentative answer might be that it doesn't, but a projecting Σ somehow blocks later PF raising.

8. Conclusions and problems

In the model outlined here the proposal is that head movement takes place in PF and is triggered by a universal requirement to eliminate the existence of morphological information expressed syntactically. Hence, verbs raise to T in PF in languages like French, Icelandic, Polish and Slovak, but not in English, where I propose T is not visible at PF, but only at LF. This visibility of T at PF is probably set parametrically for every language.²⁹

Note that the above approach unifies the motivation behind head movement. Consequently, V raising to T patterns with *by* raising to aux. in T, since both processes are motivated by the PF need to eliminate morphological information expressed in syntactic phrase structure terms (in the case of the clitics it is their deficiency).³⁰ However, even if we leave the question of head-movement open, the typological difference between languages like Slovak and Polish can be

captured within the framework of the Minimalist Programme without adopting any kind of LHM, but makes use of independently motivated operations, like V raising to T. Additionally, the merger of AGR and T heads allows us to capture the fact that a default preterite construction in both languages contains the verb, *by*, and auxiliary in one functional head.

The deficient/non-deficient head distinction can be parametrically set for every language. This would allow us to capture with the help of one parameter the differences in auxiliary clitic and *by* behaviour in such related languages as Polish and Slovak.

However, there is another option where the deficiency of a head can be tied directly to the inherent properties of the structurally deficient elements which are present in a given language. We can postulate that in Slovak, auxiliaries and *by* can raise only to deficient heads at PF, otherwise the derivation crashes. On the other hand, Polish auxiliary clitics and *by* do not require a head to be deficient, hence their distribution is freer. Such an approach would reduce the differences between Slovak and Polish clitic phenomena to inherent differences of the lexical items in each language.³¹

Although the above proposals eliminate many of the drawbacks of the previous models, they are far from unproblematic. For example, I have not given a precise construction specific account of why *by*(+aux.) is required to be in C^0 in certain Polish constructions. I also leave unanswered the question of why deficient heads exhibit the precise properties they do.

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Notes

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¹The preterite clitics historically originate from the forms of the auxiliary 'to be':

Singular: *jeśm* ⇒ *m*; *jeś* ⇒ *ś*. Plural: *jeśmy* ⇒ *śmy*; *jeście* ⇒ *ście*

(following Booij & Rubach 1987:41):

Archaic Form	Gloss	Modern Form
wyszedł jeśm	'I went out'	wyszedłem

The Slovak paradigm is presented here following Mistrik (1983).

² The ending: *-a* is the gender morpheme (fem.) in both languages. The morpheme *-i* in the plural is the same regardless of gender in both Slovak and Polish.

³ The forms *je* and *sú* are the 3rd. person singular and plural forms of the verb 'to be' respectively. These forms are not used in the formation of the past tense in Slovak.

⁴ *Wiedzieć* and *chcieć* belong to two categories of verbs in Polish. Verbs of the type *wiedzieć* (not selecting *by* in COMP) are *rozumieć* 'to understand'; *myśleć* 'to think'; *przypuszczać* 'to suppose'. The other *chcieć* category of verbs includes *pragnąć* 'to desire'; *woleć* 'to prefer'; *żądać* 'to demand'. See: Aguado & Dogil (1989).

⁵For a more detailed account of LHM see Rivero (1991).

⁶ Bošković also notes the difficulty of explaining the nature of LHM. Following recent proposals by Chomsky (1995a, b), LHM would have to be some sort of feature driven movement. However, it would be hard to conceive what feature checking motivation the participle has. Bošković notes that cross-linguistically only finite verbs move to C, which would indicate that the feature [+finite], which participles lack, is the motivation behind such movement.

As far as Slovak is concerned, the arguments put forward by Bošković (1995a) do not apply since Slovak like Polish allows the verb either to appear either to the left or, to the right of sentential adverbs.

⁷B&R assume 'scrambling' to be optional A'-movement (see Willim 1989, and Tajsner 1990 for a criticism of this approach, and Szczegielniak 1996 for a minimalist account).

⁸But only in contexts where discontinuous constituents are allowed regardless whether PFC applies or not. Hence, we can say *Ewy czytales książkę* 'where the Verb 'breaks up' the DP [Eve's book], but we cannot say **Ewy poszedles do domu* =Eve's went+be2sg. to house 'You went to Eve's house' and PFC cannot apply here **Ewy+ś poszedl do domu* = Eve's+be2sg. went to house.

⁹However, Čavar & Wilder (1994) give examples where the participle in Croatian cannot raise in front of a full non-clitic auxiliary, but it can in front of a clitic one.

¹⁰Unless we assume that the subject has to move to SPEC-C. However, I cannot see any basis for postulating such movement.

¹¹The EPP understood here as the universal requirement that Tense have a strong D categorial feature.

¹²In section 7 I will propose that Polish and Slovak clitic data can be better accounted for if we assume that head-movement takes place at PF and is not feature driven.

¹³In the case of wh-movement, it is possible to assume that the wh-phrase first moves to a SPEC-T position, checking the necessary features, and later moves on with the clitic to COMP. However, then we would have to postulate that PFC can apply in the syntax, since the clitic would have to cliticize to the wh-word before it moves to Spec-Comp.

¹⁴This is a small set of properties argued to be associated with CP. Unfortunately, it is beyond the scope of this paper to present a full account of the proposals put forward by Cardinaletti & Starke (1994), hence I omit the majority of arguments presented by C&S and will concentrate only on aspects relevant to my analysis.

¹⁵See also Chomsky 1995a,b, where clitics are simultaneously X^0 and X^{\max}

¹⁶Slovak clitic auxiliaries and copulas do not differ morphologically. However, they differ as far as syntactic behaviour is concerned. Starke (1993:13) points out that the Slovak copula can occupy clause initial positions:

- *(i) Som čítal doma I read at home'
be-1sg. read home
(ii) Som doma I am (at) home'
be-1sg. home

This indicates that the lack or existence of a support morpheme cannot be considered as sufficient evidence for determining the scale of deficiency of a lexical item.

Polish past tense auxiliary clitics are considered by Embick (1995) not to be person/number endings but auxiliary verbs which have a phonologically null stem. This lack of an overt stem is the source of the auxiliaries clitic behaviour.

See also Tomiæ (1996) concerning the auxiliary clitics of Serbo-Croatian, where she assumes that the non-clitic forms of the auxiliary/copula result from overt raising and incorporation of a verbal root *je* to an affix identical in form with the clitic auxiliary.

¹⁷B&R show that Polish and Slovak clitic auxiliaries do not parallel Serbo-Croatian auxiliary clitics with respect to negation. Following B&R, I will assume that negation forms a single unit with the participle verb in both Slovak and Polish, so I will be forced to postulate either a separate NEG node, or to assume that FP varies cross linguistically in its feature composition (see C&S fn. 65).

¹⁸Contrary to C&S, I assume that there is no separate AGR node and that agreement features are checked in T (see: Chomsky 1995b). $X^0 = X^{\max}$, I assume a Bare Phrase structure approach.

¹⁹See Rizzi (1995) for a discussion concerning the nature of Topic and Focus Phrases.

²⁰I will, however, use the XP/X" notation.

²¹It might be in fact that MP is below AUXP which would allow us to assume that aux. pick up 'by' on its way up to T, allowing us to avoid any potential HMC violations.

²²Note that in Bare-Phrase structure only X^{\max} and X^0 are visible to syntactic operations, hence, for example, the product of the merger of T and MP (shown as TP*) is invisible after the subject t_y raises forming SPEC-T (in X-bar terms an TP* = T')
[SPEC-TP_{Ty4} [TP* [T $zabil_3+by_2+s_1$] [MP t_2]] ...]

²³The same analysis holds if the object were to raise to SPEC- Σ .

²⁴Note that if we assume that Move α is the basic displacement operation then in order for $V+\underline{y}$ raising to T not to violate the HMC (it passes AUX^0 and MP^0) then we have to assume following Ferguson & Groat (1995) that since T^0 is the closest checker of the verb's tense features. Conversely we can assume that Attract α is the basic displacement operation, then the $V+\underline{y}$ complex can raise directly to T without violating the HMC, since it is the Tense head which is triggering the movement.

²⁵Note that the verb also agrees in number/gender with the subject, so it has to raise at least as high as \underline{y} . Jacek Witkoś (p.c.) has pointed out to me that I will have to postulate that the participle *malował* in constructions like: *Ja będę malował stół* 'I will be painting the desk' also has past tense. At this stage I am forced to assume that there are two distinct -l participles in Polish. Note that the perfective form *zamalował* is only restricted to past tense constructions, hence **Ja będę zamalował stół*.

²⁶It is beyond the scope of this paper to discuss the exact mechanism behind the word formation process. See, however, Marantz (1989).

²⁷Also N. Chomsky (p.c.) pointed out to me that there are no instances of pure head merger where X^0 merges with Y^0 to form a head.

²⁸However, J. Toman points out (p.c.) that the complementiser can be analysed not as being in C^0 , but as a single lexical item: *że+som*. in IP.

²⁹This is consistent with the idea that parametric variation concerns only abstract heads and PF properties.

³⁰The difference between Polish and Slovak pronominals would be that Polish pronouns are full or *weak* in the sense proposed in C&S, whereas Slovak pronouns can be clitic or full. Hence, Polish pronominals move as XP's, whereas the Slovak ones undergo only X^0 movement, which would account for Slovak pronominals always appearing after the auxiliary clitic (both must be in Σ^0), whereas Polish pronominals have a freer distribution since they can undergo XP movement to any legitimate SPEC-position. For a detailed but a somewhat different account of Polish pronominal clitics see Witkoś (1996)

³¹However, as Sam Epstein (p.c.) pointed out to me, this raises the problem how the child determines these lexical properties of clitics.

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