Floating affixes in Polish

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Abstract

The morphosyntactic status of Polish past tense agreement markers has been a matter of considerable debate in recent years (Spencer, 1991; Borsley and Rivero, 1994; Borsley, 1999; Bański, 2000; Kupść, 2000; Kupść and Tseng, 2005). Past tense agreement is expressed by a set of bound forms that either attach to the past participle, or else "float off" to a host further to the left. Despite this relative freedom of attachment, it is often noted in the literature (e.g., Borsley, 1999; Kupść and Tseng, 2005) that the combination of verbal host and agreement marker forms a word-like unit.

In this paper I will argue that these agreement markers are best analysed as affixes uniformly introduced on the verb whose inflectional features they realise. Building on the linearisation-based theory of morphology-syntax interaction proposed in Crysmann (2003), syntactic mobility of morphologically introduced material will be captured by mapping phonological contributions to multiple lexically introduced domain objects. It will be shown that this is sufficient to capture the relevant data, and connect the placement of floating "affixes" to the general treatment of Polish word order (Kupść, 2000).

1 Data

1.1 Polish past tense agreement

Past tense in Polish is marked using a combination of a participial ending *l/ł* on the verb, inflected for number and gender, plus a person/number agreement marker that realises subject-verb agreement in first and second person (*-(e)m,-(e)ś,-śmy,-ście*).

	Singular			*Plural*	
	masc	*fem*	*neut*	*masc*	*fem/neut*
1	widzia-łe-m	widzia-ł-a-m	—	widzie-l-i-śmy	widzia-ł-y-śmy
2	widzia-łe-ś	widzia-ł-a-ś	—	widzie-l-i-ście	widzia-ł-y-ście
3	widzia-ł	widzia-ł-a	widzia-ł-o	widzie-l-i	widzia-ł-y

Table 1: Past tense paradigm

What is special about the agreement marker is that it may either attach directly right-adjacent to the verbal participle, or else float off to the left.

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(1)   *(ty) widział -eś   tę   kiążkę*
       you see   -2SG this book

       'you saw this book'

(2)   *Ty -ś   widział tę   kiążkę*
       you -2SG see   this book

       'you saw this book'

The floating past tense agreement markers may attach to a wide range of preverbal hosts, including nouns, pronouns, adverbs, adjectives, conjunctions (Spencer, 1991).

(3)   *Daleko -m   poszła.*
       far   -1SG went

       'I went a long way.'

(4)   *W domu -ście to   zrobili?*
       at home -2PL that made

However, realisation in absolute clause-initial position is barred, a property shared with syntactic clitics in Polish (e.g., pronominal clitics, see Kupść, 2000), which is standardly interpreted as an instance of Tobler-Mussafia Law.

(5)   ** ś widział tę kiążkę*

In postverbal position, past tense agreement markers display a good deal of interaction with lexical phonological rules, namely, assignment of primary lexical stress, word final vowel raising, and yer vocalisation. However, in preverbal position, none of these interactions can be observed (Bański, 2000).

Yer vocalisation is a systematic vowel/zero alternation in Polish, argued by Booij and Rubach (1987) to be a cyclic lexical phonological rule. Within the domain of the word, an underlying "yer" is realised as [e], if followed by another yer, or else deleted. Booij and Rubach (1987) relate the vowel/zero alternation observable with the past tense agreement markers to this well-attested rule. Since the domain of application is the word, it follows that vowel/zero alternation at the juncture between the past tense agreement marker and the verbal host suggests that these forms combine in the lexicon.

(6)   *robił — robiłe-m — robiła-m*

Another morphophonological rule that points in the same direction is raising of *o* to *ó* (=[u]) in word final syllables before voiced consonants (Booij and Rubach, 1987). Since attachment of past tense agreement apparently blocks the application of raising, Dogil (1987) concludes that these markers must already be attached when this lexical phonological rule applies.

(7)   *Ja-m mógł. — Ja mogłem.*

Finally, lexical stress in Polish regularly falls on the penultimate syllable of the prosodic word. If a singular past tense agreement marker is attached to the participle, lexical stress assignment to the penult takes the extra syllable resulting from yer vocalisation into account (**robił** — robi**łe**m). For plural markers, there is some variation amongst speakers: stress placement is either on the antepenult or the penultimate syllable, including the agreement marker (rob**i**li — rob**i**liśmy — robil**i**śmy).

If we turn to preverbal realisation of said markers, we find that none of the above morphophonological effects can occur at the juncture between the floating agreement marker and its phonological host (Bański, 2000): neither yer vocalisation, nor stress shift can be observed.[1]

(8) Yer vocalisation[2]
  palc-a 'finger.GEN'   *palc-a=m/ś*
  palec 'finger.ACC'   **palece=m/ś*

Likewise, raising applies, as if the agreement marker were not there.

(9) Raising
  krowy 'cows.NOM/ACC'   **krow=ście* 'cows.GEN=2PL'
  krów 'cows.GEN'   *?krów=ście* 'cows.GEN=2PL'

Failure to undergo an expected and otherwise fairly regular morphophonological alternation constitutes evidence that, pre-verbally, these markers do not morphophonologically integrate with their host. The only phonological restrictions ("phonological friendliness") that do seem to hold between the floating agreement marker and its preverbal host concern the host's final segmental material, in particular sonority of final segments and complexity of the coda. In contrast to Kupść and Tseng (2005), who regard this as a morphophonological idiosyncrasy, Bański (2000) argues that the phonological selectivity can be explained in entirely prosodic terms, drawing on the sonority hierarchy. He argues further that the availability of phonologically less marked alternative attachment sites accounts for the low acceptability observable with suboptimal hosts. If we also consider further that non-local realisation of agreement is a probably a marked option by itself — although cross-linguistically attested, it is not an option chosen by too many languages of the world —, unacceptability of cliticisation to unfriendly hosts may well be accounted for by having to strikes against it: one prosodic, the other morphosyntactic.

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[1]As discussed by Kupść and Tseng (2005), as well as pointed out to me by two of the reviewers, there is a small set of hosts like, e.g., *jak* 'as', *już* 'already', *chociaż* 'although' that do feature e-epenthesis when followed by a past tense marker. Although these forms are considered archaic by Kupść and Tseng (2005), an account of Polish past tense agreement should nevertheless be able to provide an account of these forms: I would therefore tentatively suggest that these forms might be analysed as modal verbs which subcategorise for an uninflected participle, akin to the conditional and future tense auxiliaries *by* and *będzie*.

[2]The vowel/zero alternation between palec and and palca suggests that palec is underlyingly yer-final. In contrast to verbal participles, attachment of the agreement marker does not make the stem-final yer surface as [e].

1.2 The conditional auxiliary *by*

The Polish conditional marker *by* displays some striking parallelism to the past tense agreement marker: first, just like the past tense, the conditional is expressed by a combination of the participial form of a verb (inflected for number and gender) plus the auxiliary *by*, which is inflected for person and number. The form of the person/number markers is identical to past tense markers.

	masc	*Singular* *fem*	*neut*
1	widzia-ł-by-m	widzia-ł-a-by-m	—
2	widzia-ł-by-ś	widział-a-by-ś	—
3	widzia-ł-by	widzia-ł-a-by	widzia-ł-o-by

masc	*Plural* *fem/neut*
widzie-l-i-by-śmy	widzia-ł-y-by-śmy
widzie-l-i-by-ście	widzia-ł-y-by-ście
widzie-l-i-by	widzia-ł-y-by

Table 2: Conditional paradigm

Furthermore, the forms of the conditional marker *by* obey conditions on placement similar to those regulating the distribution of the past tense agreement marker: Postverbally, there is almost strict adjacency to the verb, the only exception being intervention of the particle *-no* (Kupść, see Borsley, 1999, fn. 12)

(10)   *Obejrzał no byś   ten film!*
        see   NO COND.2SG this film

        'You would see this film!'

(11)   * *Obejrzał no -ś   ten film!*
        see   NO 2SG this film

Preverbally, attachment is promiscuous, again with a ban on clause-initial position.

With respect to morphophonology, however, the conditional marker does not display any of the expected properties of affixal attachment: forms of *by* are entirely stress-neutral, regardless of their host.

(12)   **ro**bił — **ro**bił-by — *robi**ł**-by

(13)   rob**i**li — rob**i**li-by — *robil**i**-by

Likewise, application of raising is entirely unaffected by the attachment of *by*.

(14)   *mógł — mógłby — *mogłby*

Thus, I will follow Spencer (1991); Bański (2000) and Kupść and Tseng (2005) in that morphophonological evidence points towards their status as syntactic clitics.

This difference in status is further corroborated by coordination data (cf. Kupść and Tseng, 2005; Bański, 2000): while wide scope over a coordination of hosts is by-and-large impossible with past tense agreement attached to a verbal host (participle or copula), conditional markers easily take wide scope in this position.

(15)   a. *Poszedł -em i   zobaczył   *(-em)*
        go.PAST -1SG and see.PAST.MASC -1SG

        'I went and saw.'

    b. *Byli   -ście i   jest   *(-eście)*
        be.PAST -2PL and be.PRES -2PL

        'you were and you are'

(16) *Włączył   -bym   sobie radio i   posłuchał (-bym)   muzyki*
      turn.on.PART -COND.1SG SELF radio and listen.PART -COND.1SG music

      'I would turn on the radio and listen to the music.'

Preverbally, both markers may take wide scope (Kupść and Tseng, 2005).

Another difference between past tense agreement and conditional markers concerns the degree of interaction with pronominal clitic placement. As observed by Kupść (2000), Polish pronominal clitics either all precede or immediately follow the verb. Forms of clitic -*by* are always realised to the left of the pronominal clitics, regardless of whether *by* itself is realised in pre- or in postverbal position (Borsley, 1999; Witkoś, 1997)

(17)   a. *Ty byś   go widział jutro.*
        you COND.2SG 3SG seen   tomorrow

        'you would see him tomorrow'

    b. ?* *Ty go byś   widział jutro.*
        you 3SG COND.2SG seen   tomorrow

(18)   a. *Ty widział byś   go jutro.*
        you seen   COND.2SG 3SG tomorrow

    b. ?* *Ty go widział byś   jutro.*
        you 3SG seen   COND.2SG tomorrow

Preverbal forms of the past tense agreement marker pattern with -*by*. Postverbal forms, however, show no interaction with pronominal clitic placement (Witkoś, 1997; Borsley, 1999)

(19)   a. *Ty -ś go widział wczoraj.*
        you 2SG 3SG seen   yesterday

        'you saw him yesterday'

b. ?* *Ty go -ś   widział wczoraj.*
　　　　you 3SG 2SG seen 　 yesterday

(20)　a. *Ty widziałe -ś 　 go wczoraj.*
　　　　you seen 　 COND.2SG 3SG yesterday

　　b. *Ty go widziałe -ś 　 wczoraj.*
　　　　you 3SG seen 　 2SG yesterday

It seems thus that the difference in lexical status suggested by morphophonology between postverbal past tense agreement on the one side, and the conditional marker and preverbal past tense agreement on the other, is also reflected in terms of syntactic visibility.

1.3　Summary

To summarise the empirical observations made above, I conclude that the status of Polish past tense agreement presents us with an analytical paradox: while postverbal realisation of this marker suggests affixal status — as supported by their morphophonological properties, the strict adjacency requirement, the non-interaction with pronominal clitic placement, and the failure to take wide scope over a coordination of hosts —, preverbal realisation, however, suggests syntactic clitic status — as witnessed by promiscuous attachment and the lack of morphophonological integration with the host. Nevertheless, pre- and postverbal realisations need to be systematically related in order to account for the identity of formatives and the unique marking of a verbal inflectional category. The forms of the conditional marker *by*, however, are probably best analysed as syntactic clitics, regardless of position, since there is absolutely no evidence for morphophonological integration with their host, the adjacency requirement is not strict, they can take wide scope over a coordination of hosts, and they interact with pronominal clitic placement. Still, the inflected forms of the conditional marker should be related to the past tense agreement markers.

2　Previous analyses

Probably the first study of this set of phenomena in the framework of HPSG is Borsley (1999). In this paper, he focusses on the similarity in syntactic distribution between the past tense agreement marker and the conditional marker and develops an essentially parallel analysis of these markers in terms of weak auxiliaries. In order to capture the difference in syntactic mobility between preverbal and postverbal realisation, he suggests that in preverbal position, these auxiliaries are syntactically independent signs, which take a participial syntactic complement, whereas postverbally, these auxiliaries are regarded as part of a morphologically derived verb-auxiliary complex. Syntactic realisation in postverbal position is ruled out by a suitable LP constraint. Uninflected third person forms receive special attention:

since an empty auxiliary analysis will give rise to spurious ambiguity, he suggest instead that third person finite past tense forms are derived from the non-finite participle by way of a unary conversion rule.

There are, however, a few problems with this account in the light of the data discussed above: first, as pointed out by Kupść and Tseng (2005), a uniform treatment of past and conditional cannot do full justice to the apparent differences in morphological status, as witnessed by morphophonological behaviour and the coordination facts. Second, deriving postverbal weak auxiliaries uniformly as a syntactically opaque daughter of a lexical compound cannot model the observable difference in interaction with pronominal clitic placement, which suggest that postverbal conditional markers must be syntactically visible, in contrast to postverbal past tense agreement. Third, the morphological analysis put forth in Borsley (1999) is inherently asymmetrical, postulating a lexical incorporation analysis for the conditional and non-third person past tense auxiliaries on the one hand, and an analysis in terms of zero inflection on the other. Finally, it is far from obvious how the weak auxiliary analysis of the past tense agreement markers can be generalised to derive other inflected forms that draw on the same set of markers, including the conditional marker and the present (!) tense copula *jest*. Identity of exponence across different paradigms therefore favours an analysis of the past tense agreement marker as an inflectional affix, realising person and number specifications.

In a recent paper, Kupść and Tseng (2005) have argued for a non-uniform account of conditional auxiliaries and past tense agreement, according to which the former are considered to be syntactic clitics, whereas the latter are analysed as morphologically derived agreement affixes. The authors, however, do not assign a difference in status to preverbal and postverbal occurences of the past tense agreement marker, but assume instead that the past tense agreement marker always attaches to its surface host as an inflectional affix. In order to relate the non-local realisation of the agreement marker to the verbal inflectional features they are an exponent of, they suggest a special feature percolation mechanism using marker and trigger features. Essentially, the locally uninflected participle launches a trigger feature, inflection of a host for person/number agreement launches a marking feature, and a unary clause-level schema discharges both features under unification.

Although I concur with Kupść and Tseng (2005) in regarding postverbal past tense agreement markers as suffixes directly attached to their hosts, extending this perspective to their preverbal counterparts raises several issues, which I will briefly discuss: first, the feature percolation mechanism invoked by the authors does not connect past tense agreement to any well-understood subtheory of local or non-local phenomena in Polish or across languages. Likewise, past tense agreement appears as an isolated agreement process unrelated to other agreement processes in the language. Second, the syntactic similarity between preverbal past tense agreement markers and conditional auxiliaries remains unaccounted for. Third, and most importantly, Kupść and Tseng (2005) do not provide evidence that preverbal past tense agreement markers show a similar degree of morphophonological integra-

tion with the host as their postverbal counterparts: in contrast to postverbal agreement, none of the expected lexical phonological rules may apply at the juncture between preverbal agreement markers and their hosts, like, e.g., stress shift or yer vocalisation. Conversely, the observable conditions on phonological friendliness are probably best understood in prosodic terms (Bański, 2000). Finally, promiscuous attachment (Criterion A) does not seem to support an analysis in terms of direct morphological attachment either.
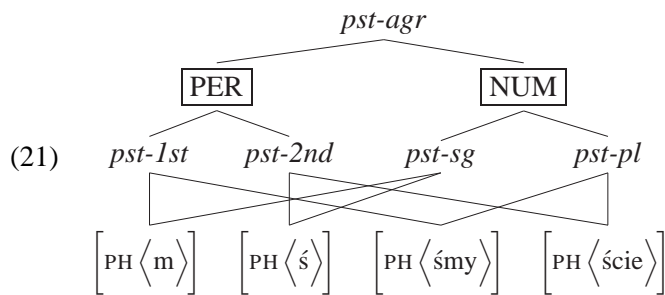
3 A coanalysis approach

In the analysis which I am going to propose I will try to synthesise the insights gained by Borsley (1999) and Kupść and Tseng (2005) and assign the status of a syntactic clitic to the conditional marker regardless of position, yet treat the past tense agreement marker as a morphosyntactic hybrid: building on proposals by Kathol (1995) and Crysmann (2003), I suggest that Polish past tense verbs can contribute more than one domain object to linear domain structure. As a result, morphological rules of exponence will uniformly introduce exponents of agreement on the verbal host, yet the mapping of lexically introduced phonology to domain objects will permit the "affix" phonology to float off. The analysis of preverbal markers as syntactically visible floating affix phonology will prove to capture, in a straightforward way the interaction with pronominal clitic placement, predict the lack of phonological integration with prosodic hosts, and account for uniqueness of exponence. Furthermore, this analysis not only connects the placement of floating past tense agreement to the standard HPSG approach to Polish word order (Kupść, 2000), but it also relates the phenomenon at hand to the strikingly similar case of floating subject agreement in Udi (Crysmann, 2000).

3.1 Morphology

As to their morphological status I follow Kupść and Tseng (2005) and assume that the past tense markers *-m,-ś,-śmy,-ście* are best regarded as exponents of person/number agreement rather than tense auxiliaries. This view is supported by a variety of considerations: first, the forms used in the conditional are identical to the ones used in the past, yet they do not select the participial form of *by*. The very same holds for the present tense copula *jest*. Second, an analysis as tense auxiliaries would assign these forms the status of *sign*, which would make the wrong prediction concerning the interpretation of inflected forms of the present tense copula *jest*, which is clearly non-past. Third, zero marking of third person also favours an affixal treatment over a compound analysis. I therefore suggest to represent the person/number markers as an inventory of pure forms (exponents — not morphemes).[3]

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[3]The paradigms generated by the realisational schemata given here are all finite paradigms. As a consequence, we can localise the encoding of past tense with the constraint on *l*-forms given in the

(21)

$$\textit{pst-agr}$$

PER — NUM

pst-1st   *pst-2nd*   *pst-sg*   *pst-pl*

$$\left[\text{PH}\left\langle\text{m}\right\rangle\right] \quad \left[\text{PH}\left\langle\text{ś}\right\rangle\right] \quad \left[\text{PH}\left\langle\text{śmy}\right\rangle\right] \quad \left[\text{PH}\left\langle\text{ście}\right\rangle\right]$$

The forms are then selected by realisational schemata: following previous work on type-based realisational morphology (Koenig, 1999; Riehemann, 1998; Crysmann, 2003), I suggest to organise the realisational schemata into a two-dimensional type hierarchy for affix and stem selection, where dimensions are conjunctively connected.

(22)

$$\left[\text{M}\left\langle\left[\begin{array}{l}\textit{stem}\\ \text{HD }\textit{verb}\end{array}\right]\right\rangle \bigcirc \textit{list(pst-agr)}\right]$$

AFFIXATION — STEM-SELECTION

$$\left[\text{M}\left\langle\left[\begin{array}{l}\textit{stem}\\ \text{HD}\,|\,\text{VFORM }l\end{array}\right]\dots\right\rangle\right]$$

$$\left[\text{M}\left\langle\dots\left[\begin{array}{l}\textit{stem}\\ \text{PH }\left\langle\text{jest}\right\rangle\end{array}\right]\dots\right\rangle\right]$$

$$\left[\text{M}\left\langle\dots\left[\begin{array}{l}\textit{stem}\\ \text{PH }\left\langle\text{by}\right\rangle\end{array}\right]\dots\right\rangle\right]$$
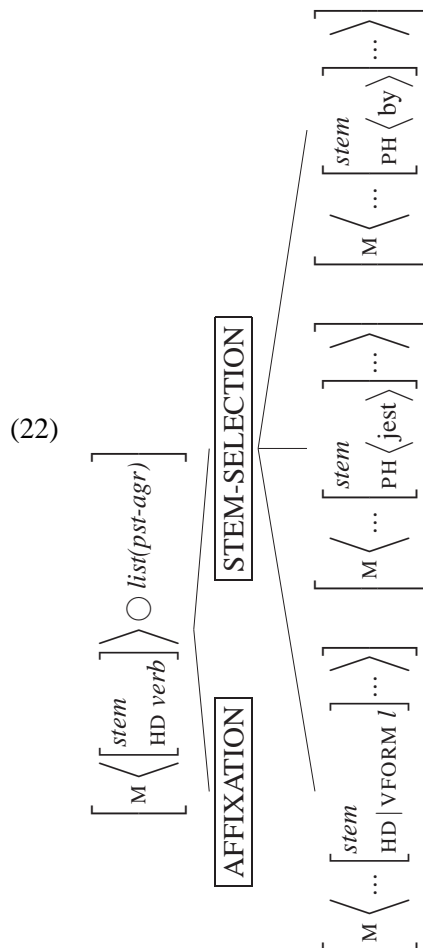
STEM dimension. Certainly, there is also a non-finite use of the *l*-form in periphrastic tenses such as future or conditional. This non-finite use may be licensed by a morphological schema of its own, which, however, is not given here.

What is crucial for our analysis is that the relative order of stem and affix not fixed on the supertype ($\bigcirc$).

(23)

$$\left[\text{M} \left\langle \begin{bmatrix} \textit{stem} \\ \text{HD } \textit{verb} \end{bmatrix} \right\rangle \right] \bigcirc \textit{list(pst-agr)}$$

STEM-SELECTION

AFFIXATION

$$\left[\text{M} \left\langle \cdots \left\langle \begin{bmatrix} \textit{stem} \\ \text{SUBJ} \left\langle \begin{bmatrix} \text{PER } 1 \vee 2 \end{bmatrix} \right\rangle \end{bmatrix} \right\rangle \cdots \right\rangle \bigcirc \left\langle \begin{bmatrix} \textit{pst-agr} \end{bmatrix} \right\rangle \right]$$

$$\left[\text{M} \left\langle \left\langle \begin{bmatrix} \textit{stem} \\ \text{SUBJ} \left\langle \begin{bmatrix} \text{PER } 3 \end{bmatrix} \right\rangle \end{bmatrix} \right\rangle \right\rangle \right]$$

NUM

PER

$$\left[\text{M} \left\langle \cdots \left\langle \begin{bmatrix} \textit{stem} \\ \text{SUBJ} \left\langle \begin{bmatrix} \text{NUM } \textit{sg} \end{bmatrix} \right\rangle \end{bmatrix} \right\rangle \cdots \right\rangle \bigcirc \left\langle \begin{bmatrix} \textit{pst-sg} \end{bmatrix} \right\rangle \right] \quad \vdots$$

$$\left[\text{M} \left\langle \cdots \left\langle \begin{bmatrix} \textit{stem} \\ \text{SUBJ} \left\langle \begin{bmatrix} \text{PER } 1 \end{bmatrix} \right\rangle \end{bmatrix} \right\rangle \cdots \right\rangle \bigcirc \left\langle \begin{bmatrix} \textit{pst-1st} \end{bmatrix} \right\rangle \right] \quad \vdots$$
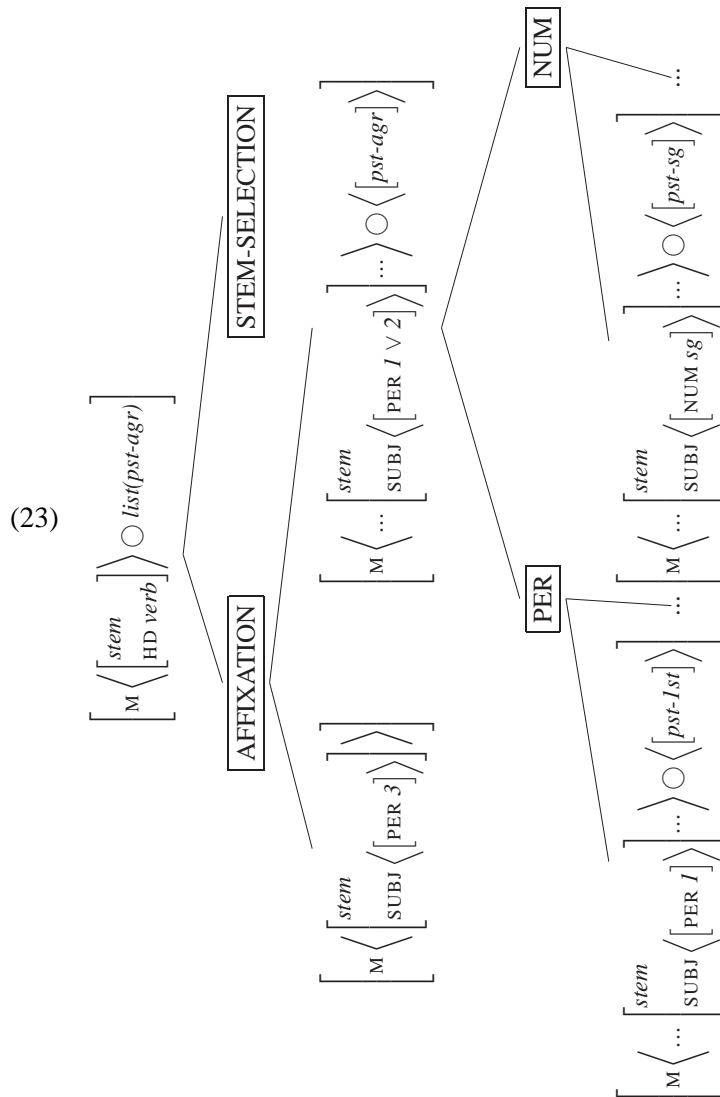
Under the natural assumption that the domain of application for morphophonological rules is the morphological structure, presence vs. absence of morphophonological effects can be simply related to the configuration found at this level: with suffixation, yer vocalisation and stress shift will be triggered. With prefixation, the local condition for rule application is simply not met. Likewise, raising will be possible, if the stem is final, yet will be blocked by following affixal material.

The possibility for affixes to be positionally non-fixed is quite common cross-linguistically: Morphologicallly conditioned positional alternation has been attested for French and Italian pronominal affixes (Miller, 1992; Monachesi, 1999), whereas morphosyntactically conditioned placement alternation of affixes has been

observed for German separable particle verbs (Kathol, 1995), European Portuguese pronominal affixes (Crysmann, 2003; Luís and Spencer, 2004), and Udi agreement (Harris, 2000; Crysmann, 2003).

3.2 Morphosyntactic mapping

Having established how agreement formatives are introduced into morphological structure, we can now proceed to the specification of the morphology-syntax interface: as already mentioned above, the key to our analysis of morphologically introduced, yet floating agreement markers is a natural extension of Linearisation HPSG (Kathol, 1995; Reape, 1994), namely the possibility for lexical signs, just like phrasal signs, to introduce more than a single domain object, an idea that has already been explored in the analysis fo morphosyntactic paradoxa in German (Kathol, 1995), European Portuguese, Fox, and Udi (Crysmann, 2003, 2000).

In order to preserve lexical integrity, morphological entities are not directly accessible to syntactic manipulation. Rather, it is only the phonological contribution of morphological entities that gets distributed over the lexically introduced domain objects. Interaction between surface syntax and morphotactics is limited to ordering: as guaranteed by the homomorphism constraints below, the sequence of PHON values on DOM must correspond to the sequence of PHON values in morphological structure.

(24) a. $const \rightarrow \begin{bmatrix} \text{DOM} & \left\langle \begin{bmatrix} \text{PH} & \boxed{i_1} \end{bmatrix}, ..., \begin{bmatrix} \text{PH} & \boxed{i_m} \end{bmatrix} \right\rangle \\ \text{PH} & \boxed{i_1} \oplus ... \oplus \boxed{i_m} \end{bmatrix}$

  b. $word \rightarrow \begin{bmatrix} \text{M} & \left\langle \begin{bmatrix} \text{PH} & \boxed{i_1} \end{bmatrix}, ..., \begin{bmatrix} \text{PH} & \boxed{i_m} \end{bmatrix} \right\rangle \\ \text{PH} & \boxed{i_1} \oplus ... \oplus \boxed{i_m} \end{bmatrix}$

All we need to do now to account for the difference in syntactic transparency between pre- and postverbal realisations of the agreement marker is to assume that Polish past tense verbs align their stem phonology with the right-most domain object.

(25) $\begin{bmatrix} \text{DOM} & list \oplus \left\langle \begin{bmatrix} \text{PH } \boxed{1} \oplus list \end{bmatrix} \right\rangle \\ \text{M} & \left\langle \begin{bmatrix} stem \\ \text{PH} & \boxed{1} \\ \text{HD} & verb \end{bmatrix} \right\rangle \bigcirc list(pst\text{-}agr) \end{bmatrix}$

As a result of the interaction between the morphologically variable position of the agreement affix and stem alignment, we will obtain two different surface-syntactic representations:

- a pre-stem position, which is syntactically transparent,

(26) $$\left[\text{DOM}\ \left\langle \left[\text{PH}\ \ \langle\text{ś}\rangle\right],\ \left[\text{PH}\ \langle\text{widział}\rangle\right]\right\rangle\right]$$

- and a post-stem position, which is syntactically opaque.

(27) $$\left[\text{DOM}\ \left\langle \left[\text{PH}\ \langle\text{widziałeś}\rangle\right]\right\rangle\right]$$

A sample derivation of floating agreement will thus look as follows:

(28)

The syntactic inseparability of the conditional auxiliary and the morphologically attached agreement markers can straightforwardly be captured by restricting the length of the lexical DOM list to 1, enforcing realisation as an inseparable suffix.

$$(29) \quad \begin{bmatrix} \text{DOM} & list \oplus \left\langle \begin{bmatrix} \text{PH } \boxed{1} \oplus list \end{bmatrix} \right\rangle \\ \\ \text{M} & \left\langle \begin{bmatrix} stem \\ \text{PH} & \boxed{1} \\ \text{HD} & verb \end{bmatrix} \right\rangle \bigcirc list(pst\text{-}agr) \end{bmatrix} \wedge \begin{bmatrix} \text{DOM} & \left\langle \begin{bmatrix} \ \end{bmatrix} \right\rangle \end{bmatrix}$$

3.3 Clitic order

The final piece in our analysis of the data at hand concerns the syntactic placement of clitics. I assume that clitic status in Polish is probably best defined prosodically, e.g., in terms of prosodic extrametricality, an assumption that will directly predict the effects of Tobler-Mussafia Law (cf. Bański, 2000). In the following, I will use the types *nonclitic* and *clitic* as mere short-cuts to refer to domain objects whose PHON starts with a prosodic word boundary, or not.

In order to model the restrictions on clitic placement observed above (see Kupść, 2000 for a more in-depth study) a set of 3 LP constraints appears sufficient to derive the basic pattern:

- Verbal clitics precede pronominal clitics

$$(30) \quad \neg \begin{bmatrix} \text{DOM} & \left\langle ... \begin{bmatrix} clitic \\ \text{HD} & noun \end{bmatrix} ... \begin{bmatrix} clitic \\ \text{HD} & verb ... \end{bmatrix} \right\rangle \end{bmatrix}$$

- Clitics either all precede or follow the verb

$$(31) \quad \neg \begin{bmatrix} \text{DOM} & \left\langle ... \begin{bmatrix} clitic \end{bmatrix} ... \begin{bmatrix} nonclitic \\ \text{HD} & verb \end{bmatrix} ... \begin{bmatrix} clitic \end{bmatrix} ... \right\rangle \end{bmatrix}$$

- Postverbal clitics must be verb-adjacent

$$(32) \quad \neg \begin{bmatrix} \text{DOM} & \left\langle ... \begin{bmatrix} nonclitic \\ \text{HD} & verb \end{bmatrix} ... \begin{bmatrix} nonclitic \end{bmatrix} ... \begin{bmatrix} clitic \end{bmatrix} ... \right\rangle \end{bmatrix}$$

Given the constraint on verb adjacency for post-verbal clitics, clustering turns out to be a mere corollary.

Thus, the patterns of placement interaction between pronominal clitics on the one side and the conditional and past tense agreemnet markers on the other will be derived as follows:

- Preverbal agreement marker must precede all other clitics

$$(33) \quad \begin{bmatrix} \text{DOM} & \left\langle \begin{bmatrix} nonclitic \\ \text{PH} & \langle \text{ty} \rangle \end{bmatrix}, \begin{bmatrix} clitic \\ \text{PH} & \langle \text{ś} \rangle \\ \text{HD} & verb \end{bmatrix}, \begin{bmatrix} clitic \\ \text{PH} & \langle \text{go} \rangle \\ \text{HD} & noun \end{bmatrix}, \begin{bmatrix} nonclitic \\ \text{PH} & \langle \text{widział} \rangle \\ \text{HD} & verb \end{bmatrix} \right\rangle \end{bmatrix}$$

$$(34) \quad * \begin{bmatrix} \text{DOM} & \left\langle \begin{bmatrix} nonclitic \\ \text{PH} & \langle \text{ty} \rangle \end{bmatrix}, \begin{bmatrix} clitic \\ \text{PH} & \langle \text{go} \rangle \\ \text{HD} & noun \end{bmatrix}, \begin{bmatrix} clitic \\ \text{PH} & \langle \text{ś} \rangle \\ \text{HD} & verb \end{bmatrix}, \begin{bmatrix} nonclitic \\ \text{PH} & \langle \text{widział} \rangle \\ \text{HD} & verb \end{bmatrix} \right\rangle \end{bmatrix}$$

- Postverbal agreement marker may follow preverbal clitics

$$(35) \quad \begin{bmatrix} \text{DOM} & \left\langle \begin{bmatrix} nonclitic \\ \text{PH} & \langle \text{ty} \rangle \end{bmatrix}, \begin{bmatrix} clitic \\ \text{PH} & \langle \text{go} \rangle \\ \text{HD} & noun \end{bmatrix}, \begin{bmatrix} nonclitic \\ \text{PH} & \langle \text{widziałeś} \rangle \\ \text{HD} & verb \end{bmatrix} \right\rangle \end{bmatrix}$$

- Conditional *by* must always precede all other clitics

$$(36) \quad \begin{bmatrix} \text{DOM} & \left\langle \begin{bmatrix} nonclitic \\ \text{PH} & \langle \text{ty} \rangle \end{bmatrix}, \begin{bmatrix} clitic \\ \text{PH} & \langle \text{byś} \rangle \\ \text{HD} & verb \end{bmatrix}, \begin{bmatrix} clitic \\ \text{PH} & \langle \text{go} \rangle \\ \text{HD} & noun \end{bmatrix}, \begin{bmatrix} nonclitic \\ \text{PH} & \langle \text{widział} \rangle \\ \text{HD} & verb \end{bmatrix} \right\rangle \end{bmatrix}$$

$$(37) \quad * \begin{bmatrix} \text{DOM} & \left\langle \begin{bmatrix} nonclitic \\ \text{PH} & \langle \text{ty} \rangle \end{bmatrix}, \begin{bmatrix} clitic \\ \text{PH} & \langle \text{go} \rangle \\ \text{HD} & noun \end{bmatrix}, \begin{bmatrix} clitic \\ \text{PH} & \langle \text{byś} \rangle \\ \text{HD} & verb \end{bmatrix}, \begin{bmatrix} nonclitic \\ \text{PH} & \langle \text{widział} \rangle \\ \text{HD} & verb \end{bmatrix} \right\rangle \end{bmatrix}$$

$$(38) \quad * \begin{bmatrix} \text{DOM} & \left\langle \begin{bmatrix} nonclitic \\ \text{PH} \langle \text{ty} \rangle \end{bmatrix}, \begin{bmatrix} clitic \\ \text{PH} & \langle \text{go} \rangle \\ \text{HD} & noun \end{bmatrix}, \begin{bmatrix} nonclitic \\ \text{PH} & \langle \text{widział} \rangle \\ \text{HD} & verb \end{bmatrix} \right\rangle, \begin{bmatrix} clitic \\ \text{PH} & \langle \text{byś} \rangle \\ \text{HD} & verb \end{bmatrix} \end{bmatrix}$$

4   Conclusion

In the present paper, I have argued that the syntax and morphology of "floating" agreement markers in Polish can receive a unified treatment under the assumption that they are uniformly introduced as agreement affixes on the verb. Morphological introduction as exponents of person/number agreement naturally accounts for the paradigm-like properties, including zero exponence and cross-paradigm parallelism. An analysis as morphologically introduced affixes also relates syntactic opacity and morphophonological properties, and derives the lexical-phonological effects (and lack thereof) by reference to the domain of application: morphological

structure. The adoption of a lexically-controlled coanalysis approach has proven to reconcile the affixal properties of postverbal markers with the syntactic mobility of their preverbal counterparts, capturing uniformity of markers and uniqueness of exponence. The specific nature of the morphology-syntax interface in terms of multiple lexically-introduced domain objects aligns the treatment of floating "affixes" with the general approach to Polish word order (Kupść, 2000). Finally, the account presented here for Polish floating affixes is highly reminiscent to the analysis of similar phenomena in Udi (Crysmann, 2000, 2003).

References

Bański, P. 2000. *Morphological and Prosodic Analysis of Auxiliary Clitics in Polish and English*. Ph.D. thesis, Uniwersytet Warszawski, Warsaw.

Booij, Geert and Jerzy Rubach. 1987. Postcyclic vs postlexical rules in lexical phonology. *Linguistic Inquiry* 18:1–44.

Borsley, Robert and M. L. Rivero. 1994. Clitic auxiliaries and incorporation in Polish. *NLLT* 12:373–422.

Borsley, Robert D. 1999. Weak auxiliaries, complex verbs and inflected complementizers in Polish. In R. D. Borsley and A. Przepiórkowski, eds., *Slavic in Head-Driven Phrase Structure Grammar*, Studies in Constraint-Based Lexicalism, chap. 2, pages 29–59. Stanford: CSLI Publications.

Crysmann, Berthold. 2000. On the placement and morphology of Udi subject agreement. Paper presented at 7th International Conference on Head-driven Phrase Structure Grammar, Berkeley.

Crysmann, Berthold. 2003. *Constraint-based Coanalysis. Portuguese Cliticisation and Morphology–Syntax Interaction in HPSG*. No. 15 in Saarbrücken Dissertations in Computational Linguistics and Language Technology. Saarbrücken: Computational Linguistics, Saarland University and DFKI LT Lab.

Dogil, Grzegorz. 1987. Lexical phonology and floating inflection in Polish. In W. Dressler, ed., *Phonologica 84*, pages 39–47. Cambridge: Cambridge University Press.

Harris, Alice C. 2000. Where in the word is the Udi clitic? *Language* 76:593–616.

Kathol, Andreas. 1995. *Linearization-Based German Syntax*. Ph.D. thesis, Ohio State University.

Koenig, Jean-Pierre. 1999. *Lexical Relations*. Stanford: CSLI publications.

Kupść, Anna. 2000. *An HPSG Grammar of Polish Clitics*. Ph.D. thesis, Polish Academy of Sciences and Université Paris 7.

Kupść, Anna and Jesse Tseng. 2005. A new HPSG approach to Polish auxiliary constructions. In S. Müller, ed., *The Proceedings of the 12th International Conference on Head-Driven Phrase Structure Grammar, Department of Informatics, University of Lisbon, August 23-24, 2005*, pages 253–273. Stanford: CSLI Publications.

Luís, Ana and Andrew Spencer. 2004. A paradigm function account of 'mesoclisis' in European Portuguese. In G. Booij and J. van Maarle, eds., *Yearbook of Morphology 2004*. Dordrecht: Kluwer.

Miller, Philip. 1992. *Clitics and Constituents in Phrase Structure Grammar*. Outstanding Dissertations in Linguistics. New York: Garland.

Monachesi, Paola. 1999. *A Lexical Approach to Italian Cliticization*. CSLI Publications.

Reape, Mike. 1994. Domain union and word order variation in German. In J. Nerbonne, K. Netter, and C. Pollard, eds., *German in Head-Driven Phrase Structure Grammar*, no. 46 in Lecture Notes, pages 151–197. Stanford University: CSLI Publications.

Riehemann, Susanne. 1998. Type-based derivational morphology. *Journal of Comparative Germanic Linguistics* 2:49–77.

Spencer, Andrew. 1991. *Morphological Theory. An Introduction to Word Structure in Generative Grammar*. No. 2 in Blackwell Textbooks in Linguistics. Oxford: Blackwell.

Witkoś, Jacek. 1997. Polish inflectional auxiliaries revisited. paper presented at the 30th Poznań Linguistic Meeting, Adam Mickiewicz University, Poznań, Poland, May 1–3, 1997.