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# YEARBOOK OF MORPHOLOGY

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## Wackernagel affixes: evidence from Balto-Slavic\*

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### 1. INTRODUCTION

Affixes, as prototypical bound elements, are generally considered to occur in a relatively fixed position (or "slot") within their host words, and in a fixed position with respect to other affixes. Zwicky and Pullum (1983), for instance, give this criterion as one of several that distinguish bound elements, i.e. affixes and clitics from free elements, i.e. words, and which differentiate affixes from nonaffixes, i.e. clitics and words.

Despite the importance of ordering restrictions as a way of identifying bound elements, there are some affixes or affix-like elements attested in various languages of the world that show variable placement with respect to their host. For example, under the analysis given in Joseph (1988a, 1988b, 1989, 1990, forthcoming) for the weak pronouns of Modern Greek, in which these elements, despite their traditional labelling as "clitic pronouns", are argued to be affixes, the variable placement of these affixal pronouns as suffixes after the nonfinite verb forms of Greek (the imperative and the participles),<sup>1</sup> as in (1), but as prefixes before finite verb forms, as in (2), means that they must be regarded as mobile affixes:

- |        |                        |               |                |
|--------|------------------------|---------------|----------------|
| (1) a. | kráta                  | to            | /*to kráta     |
|        | keep/IMPV.SG           | it/AACC       |                |
|        | 'Keep it'              |               |                |
| b.     | kratóndas              | to            | /*to kratóndas |
|        | keep/ACT.PLE           | it/AACC       |                |
|        | 'while keeping it ...' |               |                |
| (2) a. | to                     | kratáne       | /*kratáne to   |
|        | it/AACC                | keep/3PL.PRES |                |
|        | 'They are keeping it'  |               |                |
| b.     | to                     | kratúsan      | /*kratúsan to  |
|        | it/AACC                | keep/3PL.IMPF |                |
|        | 'They were keeping it' |               |                |

Thus, while perhaps rare and a marked situation cross-linguistically, mobility for affixes is not unprecedented.<sup>2</sup>

What is crucial to any such accounts demonstrating particular properties of a given affixal element is an exacting set of criteria that can allow for an

unambiguous categorial assignment of the element in question as an affix or a true clitic. For instance, mobility alone cannot be taken as sufficient evidence for demonstrating clitic status for a given element. The criteria proposed by Zwicky and Pullum (1983) and elaborated upon by Zwicky (1985) provide as rigorous a set as has been proposed. Among the criteria they have suggested are the following, which distinguish words from nonwords (i.e. clitics and affixes) and affixes from nonaffixes (i.e. clitics and words) and thus collectively serve to identify which elements are best treated as affixes:

(3) Zwicky and Pullum Criteria for Affixal Status

- a. strict ordering (nonword) vs. relatively free ordering (word)
- b. phonological dependence (nonword) vs. independence (word)
- c. high degree of combinatory selectivity (affix) vs. low degree (nonaffix)
- d. occurrence of gaps in combinatory possibilities (affix) vs. no such gaps (nonaffix)
- e. not manipulable by the syntax (affix) vs. availability to syntactic operations (nonaffix)
- f. morpho(phono)logical idiosyncrasies (affix) vs. no such idiosyncrasies (nonaffix)
- g. semantic idiosyncrasies (affix) vs. no such idiosyncrasies (nonaffix)
- h. interior position within word (affix) vs. exterior position (nonaffix)

It is our contention (following Zwicky and Pullum) that in the absence of the application of such a set of criteria, claims about the behavior of a given element and the theoretical significance of such behavior have no real force. The Greek pronouns, for instance, show fixed ordering relative to one another, occur in interior positions relative to other demonstrably affixal elements, are not deletable under identity, and show a variety of idiosyncrasies that are characteristic of affixes; thus, one is justified in treating them as affixes in spite of their mobility, and accordingly, a type of mobile affix must be recognized whose mobility is governed by the finiteness of its host word.

In this paper, we examine the behavior of the mobile reflexive marker *-s(i)*-<sup>3</sup> in Lithuanian, an element traditionally referred to as an affix (so Senn 1966; Genišienė 1987, *inter alios*) but never subjected to rigorous testing against criteria such as those in (3) to determine its affixhood. Such testing is crucial, for there are certain aspects of *-s(i)*-s mobility that are distinctly nonaffixal in nature. Consequently, this paper addresses the question of what type of element Lithuanian *-s(i)*- is, where it fits within the overall typology of morphological elements recognized cross-linguistically, and what the diachronic paths were that led to its status in the modern language.<sup>4</sup>

2. SYNCHRONIC STATUS OF *-s(i)*-

The reflexive<sup>5</sup> marker *-s(i)*- in Lithuanian typically occurs at the end of nonprefixed verbs and verbal derivatives, as illustrated in (4):

- (4) a. INFINITIVE:
 

matyti	'to see'
matyti-s	'to see each other, to meet'
- b. IMPERATIVE:
 

leik	'bend'
leik-i-s	'bow'
- c. TENSED VERB FORMS:
 

1SG (PRES)	laikau	'I consider, maintain'
3SG (PAST)	laikau-si	'I get along'
1SG (PRES)	(ji) sakė	'(she) said'
2PL (PRES)	(ji) sakė-si	'(she) said herself to be'
3SG (FUT)	keliu	'I raise, lift up'
1PL (PRES)	keliu-si	'I get up, arise'
2PL (PRES)	tikime	'we believe'
3SG (FUT)	tikime-s	'we expect, hope for'
1PL (PRES)	mātote	'you see'
2PL (PRES)	mātote-s	'you see each other'
3SG (FUT)	(ji) skaitys	'(she) will read'
1PL (PRES)	(ji) skaitys-s	'(she) will reckon with'
2PL (PRES)	mātymas	'seeing'
3SG (FUT)	mātymasi-s	'seeing one another'

DEVERBAL NOUN:

However, *-s(i)* shows mobility within the word in which it occurs when that word has one or more "preverbs", preverbal prefixed elements with lexical and/or aspectual content, such as *at-* indicating motion towards, *iš-* indicating motion out from, *pa-* indicating completion or brevity of an action, *be-* indicating durative or progressive aspect, among others, for in such cases, *-s(i)* attaches after the first such prefix, as in (5) and (6):<sup>6</sup>

- (5) ONE PREFIX:
 

a.	iš-laikau	'I preserve, withstand'
b.	iš-si-laikau	'I hold my stand' (cf. unprefixed laikau-si in (4c))
c.	(ji) at-sākė	'(she) answered'
d.	(ji) at-si-sākė	'(she) refused' (cf. unprefixed sākė-si in (4c))
e.	pér-keliu	'I move, transfer'
f.	pér-si-keliu	'I move, remove' (cf. unprefixed keliu-si in (4c))
g.	su-tikti	'to meet [someone]'
h.	su-si-tikti	'to meet each other'

- e. mātymasi-s 'seeing each other'  
pa-si-mātymas 'a date, meeting'

- f. kalbúo-si 'I converse'  
be-si-kalbani 'while conversing'

(6) TWO PREFIXES:<sup>7</sup>

- a. pa-žinti 'to know [someone], to recognize'  
su-si-pa-žinti 'to become acquainted with'

- b. pri-pa-žinti 'to acknowledge, admit, recognize'  
pri-si-pa-žinti 'to confess, avow'

- c. at-pāsakoti 'to tell (a tale) again'  
at-si-pāsakoti 'to be retold (as in a tale)'

The placement of *-s(i)* seems quite straightforward, and is usually described by reference to a single simple principle: if the "host" to which *-s(i)* attaches has no prefixes, then *-s(i)* attaches to the end of the host, but if the host has one or more prefixes, then *-s(i)* attaches in second position, after the first prefix (though see Note 6).

The mobility that *-s(i)* exhibits is interesting in that it raises two important questions.

First, this mobility is reminiscent of the crosslinguistically common placement of clitics in second position, the effect that has come to be known in the literature as "Wackernagel's Law".<sup>8</sup> This positioning is found for clitics in both clausal units, as seen with the Russian question marker *li* in (7), and phrasal units, as seen with the Macedonian definite article *ot* (cf. Sadock 1991:118) in (8):

- (7) a. čitajet *li* on knigu?  
reads Q he book/ACC  
'Is he reading a book?'

- b. knigu *li* on čitajet?  
'Is it a book that he is reading?'

- (8) a. čovek-*ot*  
man -the  
'the man'

- b. dobrī-*ot* čovek  
good-the man  
'the good man'

- c. dobrī-*ot* mal čovek  
good-the little man  
'the good little man'

The particular type of mobility found with the Lithuanian reflexive marker, therefore, moving as it does to second position in its governing unit, after the first preverb, suggests that this element might well be a clitic. Similarly, the edge-positioning of *-si* in nonprefixed forms at the end of a word after person/number suffixes would be consistent with clitic status (cf. (3h) regarding the usual exterior position of nonaffixes). In that case, however, a serious theoretical problem arises. In particular, if *-s(i)* is a clitic, it is therefore a bound word distributed by the syntactic component of the grammar just as any word would be,<sup>9</sup> and its mobility within the word would be a violation of the Lexical Integrity Principle:

- (9) Lexical Integrity Principle: No syntactic rule can have access to or affect the internal structure of a word (see Kanerva 1987, *inter alios*)

since a syntactic operation, namely clitic placement, would have to affect the internal structure of a word and have access to information about the presence of prefixes.

A corollary of Lexical Integrity is that no language will have word-internal placement of clitics, so-called "endoclititics", so that clitics in general are claimed not to violate Lexical Integrity. In particular, true clitics always attach externally, never internally in morphosyntactic words, and various proposed cases of endoclititics have been shown to be amenable to reanalysis as phenomena other than true endoclititics — usually as affixes that have come from former clitics (see Zwicky 1977; Klavans 1979; News 1984, 1988; Joseph 1988a, 1990; Macaulay 1989).

If, on the other hand, *-s(i)* is not a clitic, but rather is an affix — and a mobile one at that — then Lexical Integrity is not violated, inasmuch as the positioning of *-s(i)* as an affix would be not a matter of syntax but rather a matter of morphology, the component of grammar that is concerned with the internal structure of words. In that case, though, *-s(i)* would be an instantiation of a new type of mobile affix — namely one that moves within a word in keeping with a version of Wackernagel's Law at the word level, just Russian *li* and Macedonian *-ot* obey it at the sentence level and the phrase level respectively, as in (7) and (8) above. An affix-and-word Wackernagel's Law parallel to the clitic-and-sentence and the clitic-and-phrase versions of Wackernagel's Law is actually expected on theoretical grounds, given claims that have been made, e.g. by Baker (1985) with his "mirror principle", of parallels between syntactic organization and morphological organization, and on diachronic grounds, given that syntax so often develops into morphology over time (see Givón (1971) and Joseph and Janda (1988) for instance) and that, accordingly, Wackernagelian syntax ought to be able to give rise to Wackernagelian morphology.

We would like to argue that *-s(i)* in fact is such a Wackernagel affix, and that it thus provides an instance of a new variety of mobile affix rather than an otherwise nonoccurring type of clitic that violates Lexical Integrity.<sup>10</sup>

In support of this claim, we note that *-s(i)* shows some distinctly non-

clitic-like behavior when judged against the several diagnostic tests noted in (3) above that Zwicky and Pullum (1983) offered as heuristics to help distinguish between affixes and clitics. The most relevant criteria for the demonstration at hand are repeated and elaborated upon somewhat in (10):

- (10) a. Affixes exhibit a high degree of selection with respect to their hosts; clitics exhibit a low degree of host selection
- b. Unpredictable gaps in the combinatory possibilities are more characteristic of affixed words than of clitic groups
- c. Syntactic rules can affect affixed words as a whole, but not affixes as individual pieces of words
- d. Morphophonological idiosyncrasies are characteristics of affixes, not of clitics

Under the relevant tests, Lithuanian *-s(i)* behaves like an affix, showing various idiosyncratic morphophonological and syntactic properties characteristic of affixes.<sup>11</sup>

With regard to (10a), we note that reflexive *-s(i)* attaches only to verbs, not to regular nouns or adjectives. It does, however, attach to deverbal nominals, such as those listed in (11), so we assume that the crucial stem selection requirement is [+verb], regardless of the adjectival, nominal or adverbial function of the verb.

- (11) 

be- <i>si</i> -kalbañ	'while conversing'
be- <i>si</i> -keičiã	'those that are changing'
	[MASCULINE NOMINATIVE PLURAL PRESENT ACTIVE PARTICIPLE]
pa- <i>si</i> -mãymas	'meeting, date' [NOMINATIVE SINGULAR]
pa- <i>si</i> -mãymo	'meeting, date' [GENITIVE SINGULAR]

Criterion (10b) states that unpredictable gaps are not uncommon for inflectional paradigms, but are atypical for clitic-host combinations. Relevant here is the fact that deverbal *-mus* nouns in Lithuanian lack certain oblique plural forms when reflexive *-s(i)* is word-final, as in (12), even though declension is otherwise regular when *-s(i)* is among the prefixes, comparable to non-reflexive deverbal nouns (cf. also Jakaitienė *et al.* 1976):

- (12) 'scolding' 

NOMINATIVE	SINGULAR	PLURAL (Otrębski 1952)
GENITIVE	barimasi- <i>s</i>	barimai- <i>si</i>
DATIVE	barimo- <i>si</i>	barimų- <i>si</i>
ACCUSATIVE	barimui- <i>si</i>	---
INSTRUMENTAL	barimą- <i>si</i>	---
	barimu- <i>si</i>	---

As for criterion (10c) we know of no syntactic rules that affect the reflexive verb without also affecting *-s(i)*. Nothing in syntax breaks up the combination of verb + reflexive morpheme, moving the reflexive out of the domain of its verb for instance. Thus, criteria (10a), (10b) and (10c) all point to an affixal analysis of the reflexive; the strongest evidence though comes from criterion (10d).

In particular, *-s(i)* triggers some unpredictable vowel changes in the person suffixes. One change is the raising of low vowel [e] (phonetically [æ]) in the first and second person plurals to a higher mid vowel — conventionally written [e]:

- (13) Raising *e* to *é*: 

FIRST PERSON PLURAL:	mãtome	'we see'
SECOND PERSON PLURAL:	mãtomé-s	'you see each other'
1PL IMPERATIVE:	mãtoité-s	'you see each other'
2PL IMPERATIVE:	mãykímé-s	'let's see each other'
	mãykite	'see!'
	mãykité-s	'see each other!'

The vowel raising is not simply sensitive to the presence of a feature [reflexive], but only applies when the reflexive *-s(i)* immediately follows the vowel. So, for example, mãtomé-s 'we see each other' has raising, but pa-*si*-mãtome 'we meet each other' does not (i.e. \*pa-*si*-mãtomé) even though both contain reflexive *-s(i)* somewhere in the word. The difference is, of course, the positioning of the reflexive morpheme.

Furthermore, raising does not apply to all instances of *e* before the reflexive. It does not occur, for instance, when the aspectual prefix *be-* precedes the reflexive:<sup>12</sup>

- (14) be-*si*-kalbañ (vs. \*bè-*si*-kalbañ) 'while conversing'

Thus, the raising is a morpheme-specific process, triggered by the combination of *-s(i)* with 1PL *-me* or 2PL *-te* immediately preceding.

Note that we are assuming an analysis whereby raised *é* is treated as derived from *e* word finally. Even though final *-é* became *-e* historically, we adopt the position that a synchronic reinterpretation has taken place, such that non-final *-é* is viewed as being derived from *-e*, rather than vice versa. Only a synchronic phonological analysis of these data that is highly abstract — and therefore untenable in our view — would mirror the diachronic facts.<sup>13</sup>

A synchronic analysis of the diphthongization in the first and second person singular suffixes leads to the second idiosyncrasy in morphology. *-u* and *-i* change into *-úo* and *-ié*, respectively, before reflexive *-s(i)*, as in (15). Again we ignore the historical change (*-úo* # > *-ù* # and *-ié* # > *-j* #) that

took place, and base our analysis on just the surface facts that speakers would have to work from in constructing a grammar that would account for the observed alternations.

(15) Diphthongization:

- 1SG: tikù 'I believe'    tikiúo-si 'I expect, hope for'  
2SG: tiki 'you believe'    tiké-si 'you expect, hope for'

Diphthongization does not take place if reflexive *-s(i)* is not adjacent. Thus while unprefixed *kelíúo-si* 'I get up' shows diphthongization, prefixed *pér-si-keliu* 'I move, remove' cannot; diphthongized prefixed *\*pér-si-keliúo* is impossible. Nor can diphthongization occur if the morpheme is something other than the first or second person singular. Thus infinitival *-ti* never diphthongizes (e.g. *rúpin-ti-s* 'to worry' vs. *\*rúpin-tie-s*) nor does future *-si-* (e.g. *skaity-si-s* 'will reckon with' vs. *\*skaity-sie-s*) or imperative *-k[i]* (e.g. *maý-ki-s* 'be visible!' vs. *\*maý-kie-s*). Some of the forms cited here can be found in the Lithuanian dialects; for example, infinitival *rúpin-tie-s* 'to worry' and future *skaity-sie-s* 'will reckon with', providing evidence that reiteration of the former rule of monophthongization has occurred; clearly the synchronic rule of diphthongization has been generalized to forms formerly having monophthong *i*.

Another idiosyncratic morphophonological property of *-s(i)* is the retraction of stress onto it when "endoclititic" or infixed. Prefixes sometimes affect the location of stress on stem+suffix combinations, but the conditions for stress retraction are unpredictable. In some instances reflexive *-s(i)* bears the word-level stress. In (16), for example, there is root stress on *im̃-* 'take' in the infinitival and future forms, but retracted stress in the present and past tenses. Therefore the phonological unpredictability associated with stress provides positive evidence for an affixal analysis of reflexive *-s(i)*, since *-s(i)* evinces the same stress patterns as other prefixes. Note that if *-s(i)* were a clitic, it might well be expected to be invisible to lexical stress assignment, especially if clitics are added at a different level in the derivation.

- (16) a. pa-ĩm̃ti 'to take'  
pà-imu 'I take'
- b. pa-si-ĩm̃ti 'to take (for oneself)'  
pa-si-ĩm̃s 'will take (for herself/himself/itself)'
- c. pa-si-imu 'I take (for myself)'  
pa-si-ima 'takes (for herself/himself/itself)'  
pa-si-ém̃é 'took (for herself/himself/itself)'

These various facts, then, argue that *-s(i)* is best taken to be an affix,<sup>14</sup> despite its mobility, and thus distributed by the morphological component. Its placement in second position in prefixed words would thus not be a case of

endoclitisis in violation of Lexical Integrity, since the placement is a matter of morphology which has to have access to the internal structure of words. Moreover, a word-level instantiation of Wackernagel's Law can be posited as responsible for the observed positioning of this affix.

3. DIACHRONIC DEVELOPMENT OF *-s(i)*

Given this synchronically novel type of entity, a Wackernagel affix, the question that naturally comes up is how it could have arisen. Moreover, how can this mobile affixal marker be reconciled with the observation that it is clitics that typically show such Wackernagelian mobility? As noted above, it is well-known that syntax often morphologizes diachronically, giving rise to morphological phenomena out of once syntactic phenomena. Accordingly, one might look for the origins of the Lithuanian Wackernagel affix in original syntactic patterns involving a Wackernagel clitic. Thus, we now address the question of the diachronic development of the Lithuanian reflexive, drawing primarily on comparative evidence from various Balto-Slavic languages.<sup>15</sup>

First of all, it seems that in Old Lithuanian one possible realization for the reflexive marker was as a clitic, as suggested by (17) from Endzelins (1971: 247), in which the reflexive occurs in second position in a clause, a typical positioning for a clitic:<sup>16</sup>

- (17) visie-si tur išpažinti  
all-REFL have confess/INF  
'all must confess'

Moreover, there is evidence from early stages of other Balto-Slavic languages that point to the same conclusion for Proto-Balto-Slavic (from Endzelins 1971: 247–248):

- (18) a. Archaic Latvian<sup>17</sup>  
iz-sa gauži raņņuos  
out-REFL bitterly cry/1SG  
'bitterly I cried my eyes out'
- b. Old Prussian<sup>18</sup>  
turi sien tiset audāt  
have REFL so occur  
'it will therefore come to pass'
- c. Old Russian  
možeši sja s nimu boroti  
can/2SG REFL with him struggle/INF  
'you can struggle with him'

Furthermore, this clitic behavior is found — or rather, under our hypothesis, preserved — in several modern Slavic languages:

- (19) a. Transcarpathian Ukrainian (Ard 1977: 100)  
 vin me *sja* kupaty  
 he FUT REFL bathe/INF  
 'he will bathe'
- b. Czech (de Bray 1980b: 122)  
 to *se* mi nelbí  
 that REFL 1SG not-please  
 'That does not please me'
- c. Slovak (Ard 1977: 110)  
 Mama vedela, že *sz* zviecha po každom knokaute  
 mother knew that REFL gets-up after every knock-out  
 'Mother knew that he would get up after every knock-out'
- d. Croatian (Ard 1977: 113)  
 oni mi *se* vesele  
 they 1SG REFL gladden  
 'they are happy about me'
- e. Dialectal Polish (Sussex 1980: 198)  
 ja *się* idę kąpać  
 I REFL go bathe  
 'I'm going to bathe'
- f. Slovenian (de Bray 1980a: 394)  
 Janez *se* mi ní pokázal  
 Janez REFL 1SG not shown  
 'Janez has not shown himself to me'

If the source for the modern Lithuanian pattern with a mobile Wackernagel affix as reflexive marker is thus a clitic, the question that arises then is how a clitic might have come to be reanalyzed as an affix and how the mobility might be preserved.

It is important to note that other Balto-Slavic languages show a different development, so in addition to explaining the Lithuanian situation, we need also to construct a scenario that allows for a straightforward account of the other languages as well. This behavior includes the clitic-behavior noted above, but also nonmobile affixal behavior, as found in certain Lithuanian dialects, Modern Standard Latvian, Old Prussian, Russian, Byelorussian, most dialects of Ukrainian, and in part in Polish, too, where it appears that the reflexive has come to depend on the verb, as a regular affix (in particular

as a suffix in most cases, but as an apparent prefix in (20g)) without Wackernagelian mobility:

- (20) a. Dialectal Lithuanian (Endzelins 1971: 248)  
 su-praĩta-si '(they) understand each other'
- b. Modern Standard Latvian (compare 18a))  
 uz-rāpt-ies 'to climb up' (Stolz 1989: 16)  
 ap-vainot-ies 'to take offence' (Fennell and Gelsen 1980: 922)
- c. Old Prussian (compare (18b); Schmalstieg 1976: 217)  
 au-dassei-sin '(may it) come to pass'  
 et-lāiku-sin 'refrain'
- d. Russian (compare (18c))  
 my vídim-*sja* 'we meet, we see one another'
- e. Byelorussian (de Bray 1980c: 235)  
 jon tros-*sja* 'he was shaking'
- f. Ukrainian (compare (19a); Ard 1978: 3)  
 vin kupaty-met'-*sja*  
 he bathe-FUT-REFL  
 'he will bathe'
- g. Dialectal Polish (compare (19e))  
 jan idzie *się* kąpać  
 Jan go REFL bathe  
 'Jan is going to bathe'

Our working hypothesis to account for this variation within Balto-Slavic and for the mobile reflexive affix of Lithuanian starts with the assumption that Proto-Balto-Slavic utilized Wackernagel's Law for its independent reflexive word. As suggested in note 15, this situation may have been the result of an on-going generalization of Wackernagel's Law from sentential clitics to all clitics. Moreover, we assume that V(erb)-S(ubject)-O(bject) order was among the possible word-orders for the major constituents of a sentence in Proto-Balto-Slavic, by virtue of constituent order that was either fairly free — note, for instance, that Reklaitis (1982: 376) has reported that all permutations of V, S, and O are to be found in Old Lithuanian texts — or more consistently VSO (cf. Ard 1977: 82).<sup>19</sup>

Assuming, then, that Proto-Balto-Slavic had a second position clitic reflexive word, one still has to wonder why there are differences in the diachronic developments in the various Baltic and Slavic languages. The difference comes, we believe, from the role of the so-called preverbs. The preverbs in Lithuanian have been treated in this paper without comment as verbal prefixes, but there is evidence that they were once independent verbal adverbs

words, if not at the stage of Proto-Balto-Slavic, then at least in Proto-Indo-European. The literature on this topic is vast, so we cite only Watkins (1963) here, who observes a striking similarity between the morphologization of the Lithuanian reflexive and certain morphologizations in Celtic.<sup>20</sup>

The verbal adverbs, which later turn into the "preverbs" of Lithuanian, may occur either clause-initially or elsewhere in the sentence. If the adverb was not initial, then probably a verb would occupy the first slot in the sentence, or at least, under our assumptions concerning word order, it could. Later some of the adverbs came to be closely associated syntactically with the verb and later still to univerbate with the verb. When the adverb univerbated with the verb, the reflexive would have been stranded in-between the first adverb and the rest of the verbal complex. Thus morphologization of the adverbs took place at the same time as morphologization of the reflexive. If there happened not to be an initial adverb (A), then the reflexive (Rx) univerbated with the verb (V) that occurred immediately before it; schematically, these changes can be represented as in (21), where P is a prefix:

- (21) SYNTAX MORPHOLOGY  
 a. # A Rx (A) (A) V ... > P-Rx-(P)-(P)-V ...  
 b. # V Rx ... > V-Rx ...

(21) is the basic scheme for Lithuanian, and for any of the Baltic languages showing some degree of affixal reflexive mobility (e.g. Archaic Latvian, as in (18a)). In those languages like Russian in which the reflexive became a non-mobile suffix, the pattern in (21b) was apparently generalized to all instances of verb plus reflexive. In languages like Czech, Slovak, etc., the Wackernagel elements did not morphologize, so that it can be concluded that Wackernagel's Law can remain a stable pattern diachronically.<sup>21</sup>

Other developments are possible for the morphologization of Wackernagel's Law in clauses and phrases. In Bulgarian and Macedonian, for instance, the reflexive and other clitics occur adjacent to the verb, preceding a finite verb, but following an imperative or participle (Ard 1978):<sup>22</sup>

- (22) Bulgarian  
 a. Na mene mi se spi. (Ewen 1975:24)  
 on me/STRONG me/WEAK REFL sleep  
 'I am sleepy'  
 b. vzemi go  
 take/IMP it/ACC  
 'Take it!'
- (23) Macedonian  
 a. i se veruva deka k'e vrne (Berent 1980:176)  
 her REFL believes that will rain  
 'She believes that it will rain'

- b. zemi go  
 take/IMP it/ACC  
 'Take it!'

#### 4. CONCLUSION

We conclude that treating *-s(i)* as an affix is thus in accord with its overall behavior, allowing lexical integrity to be preserved,<sup>23</sup> while at the same time filling out the range of instantiations for Wackernagel's Law, giving a word-level counterpart to the familiar phrase and sentence-level second-position placement; and that the second position reflexive affix in Lithuanian is a result of the morphologization of a second position word in an older stage of the language — in a sense, then, the existence of such a second-position affix is expected, given that the creation of morphology out of syntax is a well-documented diachronic development, as noted earlier. Lithuanian shows an interesting path of morphologization away from earlier phrasal placement of the reflexive word that is different from that found in languages which retained Wackernagelian mobility and from that found in languages which lost that mobility.

#### NOTES

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<sup>1</sup> See Joseph (1978/1990, 1983, 1985) for arguments concerning the status of these forms with regard to finiteness. In addition to the active participles in *-ondas*, Greek also has some mediopassive participles in *-menos*, which, though infrequent, can for some speakers at least marginally accept suffixal weak pronouns, e.g. *\*to dexóménos to* 'accepting it' is possible for some Greeks, but *\*to dexóménos* with a prefixed weak pronoun is impossible for all.

<sup>2</sup> To show that mobile affixes are not a complete oddity, though they do seem to present a marked situation, we mention here a few other examples of such affixes that we are aware of. In the East Cushitic language Afar, for instance, as reported in Fulmer (1991), the plural marker [h] is prefixed to vowel-initial verbs but suffixed to consonant-initial verbs:

- (i) a. *n-ookom-é* 'we won'  
 PL-won-PERF  
 b. *ab-n-á* 'we do'  
 do-PL-IMPF

Moravcsik (1977: 76) reports that in Atayal, affix position is determined by the stem subcate-



gortization, with some verbs hosting a prefixed actor/focus marker [m], some verbs hosting an infixed [m], and others allowing either position:

- (ii) a. m-ciŋ 'fight'
- b. k-m-uŋs 'scrape'
- c. m-hkapi/h-m-kapi 'search'

Ullan (1971: 170, referred to in Moravcsik) notes that the possessor marker [m] in Miskito occurs as an infix and as a suffix, with its placement depending on the alienability of the nominal host:

- (iii) a. napa 'tooth', na-m-pa 'your tooth'
- b. nina 'name', nina-m 'your name'

Nevis 1984 has shown that the putative endoclititic *-gi-* element that occurs in the Estonian indefinite is really an affix that can be located in one of two positions: infixed or suffixed:

- (iv) a. kes-ki 'whoever' (NOMINATIVE)
- b. kelle-le-gi 'to whomever' (ALLATIVE)
- c. kelle-gi-le 'to whomever' (ALLATIVE)

(and dialectally, *-gi-* can even be repeated: *kelle-gi-le-gi*, a form which seems to be a consequence of reanalysis of the former clitic *-gi* as an affix, and which has parallels in the repetition of *-si-* in Baltic languages, as noted in Notes 16, 17, and 21). Finally, the mobility of weak pronominal forms in Romance languages, under some analyses (e.g. that of Blake and Mallinson (1987: 615)) yields further possible examples of mobile affixes. There are no doubt other examples to be found (the placement of reflexives in some Yiddish dialects, Old Irish weak pronouns, and Berber and Udi agreement markers are some cases we are aware of but have not been able to examine carefully), but these at least provide some basis for recognizing such an affixal type, and for the nature of the factors that can control affixal mobility.

<sup>3</sup> We write *-s(i)-* to indicate the two major allomorphs for this element: *-s* which occurs in post-consonantal word-final position (in which case it is preceded by an epenthetic *-i-*), and after some vowels, and *-si-* which is found elsewhere. As Genişen (1987: 19) notes, however, "the allomorph *-si-* ... may lose the final *-i-* in finite forms". The *s(i)s* distinction is irrelevant to the focus of the present study.

<sup>4</sup> The Lithuanian reflexive has been discussed elsewhere in the literature, e.g. by Watkins (1963), Stolz (1989) and Haspelmath (1990), and as noted above has been referred to as an affix. Still, no one to our knowledge has provided an explicit justification for this categorization, as we attempt here; neither has the relevance of *-s(i)-* for the principle of Lexical Integrity been discussed nor the full range of Balto-Slavic evidence bearing on the diachronic development of *-s(i)-*.

<sup>5</sup> Referring to *-s(i)-* as a "reflexive" element is somewhat misleading, for in many of its uses it is not at all reflexive in nature but can mark passive, reciprocals, anticausatives, and the like; see Genişen (1987) and Haspelmath (1990) for some general discussion of the uses of reflexive morphology. Nonetheless, we continue to refer to *-s(i)-* as a reflexive for expository convenience.

<sup>6</sup> We observe here that there are grammatical morphemes, e.g. negative *ne* and optative *te*, that show prefixal behavior with regard to *-s(i)-*, in some instances, e.g. *ne-si-lenkiu* 'I don't bow', but not in others, especially when a lexical prefix occurs as well, e.g. *ne-su-si-likiti* 'to not meet each other'. While we have no explanation for this "schizophrenic" behavior of elements such as *ne* and *te*, certain accentual facts associated with the negative morpheme in Slavic suggest to us a working hypothesis which posits a fusion between the grammatical element and a lexical prefix and accordingly a different definition of "first prefix" for verbs with such

combinations. Similarly, as noted by Schmaling (1987: 310) the "strengthening particle *-gi-*", which can follow *-si-* as in *pa-si-gi-dėiau* 'I put for myself', can occasionally also occur between *ne* or a lexical prefix and the reflexive *-si-*, as in *at-gi-si(i)šėk* 'test' (2SG IMPV), and *ne-gi-si-tikėiau* 'I did not hope'; although such forms certainly require more consideration, it seems likely that *-gi-* fuses with the element it precedes and thus creates a compound "strengthened" element that counts as the first prefix for the purposes of the placement of *-si-*.

<sup>7</sup> There are not many examples of the reflexive combining with more than one prefix; this is due to a combination of semantic and pragmatic restrictions imposed by the meanings and functions of individual prefixes. See, however, Paulauskas (1958: 418–419) for several additional examples, of which all that contain reflexive *-si-* obey the placement principle given here. Note that it is not clear whether there are two prefixes synchronically in *at-pāskoti* or not; etymologically we have *at* + *pa* + *sakoti*. In either case, the positioning of *-si-* would not be affected.

<sup>8</sup> This designation is based on Wackernagel 1892; see Collinge (1985: 217ff) for some discussion of the history of the law and Nevis *et al.* (to appear) for relevant bibliography.

<sup>9</sup> We assume a modular conception of grammar with a separate module for syntax and for morphology. Moreover, we adopt a lexical phonology treatment of the interaction of phonology and morphology. The stem to which the reflexive is attached contains all suffixes, but because these suffixes (i.e., the person-number markers, the infinitive, the future, and the imperative) do not count in the determination of Wackernagel's Law in Standard Lithuanian, we assume that only prefixes and stems count. In Kiparsky's (1982) framework, the reflexive and the prefixes belong to the same level; the other suffixes belong to an earlier one. In some Lithuanian dialects, however, only the verb root counts for the determination of "first position", e.g., *sika-si-m* 'we spin', with *-si-* after root *sika*, but before person marker *-m*; compare Standard *sika-mė-s* (Stolz 1989: 18).

<sup>10</sup> As Note 2 makes clear, mobile affixes are found in other languages, so the recognition of *-si-* as a Wackernagel affix does not constitute a complication of the typology of affixes, but rather just a refinement of the types of factors that can affect an affix's mobility. In some ways, then, *-si-* is like the prototypical infix, which often shows placement next to the segment which is at the edge of the unit in which it is infixed.

<sup>11</sup> Those dialects with *-s(i)-* inside of the personal endings (see Note 9) provide a potential argument for affixal status of *-s(i)-* based on its position. However, that positioning — in violation of Lexical Integrity if *-s(i)-* is not an affix — provides an argument only if Lexical Integrity is vindicated as a grammatical principle. Hence we offer here independent evidence for *-s(i)-* as an affix.

<sup>12</sup> Additional relevant examples include ones with the negative marker *ne*, which also does not undergo raising when followed by *-s(i)-*, e.g.:

- (i) a. *ne-si-lenkiu* (vs. *\*ne-si-lenkiu*) 'I don't bow'
- b. *ne-si-lenkiame* (vs. *\*ne-si-lenkiame*) 'we don't bow'

However, since *ne* is not a prototypical prefix in Lithuanian (see Note 6), it is at least possible that other factors inhibit the raising in (i).

<sup>13</sup> Jules Levin has noted that, given the evidence from Slavic, the vowel *e* in the second person plural was originally *e*. As he pointed out, this does not invalidate our assumption about the nature of the synchronic vowel-changing rule, but rather demonstrates that the synchronic rule is not to be tied to the earlier rule of final lowering, and that a reinterpretation has indeed taken place.

<sup>14</sup> Given then that *-s(i)-* is an affix, it is still not clear whether it is a derivational affix or an inflectional affix. It is certainly relevant to the syntax (and thus a candidate for being inflectional) in its purely reflexive uses and to the extent that it can be a detransitivizing marker, e.g. in passive and in reciprocal uses as well. However, there are some instances of *-si-* that change the meaning of the base verb, e.g. *at-sakýti* 'to answer'/'at-si-sakýti' 'to refuse, to turn down', and thus seem to be derivational in nature. The ambiguity of *-si-* with respect to derivational

versus inflectional status means that there is not necessarily a violation of strict cyclicity in the affixal attachment of *-si-*.

<sup>15</sup> We accept here the unity of Balto-Slavic, but our arguments do not depend on that assumption. The Baltic-internal evidence alone points to nonaffixal status for *si* in Proto-Baltic, in our view. At worst, then, the Slavic facts would offer typological support.

<sup>16</sup> As Mark Hale has reminded us, the situation in Old Lithuanian was quite fluid, with a variety of realizations being possible for the reflexive. As Senn (1966: §402) describes the possibilities found in Daukša's *Postilla* of 1599, they include the placement found in the modern Standard language described here, as in *pa-si-rōdē jėmus Jėzus* 'appeared to them Jesus' (*Postille* 225.24), placement of the reflexive marker at the end of prefixed verbs, as in *parōdēt* 'appeared' (*Postille* 190.2), which is equivalent to *pa-si-rōdēt*, and cooccurrence of a mobile reflexive marker with a reflexive marker at the end of the verb as well, as in *ne-pa-si-pikinsiuo-s* (*Postille* 148.26) 'I will not take offence'. A similar situation is found with the 1SG and 2SG weak pronominal forms *mi* and *ti*, as documented by Hermann 1926. It is likely, as Hale (1985) has hypothesized, following up on a suggestion of Kaisse (1985: 83), that a process of generalizing Wackernagel's Law was underway in Old Lithuanian, from affecting only sentential clitics to affecting weak pronominals as well. Since such a generalization process is apparent in other ancient Indo-European languages, it is possible that it was going on quite early in the development of the individual branches, possibly therefore as early as Proto-Balto-Slavic. What is crucial for our account here is simply that the clitic pattern of (17) was available sufficiently early in the development of Lithuanian, while we believe it represents a possible Proto-Balto-Slavic pattern, if it was instead just a Baltic innovation, the chronology of our account would need to be adjusted somewhat.

<sup>17</sup> The Latvian example in (18) shows the double occurrence of an apparent clitic reflexive *si*, occurring after the preverb but not attached to the verb, and a verb-final reflexive marker *-s*. This doubling of the reflexive marker is akin to the occasional doubling found in Old Lithuanian (see Note 16); what is crucial about this example, however, is the placement of *si*.

<sup>18</sup> See Genišenė (1987: 22–23, 159–175) for some discussion of reflexives in Old Prussian. The fluidity found in Old Lithuanian (see Note 16) is found in Old Prussian as well, examples with true clitic reflexives do occur, though it is felt by some scholars (see Schmalstieg 1976: 216–217) that at least some such examples represent loan translations from the German source of the Old Prussian texts. Given the occurrence of the same pattern in Old Lithuanian, however, we are inclined to see such examples as supporting the claim of this pattern being available at least in Proto-Baltic.

<sup>19</sup> See Schmalstieg (1987: 310–327) on word order in Lithuanian, reconstructed and otherwise. He feels (p. 310) that "cases where the pronoun follows elements other than the preverb, e.g. (Daukša's *Postilla*) *kuriōs-mi davei* 'which you gave to me' ... [reflect] the expected order with enclitic following the initial element of the sentence."

<sup>20</sup> A brief indication of the relevant evidence is in order, however. Virtually all of the oldest attested Indo-European languages show preverbs in tmesis, separated off from the verbs they are connected to semantically, and such separated preverbs have their own accentual integrity, thereby appearing by all criteria to be independent words. For example, in Vedic Sanskrit one finds *ūd gā āvad* (RV 8.14.8) 'he-drove (āvad) out (ud) the-cows (gās)', and only later in the Sanskrit tradition do the preverbs and verb form a unit. Similar facts are found in Homeric Greek versus Classical Greek, in Old Latin versus Classical Latin, in Old Irish, and so on.

<sup>21</sup> The reflexive type with the double-marking (see Notes 16 and 17) could have arisen, in our view, via a reanalysis in which the reflexive verbs with infixes *-si-* were taken by speakers to be not sufficiently characterized as reflexives and thus in need of (redundant) recharacterization of the verbs as reflexives via the added suffixal marking (see Note (2) regarding dialectal Estonian *kelle-gi-le-gi* 'to whom-ever'). In some ways, then, this recharacterization would be parallel to the process by which forms arose dialectally in Lithuanian that have a first person agreement suffix *-u* after the reflexive *-s-* as well as before it, ending thus in *-uo-si-u* (see Senn 1966: §402).

<sup>22</sup> In Joseph (1983: Chapter 5), it is reported that Macedonian clitic placement depends on

the nature of the verb (finite or non-finite) whereas Bulgarian clitic placement shows Wackernagelian mobility depending on the number of preceding elements. For instance, in the imperative with an expressed subject pronoun *ti* 'you' Macedonian has postverbal positioning of the clitic whereas Bulgarian has preverbal positioning: Macedonian *ti-zemi go* ('*ti* go *zemi*') versus Bulgarian *ti go vzemi* ('*ti* *vzemi* go'). Clearly more research is needed on this point, but the basic hypothesis concerning paths of morphologization is unaffected.

<sup>23</sup> It may be that lexical integrity will turn out only to be a tendency and not an absolute; Dahlstrom (1987) has discussed some troubling cases from Fox in which full noun phrases, adverbials, etc. can intervene between the combination of inflectional agreement prefix plus preverb and the rest of the verb. Still, until a full evaluation of such cases can be made, it is best to maintain the strongest hypothesis concerning the interaction of syntax and morphology.

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