Demarcative Stress in Latin Cliticization

Hyea-Sung Cho
(Mokpo National Maritime University)

Cho, Hyea-Sung. 1999. Demarcative Stress in Latin Cliticization. *Linguistics* 7-2, 225-240. The aim of this paper is to demonstrate that in spite of superficial stress anormality, Latin enclitics have the demarcative property of word stress, like normal stress by conforming to the (ante)penultimate stress pattern. The demarcative nature of clitic stress is formalized by Clitic constraint in partnership with TrochFt and MainStressR. Meanwhile, we assume clitics are incorporated into prosodic words. Thereby, we can dispense with the need of tier conflation, clitic extrametricality, and the distinction of lexical and postlexical stress rules, which have been assumed to account for clitic stress. **(Mokpo National Maritime University)**

1. Introduction

Latin enclitics induce stress on the immediately preceding syllable, regardless of syllable quantity. Most of analyses, based on different models, have focused on unifying both regular and enclitic stress patterns(Steriade 1988, Halle 1990, Halle and Kenstowicz 1991, Mester 1994, Hayes 1995, Halle and Idsardi 1995, Jacobs 1997). In this paper I would rather examine Latin stress in a different view. By demonstrating that enclitics conform to the (ante)penultimate stress pattern, I argue that a demarcative stress conspiracy shows up in Latin: main stress is located on one of the last three syllables from the right edge of prosodic words whether the words are cliticized or not. I observe a preference for the right edge marked by main stress both in cliticized and in uncliticized forms. An adequate analysis must capture the linguistic generalization.

The aim of this article is to demonstrate that Latin is one of the

language with the demarcative property of word stress and it can be accounted for by alignment constraints within the framework of Optimality Theory(Prince and Smolensky 1993b). They will interact with a set of stress pattern constraints to produce correct outputs. I will propose that the phonological side of cliticization is a matter of prosodic integration into adjacent prosodic words as well.

The structure of this paper is organized as follows: I briefly examine Latin stress in section 2. Section 3 provides an overview of cliticized forms, followed by the discussion of prosodic structures of encliticized words in Latin. In section 4 I will analyze enclitic stress under OT. Finally the conclusion of this paper is given in section 5.

2. Latin Stress

In Latin a trochaic foot is erected in a quantity-sensitive fashion at the right edge of a prosodic word, with the proviso that the final syllable cannot be stressed. Thereby, main stress falls either on penultimate or on antepenultimate syllable, depending on the syllable weight. It cannot retract across the heavy penult.

(1)	a.	rósa	'rose'
		úrbe	'city'
	b.	amíːcus	'friend'
		moléstus	'molest'
	c.	fácilis	'easy'
		pópulus	'people'

In cases of more than four syllables, secondary stress is placed from the left edge of prosodic word rightward, constructing syllabic trochees exhaustively. Secondary stress is quantity-insensitive since syllables are exhaustively parsed into feet on the syllabic level.[1] Degenerate feet

[1]Latin is one of languages with partially-quantity-sensitive stress pattern, in

are strictly prohibited. Consider examples in (2). In (2a) secondary stress is not assigned to the initial syllable since it will be a degenerate foot.

(2) a. pedéstrem 'on foot'
b. vòluptá:tem 'voluptuousness'
c. lìberà:tió:nem 'delivery'

We see that Latin has a left-headed foot at the right edge of words, which surfaces as main stress, and the others being secondary.

Derivational affixes are given the same explanation. The addition of suffixes to stems induces main stress to shift rightward, yielding (ante)penultimate main stress. This means that lexically assigned foot structures are not preserved at affixation processes.

(3) répremit+ur → reprémitur 'to press(pass.)'
répremint+ur → repremíntur 'to hold back(pass.)'

The basic stress pattern of Latin can be handled in OT terms by the interaction of seven constraints, which are stated in (4).

(4) Constraints for Latin footing
a. FtBin Feet must be bimoraic at some level of analysis (μ, σ).
b. TrochFt Feet are left-headed.
c. Nonfinality No head of PWd is final in PWd.[2]

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the sense that it shows weight effects in the placement of main stress, but does not in the placement of secondary stress. Alber(1997) analyzes quantity sensitivity as the result of interactions between constraints that favor weight effcts and others obscure them.

[2]We assume Prince and Smolensky's(1993b) unifying version of Nonfinality, which bars both head foot and head syllable from the word-final position. The violation of Nonfinality is counted separately.

d. MainStressR	Every main stress is aligned with the right edge of a PWd.
e. AlignPWdL	Align(PWd, L, F, L)
f. AllFtL	Align(F, L, PWd, L)
g. Parse-σ	Syllables are parsed into feet.

Since degenerate feet are absolutely banned, FtBin, a constraint demanding foot size to be two moras or two syllables, is undominated. Also, TrochFt is violated when forced by higher-ranked constraints but it is unranked with FtBin. Nonfinality is violated in monosyllabic wors.[3] I assume that MainStressR is responsible for the main stress assignment at the right edge of words. Since main stress does not fall on the final syllable, Nonfinality which bans final stressed syllables should outrank MainStressR.

(5) Partial ranking of constraints for Latin footing
FtBin, TrochFt >> Nonfin >> MainStressR

(6) pópulus 'people'

Candidates	FtBin	TrochFt	Nonfin	MainStressR
a. popu(lús)			**!	
b. (popú)lus		*!		σ
☞ c. (pópu)lus				σσ

Candidate (6a) is lost since the head syllable and the head foot are in the word-final position, violating Nonfin twice. Candidate (6b) fails because of the violation of TrochFt. Candidate (6c) satisfies all the higher-ranked constraints, so it becomes the winner.

As seen in the examples in (2), Latin has a secondary stress on the initial syllable. It is due to a constraint that demands prosodic words to

[3]Nonfin cannot render the simplex monosyllabic word unstressable because it is dominated by unviolable Lx≈PR(Word).

begin with a foot, AlignPWdL. It will be violated, however, when requirements of main stress assignment are at stake.

(7) MainStressR >> AlignPWdL

Candidates	FtBin	TrochFt	Nonfin	MainStressR	AlignPWdL
☞a. mo(lés)tus				σ	*
b. (móles)tus				σσ!	
c. (mó)(lès)tus	*!			σσ	

We also require AllFtL to achieve iterative rightward footing. Since in the output form syllables are exhaustively parsed, the ranking [Parse-σ >> AllFtL] must be obtained. In the following tableau, the higher-ranked constraints, FtBin, TrochFt, and Nonfinality are excluded for the sake of brevity-only candidates that do not violate these constraints will be considered.

(8) vòluptá:tem 'voluptuousness'

Candidates	Main StressR	Align PWdL	Parse -σ	AllFtL
☞ a. (vòlup)(tá:)tem	σ		*	σσ
b. vo(lùp)(tá:)tem	σ	*!	**	σσσ
c. (vólup)(tà:)tem	σσσ!		*	σσ

Both (8a) and (8b) violate MainStressR equally. (8a), with the initial foot, wins because it respects the next-higher ranked AlignPWdL. Ranking Parse-σ over AllFtL renders the candidate with more parsed syllables optimal, yielding rightward iterative feet in Latin. Candidate (8c) is out since it has more violations of MainStressR than candidates (8a,b).

Note that the ranking [MainStressR >> AlignPWdL] reflects that main stress assignment outranks all the constraints that determine the distribution of secondary stress. Once the necessities of main stress are satisfied, the constraint regulating secondary stress can emerge and

display their force.

Summarizing the constraint hierarchy established so far, it is like (9).

(9) FtBin, TrochFt >> Nonfin >> MainStressR >> AlignPWdL >> Parse-σ >> AllFtL

3. Cliticization and Prosodic Structures

Clitics in Latin are mainly composed of one or two syllables. They are so-called enclitics since they are located at the right part of words. Main stress always falls on the syllable immediately preceding clitics. As a consequence, stress shifts rightward when words are encliticized. Take the examples. "[" represents the clitic boundary.

(10)	a.	úbi	'where'
		ubí[libet	'wherever'
	b.	éa:	'and'
		eá:[propter	'therefore'
	c.	lí:mina	'thresholds'
		li:miná[que	'and the thresholds'
	d.	Músa	'the Muse'
		Musá[que	'and the Muse'

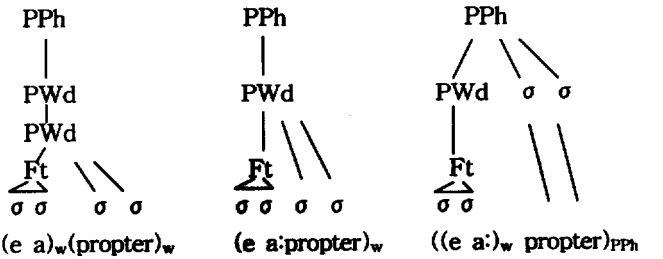
From the examples above we see that the cliticized words resemble affixed ones in the sense that they not only affect the placement of main stress but also are not stressed. We conclude from this that like suffixes, clitics should belong to the same prosodic word as the preceding morpheme. The question then arises whether clitics could be treated like one of affixes or not.

I think clitics are to be distinguished from affixes. Note that whereas the clitic boundary should be ert, the affix boundary is ignored in stress assignment. Analyzing Manam stress, Buckley(1995) argues that the source of unstressedness between clitics and final syllables of suffixes

is different. According to him, while in word-final position, clitics are excluded from metrification because they are not part of the lexical domain - the normal domain of foot construction. To put it differently, word-final syllable only is ignored from the calculation of number and weight of syllables in stress assignment, and clitics are located outside the stress domain. For instance, in *reprem*ĺ*nt+ur* the heavy penultimate syllable is stressed with final syllable extrametricality, but in *eá:propter* the penultimate syllable is unstressed in spite of heaviness because the clitic is outside the lexical word.

Now, what constituent does the clitic attach to? We have to determine the prosodic structures which it leans on. Three prosodic structures are possible.

(11) a. PWd-adjunction b. PWd-incorporation c. PPh-incorporation



In the prosodic structure in (11a), we can predict that clitics affect the location of main stress but cannot account for the stresslessness of clitics themselves since clitics constitute recursive prosodic words which are the domain of stress assignment. In the structure given in (11b), the clitic is incorporated into a prosodic word, yielding an enlarged prosodic word. The prosodic word correctly captures the rightward stress shift. In that case, however, the host of the clitic is to be the head of a foot, a stressed syllable since the clitic is preceded by a foot head within a prosodic word. Finally, if the clitic is incorporated into the phonological phrase directly, as in (11c), lexical stress would be preserved, and no

stress appears on clitics. Although the structure accounts for the lack of stress on the clitic, it must be ruled out since it cannot predict stress shift induced by cliticization. Thus, in order to explain the pre-clitic stress pattern, the structure in (11b) should be adopted since it is the structure that fits into the stress behaviors of clitics. If it is the case, it is implied that the host of clitics is not prosodic words but a smaller constituent, i.e., a foot.

4. An OT-account of Latin clitic stress

In this section I try to analyze clitic stress within the constraint-based framework. As demonstrated before, enclitics uniformly attract word stress to the final syllable of lexical word irrespective of syllable quantity. How can such pre-clitic stress be compatible with the normal stress pattern in Latin? Mester(1994) suggests that enclitic stress in Latin be placed as an effect of End Rule whose operation is to assign prominence to the rightmost element within a domain, surfacing unbounded stress pattern. Compare the following lexical word with secondary stress in (12a) with the cliticized word without secondary stress in (12b).

(12) a. vòluptá:tem 'voluptuousness'
b. li:mináque '(and)the thresholds'

Moreover, clitic stress does not observe quantity-sensitive trochaic foot formation mechanism. For instance, excluding clitics, i.e., *-que* by clitic extrametricality suggested by Mester from prosodic structures in (12b), the antepenultimate syllable *-mi-* is expected to get stressed since its penultimate syllable is light. However, the syllable preceding the clitic *-na*, is stressed although it is light. That is to say, heavy syllables and light syllables alike end up accented in preclitic position.

From the examples above, it is evident that enclitic stress employs unbounded quantity insensitive stress pattern to yield pre-clitic stress.

However, Prince(1990) argues that unbounded metrical constituents should be eliminated. According to him, unboundedness has an edge-seeking function and the work performed by unbounded metrical constituents can be achieved with binary feet and stray adjunction. Following Prince, I assume binary foot construction instead of unbounded one.

The properties of clitic stress are summarized in (13).

(13) a. Clitics are always preceded by stressed syllable close to the right edge of prosodic words.(demarcative stress)
b. No secondary stress is born in cliticized words.

How can we explain the properties under OT framework? In so far as (13a) is concerned, an optimality-theoretic analysis should treat cliticization as alignment. If it is the case, we have to determine what the host of the clitic is. We discussed in section 3 that the host is not the prosodic word. Rather, a smaller constituent, i.,e, metrical foot, should be the host since clitics are always preceded by the foot head, stressed syllable. Alignment between the clitic and the foot head enables us to represent not only the strict adjacency of stress and clitics but also the absence of stress on clitics themselves. The alignment constraint is given in (14).

(14) Clitic Align(Clitic, L, σ́, R)
(Align the left edge of the clitic with the right edge of the head of a foot.)

Clitic constraint demands that the clitic be preceded by a foot head. Because it renders the clitic located outside the main stress foot, it results in the effect of clitic extrametricality. Moreover, the (ante)penultimate stress pattern is derived in cliticized words as well since clitic size in Latin is at most two syllables. Clitic constraint is undominated, and thus it will always be respected.

Defining Clitic constraint like (14), however, the main stress foot in cliticized forms will be an iamb, not a trochee, which is in violation of TrochFt. In *li:minâque* the surface output has the right-headed foot (*minâ*). Preclitic stress violates TrochFt, but the violation is forced by a higher-ranked constraint, Clitic. Cliticized forms attract stress on preclitic syllable, satisfying undominated Clitic, but at the cost of violating TrochFt.

(15) Clitic >> TrochFt

Candidates	Clitic	TrochFt
☞ a. li:(minâ)[que		*
b. li:(mɪna)[que	*!	

Candidate (15a) is the optimal output. When Clitic constraint is at stake, one of the requirements of basic stress assignment, TrochFt, is no longer respected here. Candidate (15b) with a trochee fails to be optimal because it violates the top-ranked Clitic.

Returning to (13b), we see that an additional constraint is in order. Clitic constraint imposes no restrictions on feet elsewhere. Thus, in order to prevent foot iteration in cliticized words, *Struc^{Ft} representing bar on feet is necessary.

(16) *Struc^{Ft} foot structures are banned in cliticized forms.

Note that the left edge of prosodic words is under the influence of secondary stress assignment and the right edge is under the influence of constraints conditioning main stress. *Struc^{Ft} must be ranked below the constraints on main stress placement, i. e., Clitic, FtBin, TrochFt and MainStressR, because every word has to bear main word stress. Meanwhile, *Struc^{Ft} should outrank AlignPWdL and Parse-σ, which are defined to build secondary stress feet. Hence, the noniteration effect could be obtained by means of the ranking MainStressR >> *Struc^{Ft}

>> AlignPWdL >>Parse-σ.

The following tableau illustrates the interaction of *Struc^{Ft}, AlignPWdL, and Parse-σ. Candidate (17a), without secondary stress, is chosen as optimal. Candidate (17b) loses because it contains the initial secondary stress foot, violating *Struc^{Ft}.

(17) *Struc^{Ft} >> AlignPWdL >> Parse-σ

Candidates	*Struc^{Ft}	AlignPWdL	Parse-σ
☞ a. li:(miná)[que	*	*	**
b. (lí:)(miná)[que	**!		*

The account of preclitic stress such as *li:(miná)que* has been developed. We see that main stress on the syllable immediately preceding clitics is due to the top-ranked Clitic, which demands right alignment of a stressed syllable with the left edge of a clitic. In addition, ranking *Struc^{Ft} over AlignPWdL and Parse-σ makes a single main stress foot appear in cliticized words.

So far, we have argued that the following constraint ranking is responsible for both the regular stress and irregular stress.

(18) Clitic, Ft-Bin >> TrochFt >> Nonfin >> MainStressR >>*Struc^{Ft} >> AlignPWdL >> Parse-σ >> All-Ft-L

It is confirmed by the following tableau that the constraint ranking in (18) selects the output correctly.

(19) eá:propter 'therefore'

Candidates	Clitic	Troch Ft	Main StressR	*Struc^{Ft}	Align PWdL	Parse -σ	All FtL
☞a. (e:á)[propter		*	σσ	*		**	
b. (e:á)[(pròp)ter		*	σσ	**!		*	**
c. (éa:)[propter	*!		σσσ	*		**	

Candidate (19a) violates TrochFt to satisfy Clitic. The clitic is adjoined to the stressed syllable, which yields the violation of MainStressR inevitably. But it has only one violation of *Struc^{Ft}. Candidate (19b) has more violations of *Struc^{Ft} than candidate (19a). *Struc^{Ft} selects the form with less feet as optimal in cliticized words. Thus, candidate (19a) becomes the winner. The third condidate (19c) fatally incurs the violation of dominant Clitic although it satisfies TrochFt.

One further examination is left. Sequences of clitics can adjoin to the host in Latin. Examples of these include the following.

(20) a. id[circó[que
b. me[cúm[que
c. te[cúm[que
d. post[modó[que
e. ea:[proptér[que

What is notable from examples above is that although sequences of clitics are adjoined, main stress falls on the syllable immediately preceding the rightmost clitics like the form with a single clitic. Still, (ante)penultimate stress pattern is achieved, which is surface-unviolated. A preference for the right edge is marked by main stress. So, we need to reformulate Clitic constraint (14) to (21).

(21) Clitic Align(Rightmost clitic, L, ó, R)
(Align the left edge of the rightmost clitic with the right edge of the head of a foot.)

Interaction of Clitic with TrochFt, MainStressR, and *Struc^{Ft} accounts for (ante)penultimate stress pattern of cliticized words straightforwardly. Tableau (22) illustrates that Clitic must not be violated even with clitic sequences.

(22) ea:proptérque

Candidates	Clitic	Troch Ft	Main StresR	*Struc^{Ft}	Align PWL	Parse -σ	All FtL
☞a.ea:[(proptér)[que		*	σ	*	*	***	**
b.(èa:)[(proptér)[que		*	σ	**!		*	**
c.(e:à)[(proptér)[que		**!	σ	**		*	**
d.ea:[(própter)[que	*!		σσ	*	*	***	**

The optimal candidate (22a) observes top-ranked Clitic but violates constraints regulating main stress assignment minimally. Its competing candidate (22b) has another secondary stress foot, whose presence is not favored in cliticized forms. Hence, it is defeated. Candidate (22c) loses since it incurs two violations of TrochFt. What is implied by the defeat of (22c) is that the violation of TrochFt is possible when forced by a dominant constraint such as Clitic. Otherwise its violation is considered fatal.

As supporting evidence of Clitic constraint, I cite minimal stress pairs formed by identical segments in Latin. The pairs show that the alignment between the left edge of clitic and the right edge of foot head must be incorporated into Latin grammar. Unless the clitic boundary is active, we cannot distinguish the minimal stress pairs.

(23) a. itáque 'and so'
ĭtaque 'therefore'
b. undĭque 'and from'
úndique 'everywhere'

While cliticized words show penultimate stress, lexical words with nonanalyzing meaning demonstrate antepenultimate stress. It is evident that the sharp stress difference between their stress patterns is due to Clitic constraint.

(24) itáque 'and so'

ita[que	Clitic	Troch Ft	Nonfin	Main StressR	*Struc^{Ft}
☞a. (itá)[que		*		*	*
b. (ita)[que	*!			**	*
c. i(tá[que)	*!		*	*	*

(25) ítaque 'therefore'

itaque	Clitic	Troch Ft	Nonfin	Main StressR	*Struc^{Ft}
☞a. (íta)que				**	
b. (itá)que		*!		*	
c. i(táque)			**!	*	

Two contrasting stress pairs can be accounted for straightforwardly under our analysis. In the tableau in (24), optimal candidate (a) has a minimal violation of TrochFt, whose violation is forced to satisfy the higher-ranked Clitic constraint. On the contrary, in the tableau in (25), the same violation of TrochFt is considered fatal in the candidate (b) since the violation is not forced by any dominant constraint. TrochFt is active, barring the iamb. In conclusion, Clitic formalizes the demarcative nature of clitic stress in partnership with TrochFt and MainStressR.

5. Conclusion

Clitics in Latin behave differently in stress assignment. With respect to stress assignment, we have argued that clitic stress converges to the (ante)penultimate stress pattern ultimately like regular stress in Latin, which we think is an instance of demarcative stress defined by Kager(1996).

By ranking Clitic constraint on the topmost, we can explain seemingly aberrant clitic stress. The interaction of Clitic with TrochFt and

MainStressR captures the demarcative property of clitic stress. In addition, *Struc^{Ft} has been incorporated into the constraint ranking to define the absence of secondary stress in cliticized words. Hence, our analysis can dispense with the need of tier conflation, clitic extrametricality, and the division of lexical and postlexical stress rules, which have been assumed to explain clitic stress.

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Department of Liberal Arts
Mokpo National Maritime University
Chukyo-dong 571
Mokpo-shi Chunnam
Korea
hscho@mail.mmu.ac.kr