

A study on the dialectology of Vulgar Latin vocalic mergers: the interaction between vowel quality, syncope and accent

Béla Adamik
Eötvös Loránd University Budapest
adamik.bela@btk.elte.hu

ABSTRACT

This paper contributes to the issue of a potential correlation between the proportion of vocalic confusions under the accent measured against the proportion in unaccented syllables and the intensity of the accent itself, as supposed by József Herman in 1965. Accordingly, where there are relatively many mistakes in accented syllables, i.e. where we find a *higher* proportion of misspellings as for the vowel mergers in stressed syllables, there seems to be a relatively *lower* intensity of stress; and, conversely: where we find relatively few mistakes in stressed syllables, i.e. where we record a *lower* proportion of misspellings of the vowel mergers in stressed syllables, there the stress must have been of *higher* intensity. This correlation theory and the underlying findings of Herman were criticized and rejected by J. N. Adams in 2007. By adding the phenomenon of syncope to the equation, and looking at data sets from the “Computerized Historical Linguistic Database of Latin Inscriptions of the Imperial Age” (<http://lldb.elte.hu/>), recorded from a selection of Roman provinces, this survey will prove that the correlation suggested by Herman indeed existed and it was in effect throughout the whole Late Latin period.

1. Introduction

1.1. In his study on territorial differences in the phonology of Latin during the Empire, published first in 1965 then again in 1990, in the section ‘The problem of stress accent’ (Herman 1965=1990: 22-24), József Herman discussed the territorial distribution of the orthographic confusions¹ between E and I and between O and U corresponding to the well known Vulgar Latin vowel mergers of long *ē* and short *i* as a close *e*, long *ō* and short *u* as a close *o* in stressed syllables, and to the same mergers but extended also to short *e* and short *o* respectively in unstressed syllables. He analyzed the late (i.e. 5th

¹ In this survey for denoting the various types of misspellings in inscriptions I use the code-system of the Computerized Historical Linguistic Database of Latin Inscriptions of the Imperial Age (cf. <http://lldb.elte.hu/> and accordingly abbreviated as Database or LLDB hereafter); as for the format of the codes, the sign “>” is to be interpreted as “represented in the inscriptional text as”, e.g. “é: > I” means “a Classical Latin stressed long *e* is represented in the text by a letter I”.

and 6th century)² material of some Roman provinces and of Rome, and he discovered an unexpected difference (“différence inattendue”) in the distribution of vocalic confusions according to their positions in stressed and unstressed syllables (see Table 1). He found a marked distinction first of all between Gaul³ and Rome, revealing that the vocalic confusions under the accent discussed here are much rarer in Rome than in Gaul. According to Herman’s (1965=1990: 22-23) calculations, the percentage of confusions under the accent is 27.6 in Gaul and 14.3 in Rome (see Table 1, Full version), and the contrast is even more explicit if only the orthographic confusions referring to the vowel mergers of long *e* and short *i* as a close *ē* and long *o* and short *u* as a close *ō* in both stressed and unstressed syllables are considered:⁴ this time the related percentages are 29.3 in Gaul and 13.2 in Rome (see Table 1, Short version).

From the fact that this 27.6 % (29.3%) rate of confusion under the accent found in Gaul roughly corresponds to the general, i.e. one to two and a half (1:2.5) proportion of stressed and unstressed syllables in Latin texts, Herman (1965=1990: 23) concluded that in Gaul the vocalic confusions occurred without distinction in both accented and unaccented syllables, whereas in Rome vowels in accented syllables seemed to resist the merger. These observations led Herman to the conclusion that the territorial differences in the distribution of the accented and unaccented items of E/I and O/U faults

² Where such an exactly dated material (as in the case of Rome) was not available for him, Herman (1965=1990: 13) either (where it was possible, thus as for Spain and Gaul) left out of consideration those inscriptions to be dated to later than 600 or (as for North and South Italy and Dalmatia) simply involved all christian inscriptions in his investigation.

³ In Herman’s survey Gaul is represented by the cities together with their territories of Lyon – Lugudunum (of the province Lugudunensis) and Vienne – Vienna (of the province Narbonensis).

⁴ In Herman’s investigation in this second turn (expressed in terms of the code-system of the LLDB-Database) *í* > *E*, *i* > *E*, *é* > *I*, *e* > *I*, *ú* > *O*, *u* > *O*, *ó* > *V*, *o* > *V* are included but *í* > *E*, *i* > *E*, *é* > *I*, *e* > *I*, *ó* > *V*, *o* > *V* are excluded (*ú* > *O* and *u* > *O* was not concerned at all), see Tableau 1 (Herman 1965=1990: 25). This means he excluded in his short version both those orthographic misspellings not in accordance with the reorganization of vocalic qualities in Vulgar Latin, since the vowels concerned (*é*, *í*, *ó*, *ú*; *i* and *u*: namely) are not involved in these vowel mergers, and those that represent the mergers here concerned not unambiguously, i.e. *e* > *I*, *o* > *V*. His procedure is, however, acceptable only at least as for *o* > *V*, i.e. “V pour *ō*”, but not for *e* > *I*, i.e. “I pour *ē*”, because as Herman (2000: 34) himself admits, “most of the Romance regions have /e/ in an unstressed final syllable coming from all of Latin long /e:/, short /e/, and short /i/”, thus *e* > *I*, i.e. “I pour *ē*” does indeed represent the merger in unstressed syllables; however, as for *o* > *V*, i.e. “V pour *ō*”, there is a discrepancy in the related literature regarding whether the merger of long /o:/, short /o/, and short /u/ in an /o/ did happen at all: as for Kiesler (2006: 44) and Maiden (2011: 242-243) yes, at least as for the Western Romance, as for Banfi (1996: 166, section 1.3.3.) not, at least not as for internal syllables.

had to correlate with the territorial differences in the degree of intensity of the stress.

Table 1 (Herman 1965: 22- 24)	classical Latin > vulgar Latin: $\acute{e} \acute{i} > e, \acute{e} > e; \acute{o} \acute{u} > o, \acute{o} > o; \bar{e} e \acute{i} > e, \bar{o} o u > o \rightarrow E \sim I / O \sim V$											
	F = $\acute{i} > E, \acute{i} > E, \acute{e} > I, e > I, \acute{u} > O, u > O, \acute{o} > V, o > V, \acute{i} > E, \acute{i} > E, \acute{e} > I, e > I, \acute{o} > V, o > V$											
	S = $\acute{i} > E, \acute{i} > E, \acute{e} > I, e > I, \acute{u} > O, u > O, \acute{o} > V, o > V$						F = Full version, S = Short version					
c. 5-6 AD	Gaul		Rome		Spain		N. Italy		S. Italy		Dalmatia	
	F	S	F	S	F	S	F	S	F	S	F	S
$\acute{E} \sim \acute{I} /$ $\acute{O} \sim \acute{U}$	27,6 %	29,3 %	14,3 %	13,2 %	25,6 %	26,9 %	18,3 %	16,8 %	17,8 %	20 %	25,3 %	25,7 %
$E \sim I /$ $O \sim U$	72,4 %	70,7 %	85,7 %	86,8 %	74,4 %	73,1 %	81,7 %	83,2 %	83,2 %	80 %	74,7 %	74,3 %

Herman based his assumption on the well known fact –also corroborated by evidence from Romance languages– that in Vulgar Latin the confusion of vowel quality in unstressed syllables went further than it did in stressed syllables. He assumed that the stressed position helped in retaining the original distinctions and contrasts of quality, at least in the case of long \bar{e} and short \acute{e} , and long \bar{o} and short \acute{o} , which again merged in unstressed syllables.⁵ On the analogy of the fact that in unstressed syllables, i.e. in position of no prominence or no intensity,⁶ this merger affected more (6) vowels, than in stressed ones, i.e. in position of prominence or intensity, where it affected less (4) vowels, Herman assumed that the same or a similar difference in the degree of intensity of the stress had to cause the same or a similar effect within the stressed syllable itself: more intensity in stress had to go hand in hand with minor merger and consequently less confusions under the accent and, conversely, less intensity in stress had to couple with major merger and consequently more confusions under the accent.

In other words, Herman assumed that where there are relatively many mistakes in accented syllables, i.e. where we find a *higher* proportion of misspellings as for the vowel mergers in stressed syllables, the intensity of

⁵ At least the front vowels (and possibly the back vowels as well) in the Western Romance (cf. footnote 4). But the problem of this discrepancy as for mergers in unstressed syllables must not be overemphasized because territorial differences do exist also as for the vowel mergers in stressed syllables, see Herman (2000: 33-34): only the front vowels merged in Rumanian the back ones did not, and neither of them merged in Sardinian.

⁶ Instead of the term ‘expiratory prominence’ used e.g. by Loporcaro (2011: 62) I retain the term ‘intensity’ used as ‘intensité’ by Herman (1965=1990) and also by Herman (2000: 36) as follows: “stress accent (...) involving intensity, with the stressed syllable being pronounced louder than the others”; as for the nature of Latin stress, see Loporcaro (2011: 62), and Adamik (2013).

stress must have been relatively *low*, and, conversely: where we find relatively few mistakes in stressed syllables, i.e. where we record a *lower* proportion of misspellings of the vowel mergers in stressed syllables, the stress must have been of *higher* intensity. Thus, according to Herman, the territorial differences in the *rate* of misspellings in stressed position are to be explained by the territorial differences in the *degree* of intensity of the stress.

1.2. Herman's findings on the correlation between the proportion of vocalic confusions under the accent and the degree of intensity of accent itself have recently been criticized by J. N. Adams (2007: 666-668) in the chapter '*The 'Roman accent' and its alleged effects*'. Adams briefly discusses Herman's related findings⁷ and then he rejects them saying: "[a] glance at Herman's percentages shows that they establish nothing substantial", and "[t]hese figures show that accented vowels were affected at Rome just as in Gaul; the difference between the percentages is not compelling"; or "there is nothing distinctive about the behaviour of vowels in accented syllables", and "[i]t would not be justified to conclude from such evidence that the Latin accent of Rome differed from that of Gaul", etc.

2. Discussion

2.1 Justice can be done to either Herman's or Adams' approaches if we can test again this supposed correlation between the proportion of vocalic confusions under the accent and the degree of intensity of accent. There is a way to verify or refute Herman's above assumption: if we repeat his investigation, however, this time we measure the proportions of the misspellings relating to the vowel mergers in stressed syllables not only against those in unstressed syllables, but also against the incidences of syncope, and see whether or not a correlation, or even an inverted correlation can be established between them.

In Latin, syncope happens, i.e. unstressed short vowels can disappear before or after a stressed syllable, if the stress is intense or prominent enough to delete them. In our context this should mean that where we find a *higher*

⁷ Adams also criticized Herman's methodology: "Second, the method used by Herman to produce his percentages is unsatisfactory. What he ought to have calculated is the percentage of errors as compared with correct spellings under the accent in the two places. The figure achieved in that way might have been compared with the percentage of errors versus correct spellings in unstressed syllables in the two places. Instead he counted the number of spelling errors in both stressed and unstressed syllables, with no reference to correct spellings, and calculated therefrom the percentage of errors occurring in stressed as against unstressed syllables." However, as I pointed out in Adamik (2012), the method recommended by Adams is more in need of criticism than that used by Herman.

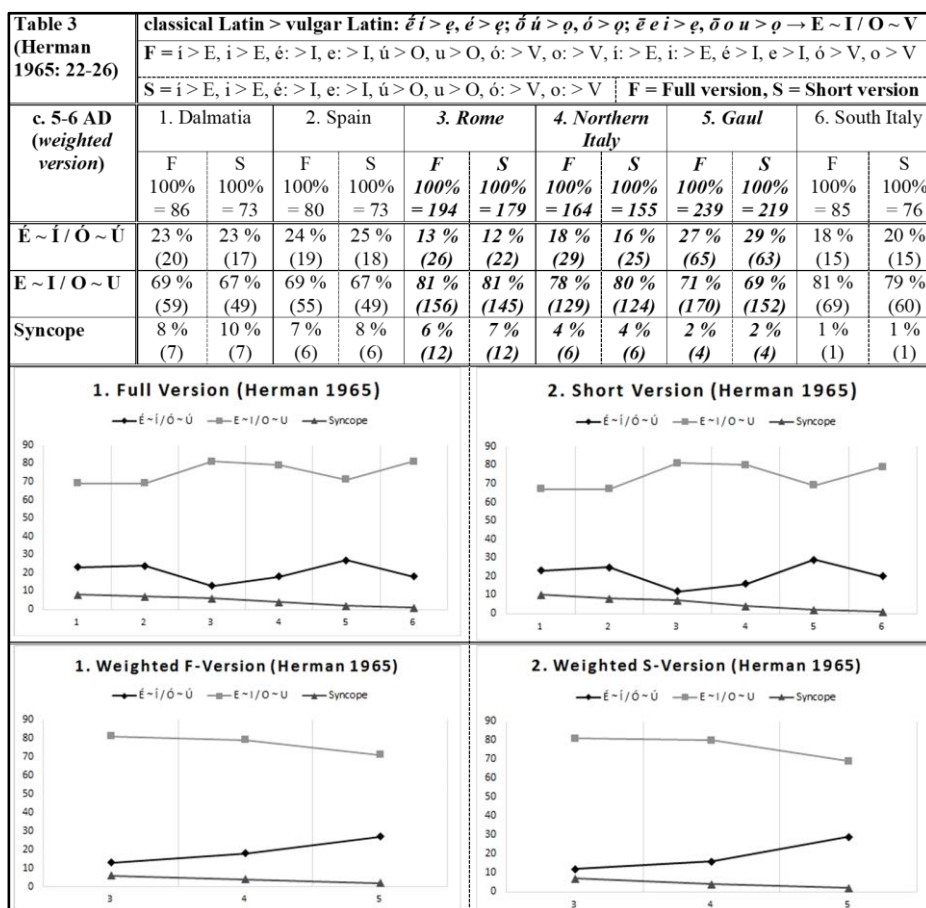
proportion of misspellings of the stressed vowel mergers there must be *less* or *no* cases of syncope due to the relatively *lower* intensity of stress; and, conversely: where we record a *lower* proportion of misspellings of the stressed vowel mergers we must find *more* cases of syncope on account of the *higher* intensity of stress (see Table 2).

Table 2 (Extended Correlation Theory)	Vowel Mergers	Intensity of Stress	É/Ī and Ó/Ū confusions	E/I and O/V confusions	Syncope
+ = increase, higher degree / rate / proportion	$\tilde{e} e i > \varphi$ $\tilde{o} o u > \varphi$	+	–	+	–
– = decrease, lower degree / rate / proportion	$\tilde{e} i > \varphi$ $\tilde{o} u > \varphi$	–	+	–	+

2.2. Therefore, in my paper I intend to re-examine the problem of this correlation theory in its extended form, and this way continue and expand the investigation started by Herman. First, since Herman set out not only the figures for vocalic confusions in his Tableau 1 (Herman 1965=1990: 25) but those for syncope in its continuation (on page 26) as well, I decided to recalculate the proportions of vocalic confusions under the accent, again of those in unstressed syllables and of incidences of syncope in relation to each other merely based on Herman's data sets. Then, just for controlling Herman's correlation theory, I shall perform the same analysis, this time based on the data collected to date in the "Computerized Historical Linguistic Database of Latin Inscriptions of the Imperial Age". Now let us examine the results of the recalculation of Herman's figures.

The results of this recalculation displayed both numerically and in charts can be seen in Table 3. First I calculated the related proportions of the three items here concerned in both full and short version, then sorted the areas chosen by Herman in descending order based on their rates of syncope, and charted the relative frequencies of these three items in line diagrams according to both full and short versions. As the next step, I eliminated the areas where the total number of data is relatively low, i.e. less than 100 pieces of data and only considered those with a relatively high total number, i.e. more than 100 pieces of data. This kind of weighting is reasonable considering the empirical and statistical fact that the more data we have for establishing and displaying relative frequencies of any given criteria, the more reliable and faithful the relations established and displayed between them are (see charts Weighted F-Version and Weighted S-Version abbreviated as WFV and WSV resp. hereafter). This way a definite correlation has been evidenced as for Rome (no. 3), Northern Italy (no. 4) and Gaul (no. 5). Comparing these three regions of high data sets (Rome, Northern Italy and Gaul are abbreviated here as R, NI and G resp.), one can

observe the operation of the assumed correlation undoubtedly: the more confusions under the accent turn up (WfV: R 13 % < NI 18 % < G 27 % / WSV: R 12 % < NI 16 % < G 29 %), the fewer syncope occur (WfV: R 6 % > NI 4 % > G 2 % / WSV: R 7 % > NI 4 % > G 2 %), and in line with this the fewer confusions in unstressed syllables are to be recorded (WfV: R 81 % > NI 78 % > G 71 % / WSV: R 81 % > NI 80 % > G 69 %). Consequently, the systematic interaction of syncope and vowel mergers seems to work according to the varying and changing intensity of accent really as Herman already assumed without involving syncope in the equation.



2.3. In his study, Herman was not able to publish the full bibliography for the data collected from the several inscriptional corpora used in the process – obviously because of the immense volume of data. This way the figures and results were to be taken on trust. However, scientific investigation requires controllability, which is now offered by the Computerized Historical Linguistic Database of Latin Inscriptions of the Imperial Age.⁸ Accordingly, present investigation with the same or slightly modified criteria was based on the data collected to date in this Database. In this survey I will consider the following six territorial units that partly agree and partly disagree with those of Herman's study⁹: 1. Dalmatia, 2. Venetia-Histria (Regio X), 3. Liguria and Transpadana (Regio IX and XI), 4. Gallia Lugudunensis, 5. Gallia Narbonensis and 6. Gallia Belgica.¹⁰ I treat these provinces in the same chronological framework as Herman did, i.e. according to their inscriptional material datable exactly or approximately to the period of 5th-6th centuries.¹¹ As for the methodology used in this survey, it should be mentioned here that I will examine the relative frequencies of syncope¹² and vocalic confusions in stressed and unstressed syllables based on those pieces

⁸ Henceforth we refer to this Database simply as “the Database” or “LLDB” (cf. <http://lldb.elte.hu/>); for a general description, see Adamik (2009), for a description of its methodology, see Adamik (2012).

⁹ The reasoning for my territorial selection was that on one hand the material pertaining to Rome has not been yet processed in the Database, and, on the other hand, the data from the provinces of Spain and Southern Italy are still being processed and yield insufficient data for such a statistical investigation.

¹⁰ The data pertaining to Dalmatia have been recorded by myself and Tünde Vágási (from the corpora of ILJug, Salona and AE), those to Venetia-Histria by Ákos Zimonyi (from the corpora of InscrAqu, InscrIt, CIL and Pais), those to Liguria and Transpadana by Judit Kovács and Ákos Zimonyi (from the corpora of ICI, ILVercel and InscrIt), those to Gallia Lugudunensis by Krisztina Fodor and Zsuzsanna Ötvös (from the corpora of CIL, RICG and IAParis), those to Gallia Narbonensis by Zsuzsanna Ötvös and Tünde Vágási (from the corpora of RICG, ILGN, ICalvet, ILN and CIL) and those to Gallia Belgica by Krisztina Fodor and Lehel Ambrus (from the corpora of RICG, FITrier, Finke, Schillinger and Nesselhauf); for resolving abbreviations of inscriptional corpora used in this survey see: http://lldb.elte.hu/admin/abbrev_bibl.php

¹¹ This means that when working with the database, I set the following search criteria for extracting relevant data: inscriptions dated 1) to 401-600 A.D., 2) to whatever date within the period of 401-600 A.D. (e.g. 451-550 or 519 etc.), 3) to periods longer than the given period of 401-600 A.D. (e.g. 351-650 etc.), and 4) to periods which are longer in one direction but shorter in the other (and vice versa) than 401-600 A.D. (e.g. 351-450 or 551-650, etc.); at the same time we excluded those data that are to be exactly dated either before 401 A.D. (such as 301-400 etc.) and after 600 (such as 601-700 etc.). This way we could establish nearly the same or even a more exact chronological framework than as it is done by Herman (1965=1990: 13).

¹² The two types of Latin syncope are labelled in the Database as syncope praetonica, e.g. VETRANVS for *veteranus* (LLDB-1187) and syncope posttonica, e.g. TITLVM for *titulum* (LLDB-422).

of data that can be interpreted as incidences of merely phonological changes.¹³

The results of this control investigation as for its both full and short versions can be seen in Table 4.¹⁴ Again, I sorted the areas concerned in

¹³ In this investigation we exclude those data forms of our Database with a nominal or verbal morphosyntactic alternative code (chosen from the lists labelled as 'Nominalia' or 'Verbalia' in the Database), and consider only those with phonetic main codes (chosen from the lists labelled as 'Vocalismus' in the Database), such as (é: > I) FECIRVNT for *fecerunt* (LLDB-7226), (í > E) MENVS for *minus* (LLDB-2594), (ó: > V) AMVRE for *amore* (LLDB-8255), (ú > O) NOMERO for *numero* (LLDB-554), (ó > V) MEMVRIA for *memoriam* (LLDB-585), (é > I) MIRITO for *merito* (LLDB-25583), (í: > E) PERECVLO for *periculo* (LLDB-18874), (ú: > O) INMONES for *immunis* (LLDB-12585), (e: > I) FILICITER for *feliciter* (LLDB-10024), (i > E) INVEDA for *invida* (LLDB-3074), (o: > V) RVMANVS for *Romanus* (LLDB-28125), (u > O) TVMOLVM for *tumulum* (LLDB-24), (o > V) CORPVRA for *corpora* (LLDB-9446), (e > I) SEMPIR for *semper* (LLDB-13644), (i: > E) VETALIS for *Vitalis* (LLDB-5244), (u: > O) MOSIVO for *musivo* (LLDB-25818). This procedure is inevitable because such forms as ANNVS for *annos* (e.g. LLDB-11843), MENSIS for *menses* (e.g. LLDB-7012) and IACIT for *iacet* (LLDB-14646), QVIESCET for *quiescit* (LLDB-8079) etc. can be interpreted not only as incidences of phonological changes but also as incidences of confusions between either cases or declensions or conjugations – and these are not separable. Accordingly, we have excluded also those data forms with a parallel alternative code chosen from the list labelled as 'Syntcatica etc.' in the Database, e.g. archaisms such as VIVOS for *vivus* (e.g. LLDB-231) or possible recompositions such as PERDEDIT for *perdidit* (LLDB-4335) etc.

¹⁴ The data sets displayed in Table 4 represent the status on 10.12.2014 and can be verified in the Database by searching the codes here concerned. Dalmatia (F-Version), É ~ Í / Ó ~ Ú 34 = í > E: 17 + é: > I: 3 + ú > O: 5 + ó: > V: 5 + í: > E: 1 + é > I: 2 + ó > V: 1, E ~ I / O ~ U 54 = i > E: 24 + e: > I: 5 + u > O: 7 + o: > V: 1 + i: > E: 2 + e > I: 7 + o > V: 7 + u: > O: 1, Syncope 8 = syncope posttonica: 7 + syncope praetonica: 1; Dalmatia (S-Version), É ~ Í / Ó ~ Ú 28 = í > E: 16 + é: > I: 2 + ú > O: 5 + ó: > V: 5, E ~ I / O ~ U 50 = i > E: 23 + e: > I: 5 + u > O: 7 + o: > V: 1 + o > V: 7 + e > I: 7, Syncope 8 = syncope posttonica: 7 + syncope praetonica: 1. Venetia et Histria (F-version), É ~ Í / Ó ~ Ú 33 = í > E: 11 + é: > I: 4 + ú > O: 2 + ó: > V: 4 + í: > E: 6 + é > I: 1 + ó > V: 4 + ú: > O: 1, E ~ I / O ~ U 80 = i > E: 57 + e: > I: 5 + u > O: 5 + o: > V: 1 + i: > E: 4 + e > I: 5 + o > V: 2 + u: > O: 1, Syncope 9 = syncope posttonica: 5 + syncope praetonica: 4; Venetia et Histria (S-version), É ~ Í / Ó ~ Ú 20 = í > E: 10 + é: > I: 4 + ú > O: 2 + ó: > V: 4, E ~ I / O ~ U 75 = i > E: 57 + e: > I: 5 + u > O: 5 + o: > V: 1 + o > V: 2 + e > I: 5, Syncope 8 = syncope posttonica: 4 + syncope praetonica: 4. Liguria and Transpadana (F-Version), É ~ Í / Ó ~ Ú 33 = í > E: 15 + é: > I: 6 + ú > O: 2 + ó: > V: 2 + é > I: 5 + ó > V: 3, E ~ I / O ~ U 63 = i > E: 32 + e: > I: 2 + u > O: 21 + o: > V: 2 + e > I: 4 + o > V: 2, Syncope 5 = syncope posttonica: 5; Liguria and Transpadana (S-Version), É ~ Í / Ó ~ Ú 25 = í > E: 15 + é: > I: 6 + ú > O: 2 + ó: > V: 2, E ~ I / O ~ U 63 = i > E: 32 + e: > I: 2 + u > O: 21 + o: > V: 2 + e > I: 4 + o > V: 2, Syncope 3 = syncope posttonica: 3. Gallia Lugudunensis (F-Version), É ~ Í / Ó ~ Ú 41 = í > E: 11 + é: > I: 17 + ú > O: 5 + ó: > V: 4 + í: > E: 2 + é > I: 1 + ó > V: 1, E ~ I / O ~ U 64 = i > E: 37 + e: > I: 2 + u > O: 16 + o: > V: 3 + i: > E: 1 + e > I: 3 + o > V: 2, Syncope 4 = syncope posttonica: 4; Gallia Lugudunensis (S-Version), É ~ Í / Ó ~ Ú 37 = í > E: 11 + é: > I: 17 + ú > O: 5 + ó: > V: 4, E ~ I / O ~ U 63 = i > E: 37 + e: > I: 2 + u > O: 16 + o: > V: 3 + e > I: 3 + o > V: 2, Syncope 1 = syncope posttonica: 1. Gallia Narbonensis (F-Version), É ~ Í / Ó ~ Ú 112 = í > E: 40 + é: > I: 28 + ú > O: 25 + ó: > V: 9 + í: > E: 3 + é > I: 3 + ó > V: 4, E ~ I / O ~ U 177 = i > E: 89 + e: > I: 8 + u

descending order according to their rates of syncope and charted the relative frequencies of these three items in line diagrams: where the rate of syncope was the same, the higher number of items mattered.¹⁵ Then again, I excluded those areas with a total number of less than 100 pieces of data (see charts Weighted F-Version and Weighted S-Version). This way, apart of Dalmatia (which seems to be clearly detached from the other selected areas), a chain of correlation has been evidenced between all areas concerned according to the full version, which is even more visible in the short version. As for the full version, it has to be noticed that (excluding the special case of Dalmatia) only Gallia Narbonensis differs but slightly from the trend: the tendency of parallel decrease of confusions in unstressed syllables and of syncope falters namely as for Gallia Narbonensis (no. 5) if compared with the preceding Gallia Lugudunensis (no. 4), where the proportion of confusions in unstressed syllables did not recede in parallel with that of syncope but even slightly increased, E ~ I / O ~ U: GL (4) 58 % < GN (5) 60 % vs. Syncope: GL (4) 4 % > GN (5) 2 %. However, if we consider the short version, where the orthographic misspellings of the non-Romance type and the optionally correct forms are removed,¹⁶ this seeming anomaly immediately disappears. Comparing the same regions concerning the short versions, one can observe that, apart from Dalmatia, this correlation indeed exists (see chart 2. Short version LLDB): the more confusions under the accent turn up (VH 19 % < LT 27 % < GN 36 % < GL 37 % < GB 44 %), the fewer syncopes occur (VH 8 % > LT 3 % > GN 1 % = GL 1 % > GB 0 %), and in line with it the fewer

> O: 58 + o: > V: 5 + i: > E: 3 + e > I: 11 + o > V: 3, Syncope 7 = syncope posttonica: 6 + syncope praetonica: 1; Gallia Narbonensis (S-Version), É ~ Í / Ó ~ Ú 99 = í > E: 40 + é: > I: 27 + ú > O: 23 + ó: > V: 9, E ~ I / O ~ U 170 = i > E: 89 + e: > I: 8 + u > O: 57 + o: > V: 4 + e > I: 9 + o > V: 3, Syncope 3 = syncope posttonica: 2 + syncope praetonica: 1; Gallia Belgica (F-Version), É ~ Í / Ó ~ Ú 51 = í > E: 37 + é: > I: 6 + ú > O: 2 + ó: > V: 1 + í: > E: 4 + é > I: 1, E ~ I / O ~ U 59 = i > E: 22 + e: > I: 5 + u > O: 26 + o: > V: 1 + e > I: 2 + o > V: 3, Syncope 0; Belgica (S-Version), É ~ Í / Ó ~ Ú 46 = í > E: 37 + é: > I: 6 + ú > O: 2 + ó: > V: 1, E ~ I / O ~ U 59 = i > E: 22 + e: > I: 5 + u > O: 26 + o: > V: 1 + e > I: 2 + o > V: 3, Syncope 0.

¹⁵ This way Gallia Lugudunensis no. 4 (by 4 % of syncope) and Narbonensis no. 5 (by 2 % of syncope) exchanged their position in the ranking according to the short version, where Narbonensis is the 4th (by 1 % of syncope of 3 pieces of evidence) and Lugudunensis the 5th (also by 1 % of syncope but of merely 1 piece of evidence).

¹⁶ In my short version (contrary to Herman's procedure) I included *e* > *I* and *o* > *V*, because the vowels concerned (short *e* certainly and short *o* possibly) took part in the vocalic mergers in unstressed syllables, cf. my reasoning in footnote 4 above; and (according to Herman's procedure) I excluded those phenomena which are not in accordance with the reorganization of vocalic qualities in Vulgar Latin (i.e. *é* > *I*, *í*: > *E*, *ó* > *V*, *ú*: > *O*, *i*: > *E* and *u*: > *O*) because the vowels concerned (*é*, *í*:, *ó*, *ú*:, *i*: and *u*:) are not involved in vowel mergers. Similarly, I have also excluded those data forms that either contextually (e.g. syncopated forms of *saeculum* in vers) or technically (e.g. uncertain readings of whatever origin of the texts) may optionally be regarded correct, and are therefore labelled as "*fortasse recte*" in the Database.

confusions in unstressed syllables are to be recorded (VH 73 % > LT 70 % > GN 63 % > GL 62 % > GB 56 %). This chain of correlation does not change at all in the short version after weighting, i.e. after having excluded Liguria and Transpadania with their total number of 91 pieces of data from the equation (see chart 2. Weighted S-Version in Table 4).

Table 4 (LLDB)	classical Latin > vulgar Latin: $\tilde{e} i > e, \acute{e} > \acute{e}; \tilde{o} \acute{u} > o, \acute{o} > o; \tilde{e} e i > e, \tilde{o} o u > o \rightarrow E \sim I / O \sim V$ $F = i > E, i > E, \acute{e} > I, e > I, \acute{u} > O, u > O, \acute{o} > V, o > V, i > E, i > E, \acute{e} > I, e > I, \acute{o} > V, o > V,$ $\acute{u} > O, u > O$ F = Full version, S = Short version $S = i > E, i > E, \acute{e} > I, e > I, \acute{u} > O, u > O, \acute{o} > V, o > V, e > I, o > V$ (<i>fortasse recte</i> excluded)											
	1. Dalmatia		2. Venetia et Histria		3. Liguria and Transpadana		4. Gallia Lugudunensis		5. Gallia Narbonensis		6. Gallia Belgica	
	F	S	F	S	F	S	F	S (5)	F	S (4)	F	S
	100% = 96	100% = 86	100% = 122	100% = 103	100% = 101	100% = 91	100% = 109	100% = 101	100% = 296	100% = 272	100% = 110	100% = 105
$\tilde{E} \sim \tilde{I} / \tilde{O} \sim \tilde{U}$	35 % (34)	33 % (28)	27 % (33)	19 % (20)	33 % (33)	27 % (25)	38 % (41)	37 % (37)	38 % (112)	36 % (99)	46 % (51)	44 % (46)
$E \sim I / O \sim U$	57 % (54)	58 % (50)	66 % (80)	73 % (75)	62 % (63)	70 % (63)	58 % (64)	62 % (63)	60 % (177)	63 % (170)	54 % (59)	56 % (59)
Syncope	8 % (8)	9 % (8)	7 % (9)	8 % (8)	5 % (5)	3 % (3)	4 % (4)	1 % (1)	2 % (7)	1 % (3)	0 % (0)	0 % (0)

1. Full Version (LLDB)	2. Short Version (LLDB)
<p>Legend: $\tilde{E} \sim \tilde{I} / \tilde{O} \sim \tilde{U}$ (diamonds), $E \sim I / O \sim U$ (squares), Syncope (triangles)</p>	<p>Legend: $\tilde{E} \sim \tilde{I} / \tilde{O} \sim \tilde{U}$ (diamonds), $E \sim I / O \sim U$ (squares), Syncope (triangles)</p>
1. Weighted F-Version (LLDB)	2. Weighted S-Version (LLDB)
<p>Legend: $\tilde{E} \sim \tilde{I} / \tilde{O} \sim \tilde{U}$ (diamonds), $E \sim I / O \sim U$ (squares), Syncope (triangles)</p>	<p>Legend: $\tilde{E} \sim \tilde{I} / \tilde{O} \sim \tilde{U}$ (diamonds), $E \sim I / O \sim U$ (squares), Syncope (triangles)</p>

3. Conclusions

3.1. The systematic interaction of syncope and vowel mergers has been proven to operate not only in the data sets of Herman (1965=1990), but also in those of the Computerized Historical Linguistic Database of Latin Inscriptions of the Imperial Age.

What Herman assumed based merely on the *general evidence* of the differing measure of vowel mergers in stressed and unstressed syllables (i.e. on the fact that the confusion of vowel quality in the unstressed vowels went further than it did in the stressed vowels) has now been *evidenced by involving syncope* in the investigation. By determining the proportions of the misspellings of the stressed and unstressed vowel mergers and measuring them against the incidences of syncope, a systematic correlation was detected between the rate of syncope and that of vocalic confusions under the accent and that of in unstressed syllables.

Consequently, at least in some later Roman areas as in Gaul and Northern Italy, the systematic interaction of syncope and vowel mergers operates according to the varying and changing intensity of accent as follows: where we find a *higher* proportion of misspellings of the stressed vowel mergers, there are *fewer* confusions in unstressed syllables and in line with it *fewer* cases of syncope due to the relatively *lower* intensity of stress; and, conversely: where we record a *lower* proportion of misspellings of the stressed vowel mergers, we find *more* confusions in unstressed syllables and in line with it *more* cases of syncope on account of the *higher* intensity of the stress. Furthermore, where the intensity of stress must have been the *lowest*, there syncope did not occur at all but the relatively *highest* proportion of misspellings of the vowel mergers in stressed syllables is to be recorded (as in Gallia Belgica, where a 0 % rate of syncope is opposed to a high rate of 46 % / 44 % confusions under the accent).

3.2. The most striking result of this survey may concern the nature of the Latin accent or stress: since the frequency of syncope goes hand in hand with the intensity of accent, the general decrease of syncope observed over the centuries¹⁷ indicates the general decrease of intensity of Latin accent at the same time.¹⁸

All in all, József Herman's correlation theory in its original brief formulation from fifty years ago, together with its extended version as presented above constitute an undoubtedly great leap forward in the research of Vulgar Latin phonology.¹⁹

¹⁷ As evidenced in Adamik (2016).

¹⁸ Contrary to my former assumption formulated in Adamik (2013).

¹⁹ The present paper has been prepared within the framework of the project OTKA (Hungarian Scientific Research Fund) No. K 108399 entitled "Computerized Historical Linguistic Database of Latin Inscriptions of the Imperial Age" (<http://lldb.elte.hu/>) and of the project entitled "Lendület ('Momentum') Research Group for Computational Latin Dialectology" (Research Institute for Linguistics of the Hungarian Academy of Sciences). I wish to express my gratitude to Zsuzsanna Sarkadi for her help in the revision of the English text.

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