Vowel mergers in the Latin of the Danubian provinces of the Roman Empire as evidenced in inscriptions

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RESEARCH ARTICLE

ABSTRACT

The present study analyzes the transformation of the vowel system and especially the process of vowel mergers based on the Latin inscriptions of the Danubian provinces. With the help of the Computerized Historical Linguistic Database of the Latin Inscriptions of the Imperial Age (http://lldb.elte.hu/), it tries to draw and then compare the phonological profiles of the selected provinces and to describe the dialectal position of the Danubian provinces regarding vocalism in the first four centuries AD. The analysis, which also covers comparisons with certain provinces of Italy and Dalmatia, is carried out considering four aspects: the ratio of vocalic versus consonantal changes, the ratio of vowel mergers compared to vocalic changes, the ratio of *e-i* and *o-u* mergers compared to each other, and the ratio of vowel mergers by stressed and unstressed syllable. As a result of the present study, it was revealed that Danubian provinces cannot be treated as a unit or as clearly separate from the other areas studied according to either aspect of the study. The Dacian development, which can only be observed in the 2nd–3rd century, can easily be placed among the Danubian provinces, so it is not necessary to connect it with the developmental trends in southern Italy. The present study, which continued József Herman's research, managed to explore the hitherto little-known linguistic and dialectological features of Latin in the Danubian provinces.

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1. INTRODUCTION

The dialectological characterization of the inscriptional Latin of the Danubian provinces on the basis of various linguistic criteria has been studied for a long time, and even some recent works touched upon the subject. However, József Herman's study published in 1983 and republished in 1990 is still considered fundamental, the conclusions of which are as follows: "It emerges from the research carried out since the beginning of the century and in particular from the recent works of H. Mihăescu, that the so-called Danubian provinces did not constitute a linguistically distinctive area that could be contrasted with other parts of the Empire; the various innovations and developments attested by the inscriptions of this region are found without exception elsewhere as well, just as the innovations noted in other provinces are almost all found in the inscriptions of this region. However, this purely negative result in a certain sense can be overcome if we examine and measure the exact extent and chronology of the various phenomena more carefully and, if possible, using statistical methods. Such research will demonstrate, it seems, that the Danubian provinces are neither more nor less homogeneous from the point of view of Latin than the other regions and provinces of the Empire, that here too there are divisions, a set of 'microstructures' reflecting the ways and the mechanism of the extension of the innovations, unequal ways and mechanisms, different from province to province, following the local conditions, the axes of communication, the ethnic particularities etc. Continuous and systematic research in this direction can probably show that, at least in the first centuries of the Empire, Italy was still the centre from which innovations started (certainly different areas of Italy, but that's another question); the provinces also differed from each other according to the ties they had to one or another region of Italy – through transport conditions, the origin of the colonists, troop movements etc. It also seems that, among the Danubian provinces, Pannonia and Dalmatia (and doubtless also Noricum) were particularly attached to northeastern Italy, more particularly to Venetia, while Dacia seemed to be attached rather to generally more conservative regions, notably central and southern Italy."[1]

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[1] HERMAN (1983=1990) 180–181: "Il ressort des recherches poursuivies depuis le début du siècle et en particulier des ouvrages récents de H. Mihăescu, que les provinces dites danubiennes ne constituaient pas un domaine linguistique individualisable, supposant aux autres parties de l'Empire; les innovations et évolutions diverses qu'attestent les inscriptions de cette région se retrouvent sans exception ailleurs également, comme les innovations relevées dans d'autres provinces se retrouvent presque toutes dans les inscriptions de cette région. Ce résultat, dans un certain sens purement négatif, est susceptible d'être dépassé à l'aide de recherches plus minutieuses portant sur l'extension et la chronologie exactes, mesurées si possible à l'aide de méthodes statistiques, des divers phénomènes. De telles recherches démontreront, semble-t-il, que nos provinces ne sont ni plus ni moins homogènes du point de vue du latin que les autres régions et provinces de l'Empire, qu'il existe des clivages, un ensemble de 'microstructures' reflétant les voies et le mécanisme de l'extension des innovations, voies et mécanismes inégaux, différents de province en province, à la suite des conditions locales, des axes de communication, des particularités ethniques etc. Il semble que de telles recherches, conduites avec assiduité et d'une manière systématique, démontreront qu'au cours, au moins, des premiers siècles de l'Empire, l'Italie restait le centre d'où partaient les innovations (sans doute de diverses régions d'Italie – ce qui est une autre question), et que les provinces se différenciaient entre elles selon la diversité des liens que grâce aux communications, à l'origine des colons, aux mouvements de troupe etc. elles maintenaient avec telle ou telle région d'Italie. Il semble aussi que, parmi le provinces danubiennes, la Pannonie et la Dalmatie (et sans doute aussi le Norique) se rattachaient tout particulièrement à l'Italie du Nord-Est, plus particulièrement à la Vénétie, alors que la Dacie semblait se rattacher plutôt à des régions en général plus conservatrices, notamment à l'Italie centrale et méridionale." Mihăescu = MIHĂESCU (1978).

Herman's findings were formulated taking into account several linguistic (mainly phonetic, and also some morphological and morpho-syntactic) criteria, but were mostly based on the examination of vowel mergers. Herman's essential findings regarding this, mostly using the results of a previous study,[2] are as follows: "It emerges that in Dalmatia and in Regio X [i.e. Venetia et Histria], the reorganization of vowel quality ($\bar{e}, \bar{\iota}, > \underset{.}{e}; \bar{o}, \breve{u} > \underset{.}{o}$) in both the palatal and velar series was in full swing before the era of Christian inscriptions in both stressed and unstressed syllables. In Pannonia, the situation is similar in that the reorganization of vowel quality can be clearly recognized in both the palatal and velar series in the case of the unstressed syllable; in the stressed syllable, this reorganization mainly characterises the palatal vowels, while the examples for the velar series are confined to the extreme south of the province, close to Dalmatia. Dacia, on the other hand, is extremely conservative: although there are a few scattered examples of I ~ E confusion in the province, their distribution according to vowel types does not foreshadow the future Romance reorganization of vowel quality; the trend does not emerge in the velar series either, the single example in a stressed syllable is highly questionable (…) It should be noted that this is not a matter of general conservatism or purism, as Dacia also follows the direction of movement of the language system at other points. Let us also note that with regard to the conservative character of Dacia in the field of vocalism, this province is by no means isolated: however, it joins not its neighbours but certain regions of southern Italy; Pannonia, on the other hand, is clearly linked, with a slight delay, to the evolution of north-eastern Italy and Dalmatia."[3]

Herman's findings were only sporadically reflected in the literature, tangentially by M. Loporcaro,[4] briefly by J. N. Adams,[5] and to a somewhat greater extent by A. Gonda.[6] However, they were not discussed in the depth and detail they deserved. That is why, since the provinces that Herman included in his analysis are sufficiently processed in the Computerized Historical Linguistic Database of the Latin Inscriptions of the Imperial Age (= LLDB), I set myself the goal of checking Herman's conclusions and, where necessary, supplementing and revising them. To do this, I examine the phonological data set of the LLDB for the provinces also examined by Herman,

[2] HERMAN (1968=1990a).

[3] HERMAN (1983=1990) 178–179: "Il en ressort qu'en Dalmatie et dans la Regio X le regroupement des timbres ($\bar{e}, \bar{\iota}, > \underset{.}{e}; \bar{o}, \breve{u} > \underset{.}{o}$) était déjà nettement engagé dans la série palatale comme dans la série vélaire, et cela dès avant la période des inscriptions chrétiennes, en syllabe accentuée aussi bien qu'en syllabe non accentuée; la Pannonie rejoint ces deux provinces, le regroupement des timbres se pratique clairement en syllabe non accentué pour la série palatale aussi bien que pour la série vélaire; en position accentuée le fait est surtout clair pour la série palatale, tandis que les exemples pour la série vélaire se cantonnent dans l'extrême Sud de la province, voisin de la Dalmatie. La Dacie, par contre, est extrêmement conservatrice: bien qu'il y ait quelques exemples épars de confusion I ~ E dans la province, leur répartition selon les types de voyelle ne préfigure pas la future redistribution romane des timbres; la tendance ne se dessine pas non plus dans la série vélaire, l'unique exemple en syllabe accentuée est fortement sujet à caution (…). Il est d'ailleurs à noter qu'il ne s'agit pas d'un conservatisme ou d'un purisme général de la Dacie, qui suit bien le mouvement d'ensemble sur d'autres points du système. Notons aussi qu'en ce qui concerne le caractère conservateur de la Dacie dans le domaine du vocalisme, cette province n'est nullement isolée: elle rejoint, par delà ses voisins, certaines régions de l'Italie méridionale; la Pannonie, par contre, se rattache nettement, avec un léger retard, a l'évolution de l'Italie de Nord-Est et de la Dalmatie."

[4] LOPORCARO (2015) 54.

[5] ADAMS (2007) 668–669: *7.2 The Danubian provinces.*

[6] GONDA (2019) 54–59.

that is, the Danubian provinces (Noricum, Pannonia Superior, Pannonia Inferior, Dacia, Moesia Superior and Moesia Inferior) which are the focus of my study, alongside the provinces selected for comparison (Dalmatia, then Venetia et Histria from Northern Italy, then Picenum, Samnium, and Rome from Central Italy, as well as Apulia et Calabria, and Bruttium et Lucania from Southern Italy, not considered by Herman). The phonological analysis focuses on the examination of the various ratios of *e/i* and *o/u* letter confusions referring to vowel mergers, with regard to stressed and unstressed syllable positions, in accordance with the methodology used in my paper of 2022.[7] Since the inscriptional culture in the Danubian provinces disappeared much earlier (roughly in the 4th century) than in the Dalmatian and Italian areas selected for comparison (roughly in the 6th–7th centuries), I will only carry out the comparative study of the Danubian provinces with regard to the first four centuries AD. At the same time, I carry out this analysis in a century-by-century breakdown, so that, in addition to regional differences, trends in change over time can also be recognized. As a result, the subtle structural analysis based on the LLDB database can reveal the territorial and chronological differences in the internal development of the Danubian provinces, as well as their possible dialectological connections with other, more deeply Romanized (Dalmatian and Italian) areas in terms of vowel mergers.

2. METHODOLOGY

Before I go into the detailed analysis, the following features of methodology must be highlighted. Throughout my analysis, the method of József Herman will be followed:[8] I will analyse the distributional structures of purely phonological 'errors' recorded from Latin inscriptions by excluding data which have morpho-syntactic or other non-phonological interpretations[9] as well

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[7]ADAMIK (2022).

[8]For Herman's methodology, see HERMAN (2000b) 123–135 and ADAMIK (2012) 123–139.

[9]Throughout the current investigation I will consider only those data forms with phonetic main codes (chosen from the list labelled as 'Vocalismus' in the Database) that do not have a nominal or verbal morphosyntactic alternative code (chosen from the lists labelled as 'Nominalia' or 'Verbalia' in the Database), such as (é: > I) FECIRVNT for *fecerunt* (LLDB-7226, CIL III 10743, 3), (í > E) PRINCEPIO for *Principio* (LLDB-37952, CIL III 4335, 6), (ó: > V) MAIVRE for *Maioris* (LLDB-763, IBulgarien, 75, 4), (ú > O) NOMERO for *numero* (LLDB-554, AE 1912, 192, 2), (ó > V) MEMVRIA for *memoriam* (LLDB-585, AE 1969–70, 575, 7), (é > I) VALIRIO for *Valerio* (LLDB-45520, AE 1913, 137, 2), (í: > E) MEL for *miles* (LLDB-6232, CIL III 10572, 2), (ú: > O) INMONES for *immunis* (LLDB-12585, InscrAqu 3, 3393, 3), (e: > I) DISIDERIVM for *Desiderium* (LLDB-47569, CIL III 10233, 7), (i > E) VIXET for *vixit* (LLDB-44303, CIL III 3987, 2), (o: > V) PRONEPVS for *pronepos* (LLDB-8500, CIL III 13392, 7), (u > O) ANNORO for *annorum* (LLDB-709, AE 1958, 226, 6), (o > V) VIATVR for *viator* (LLDB-589, IScM 5, 52, 6), (e > I) MIMORIA for *memoriae* (LLDB-44680, Hild 139, 1), (i: > E) VETALI for *Vitali* (LLDB-7136, CIL III 11054, 2), (u: > O) IESO CR[I]|STI for *Iesu Christi* (LLDB-14504, CIL III 13352, 2) etc. This procedure is necessary because forms like BIXI|T ANNVS for *vixit annos* (e.g. LLDB-5441, AE 2000, 1262, 4; o: > V / decl. IV pro II), VIXIT () MENSIS for *vixit () menses* (e.g. LLDB-6197, CIL III 10577, 6; e: > I / acc. pl. -IS pro -es) and IACIT for *iacet* (LLDB-14646, CIL III 9527, 1; e > I / -IT pro -et (in 3. pers. praes. impf. verborum)), QVIESCET for *quiescit* (LLDB-14140, CIL III 9532, 1; i > E / -ET pro -it (in 3. pers. praes. impf. verborum)) etc. can be interpreted not only as incidences of phonological changes but also as incidences of confusions between either cases, declensions or conjugations – and these are not separable. Accordingly, I have also excluded data forms with an alternative code chosen from the list labelled as 'Syntactica et lexica' in the Database, e.g. archaisms such as VIVOS for *vivus* (e.g. LLDB-11065, CIL III 3625, 3; u > O / archaismus) or possible recompositions such as PERDEDE| RVNT for *perdiderunt* (LLDB-33076, CIL III 8500, 5-6; i > E / recompositio) etc. For resolving abbreviations of inscriptional corpora used in this survey see: http://lldb.elte.hu/admin/abbrev_bibl.php.

as the purely orthographic errors as non-linguistic ones.[10] I will consider all types of phonological changes recorded in the LLDB database, with particular emphasis on the substantial vowel mergers in the vowel system.[11]

As it is well known, the orthographic confusions[12] between E and I and between O and U represent the Vulgar Latin vowel mergers of long $\bar{e}$ and short i into a closed $e̦$, and long $\bar{o}$ and short u into a closed $o̦$ in stressed syllables, alongside the same mergers in unstressed syllables, with an extension to short e and short o respectively.[13] These changes (meaning $\acute{\bar{e}}$ $\acute{i}$ > $e̦$, $\acute{e}$ > $e̦$, $\bar{e}$ e i > $e̦$; $\acute{\bar{o}}$ $\acute{u}$ > $o̦$, $\acute{o}$ > $o̦$, $\bar{o}$ o u > $o̦$) occurred in the great majority of the Romance languages, and lead to the emergence of a system that can be called 'Proto-Western-Romance'.[14] At the same time,

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[10]The following codes were excluded as purely orthographic phenomena: g > C, qu > CV, H > ø, *aspiratio vitiosa*, ch > C, ph > P, th > T, PH ~ F, c > K, k > C, x > SX / CS / XS / XSS / XX, i (= /j/) > II, áe > E, é > AE, é: > AE, ae > E, e > AE, e: > AE, ae / áe > AI, i: > II, e: > EE, a: > AA, o: > OO, u: > VV. Purely orthographic phenomena here include not only spelling patterns based on different (substandard) practices (which were to be avoided in standard orthography), such as CV instead of QV, CS instead of X, or geminating vowels as VV to denote long *u*, but also which testify to linguistic changes that have already taken place (are no longer active), such as not writing H (H > ø), writing it in the wrong place (*aspiratio vitiosa*), or confusing AE and E, cf. HERMAN (2000a) 38 ("First we can mention a change that happened in the Republican period, that is, even before the Empire; the laryngeal aspirate /h/ was dropped, in all positions in a word") and 31 ("*Ae* and *oe*, however, became monophthongs at an early date, probably in the first century AD."). Similarly, I have also excluded data forms that either contextually (e.g. syncopated forms of *saeculum* in verse) or technically (e.g. readings uncertain for whatever reason) might be regarded as correct, and are therefore labelled as "fortasse recte" in the Database. Moreover, I excluded items imported from other provinces (labelled as "Import from" in the Database) using the 'Excluding import and including export' submodule (see in the 'Loc.' module of the extended search engine of the Database http://lldb.elte.hu/admin/search_2.php) that aggregates inscriptions (i.e. data forms) of the selected province by excluding inscriptions imported here from other provinces, but adding inscriptions exported to other provinces from here (and imported there).

[11]Additionally, the *b-w* merger in the consonant system (apparent in the confusion of the letters B and V) will also be taken into account to some extent. It was included in the discussion as a contrast group, as a kind of index of productivity. The method of contrasting the vowel mergers with the *b-w* merger was previously applied in the analysis of Sardinian Latin e.g. by LUPINU (1999) 238ff., as well as of African Latin by ADAMS (2007) 642–649 and ADAMIK (2020) 12ff.

[12]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 (see https://lldb.elte.hu/admin/abbrev_codes.php); 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 the letter I".

[13]For the respective mergers, see some illustrative examples from the material of the selected provinces: ($\acute{\bar{e}}$ $\acute{i}$ > $e̦$) é: > I, FICIT for *fecit* (LLDB-584, *AE* 1969–70, 575, 7), í > E, DOMETIAE for *Domitiae* (LLDB-1747, CIL III 12432, 1); ($\acute{\bar{o}}$ $\acute{u}$ > $o̦$) ó: > V, TIRVNI for *Tironi* (LLDB-63381, *AE* 2011, 1138, 7), ú > O, SECON|DO for *secunda* (LLDB-567, *AE* 1969–70, 575, 4–5); ($\bar{e}$ e i > $e̦$) e: > I, DIDICAVI for *dedicavi* (LLDB-14902, CIL III 3474, 4–5), e > I, CILERIVS for *celerius* (LLDB-4868, *AE* 1934, 213, 7), i > E, FEDELI for *fideli* (LLDB-44318, CIL III 4002, 3), ($\bar{o}$ o u > $o̦$) o: > V, MERITV for *merito* (LLDB-27420, *RIS* 154, 7), o > V, CVLVMBVLA for *Columbula* (LLDB-23211, *AE* 2008, 1150, 8), u > O, FONDAMENTIS for *fundamentis* (LLDB-6054, RIU 3, 804, 7). At the same time, in the present study I also took into account the relatively rare and scattered letter confusions that occurred in the case of vowels that did not participate in the vowel merger. These occasional letter confusions are probably also attributable to spelling uncertainty caused by this merger (which is even more likely in the case of the long unstressed *i* and *u*, after their shortening, especially in word-final syllables, cf. HERMAN [2000a] 28), e.g.: (ó > V) PVSVIT for *posuit* (LLDB-3839, *IScM* 2, 147, 2), (é > I) PVDINTI for *Pudenti* (LLDB-2330, *IMS* 6, 34, 4), (í: > E) AVETVS for *Avitus* (LLDB-117070, *AE* 2003, 1439, 5), (ú: > O) INMONES for *immunis* (LLDB-12585, InscrAqu 3, 3393, 3), (i: > E) SVES for *suis* (LLDB-63272, CIL III 12463, 7), (u: > O) FRONITI for *fruniti* (LLDB-12199, InscrAqu 3, 3129, 6).

[14]Dalmatian late Latin and Dalmatian Romance also belonged to the Western-Romance vowel system, see ADAMIK (accepted for publication b).

the evidence from Romance languages suggests that this reorganization of vowel quality did not occur in Sardinia and Africa ($\bar{\imath}\ i > i,\ \bar{e}\ e > e,\ \bar{o}\ o > o,\ \bar{u}\ u > u$),[15] and occurred only partially in some of the Latin spoken in the Balkans, that is, in the forerunner of the later Romanian language ($\acute{\bar{e}}\ \acute{\imath} > e,\ \acute{e} > e,\ \bar{e}\ e\ i > e,\ \bar{o}\ o > o,\ \bar{u}\ u > u$).[16] This type of asymmetric merger, so a merger only affecting front vowels, also occurred in the precursor of one of the Italian dialects spoken in Lucania in southern Italy,[17] in the northern part of present-day Basilicata, while in the southern half of the same area, traces of the Sardinian-type development can be discovered in the local Italian dialect, in which these mergers did not occur at all.[18]

Since my presentation concerns geographical areas in which one of the precursors of the later Balkan Romanian language and the later Lucanian southern Italian dialects may have developed, throughout the analysis I will pay attention to the possible appearance of developmental tendencies of the symmetrical western type and the asymmetrical eastern type as well as the Sardinian type in the analysed Latin material, not only with regard to the Danubian provinces, but also with regard to the Italian provinces included in the comparison. I will pay special attention to Dacia, since this is the only province in the Danubian region in connection with which the possibility that a Romance language developed from the Latin spoken here is raised regularly, so much so that it is widely called Daco-Romanian or Daco-Romance in the literature.[19]

3. ANALYSIS OF THE DATA FROM THE SELECTED PROVINCES

Now let us turn to the analysis of the data from the selected provinces. In order to see the changes over time, as mentioned, I divided the relevant LLDB material into four groups according to the centuries when they were created:[20] data forms recorded from the 1st century

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[15]The vocalism of Latin in later Africa Proconsularis including Numidia turned out to be of the same type as of the later Latin in Sardinia, while the vocalism of the Latin in later Mauretania Caesariensis might have started to develop toward the eastern or Balkan type of vocalism, see ADAMIK (2020).

[16]Vowel quality in Sardinia remained as it had been all along, even though the length distinctions were lost here just like everywhere else ($\bar{\imath}\ i > i,\ \bar{e}\ e > e,\ \bar{o}\ o > o,\ \bar{u}\ u > u$). At the same time, in Romanian, which is the single persistent representative of Balkan Latin, we find a development halfway between the two; front vowels merge, just like in most Romance languages, but the difference in quality is preserved in back vowels ($\acute{\bar{e}}\ \acute{\imath} > e,\ \acute{e} > e,\ \bar{e}\ e\ i > e,\ \bar{o}\ o > o,\ \bar{u}\ u > u$), just like in Sardinia, cf. HERMAN (2000a) 32–33.

[17]The first traces of the development of this kind of asymmetric system can be discovered in the 5th century inscriptional material of Bruttium et Lucania, see ADAMIK (accepted for publication a).

[18]See LOPORCARO (2011) 114 and n. 11 cited there (2011) 691, as well as LEDGEWAY (2016).

[19]E.g. by LOPORCARO (2011) 114, 128. etc. Cf. HERMAN (2000a) 13: "Dacia was abandoned in AD 270; possibly some groups of the Romanized population stayed there, although most of them withdrew to the banks of the lower Danube, in the province of Moesia. (The geographical location and the chronology of the development of Rumanian is still a controversial question and unfortunately confused by politics.)"

[20]Data with only an estimated date of creation were classified according to the midpoint of the period indicated on each data form with the help of the 'Period A' module of the search function in the LLDB, cf. https://lldb.elte.hu/admin/search_2.php. This way those data forms will be displayed where the arithmetic mean of the indicated period falls within the period specified in the search query. E.g. with a search query for AD 101–200, data forms with a date 91–150 (mean: 120.5) or 171–210 (mean: 190.5) will be displayed, as well as data forms with a period narrower than the search query, such as 131–150 (mean: 140.5), and where a single year is indicated, such as 131. At the same time, data forms with dates such as 71–110 (mean: 90.5) or 191–230 (mean: 210.5) will be excluded.

(see Table 1), 2nd century (see Table 2), 3rd century (see Table 3) and 4th century (see Table 4). The data in each of the four tables are displayed in the following manner. Under the name of each province, there is a row of information with data. Column 1 displays the total number of phonological data forms. Column 2 has the ratio of vocalic versus consonantal changes (abbreviated as V and C). Column 3 shows the exact numbers and proportions for E/I and O/V confusions within vocalic changes, and the exact numbers and proportions of B/V confusions within consonantal changes.[21] Column 4 shows the totalized percentage of E/I and O/U faults compared to all vocalic errors, while column 5 the E/I to O/U ratio, and column 6 the incidence of these confusions in stressed and unstressed syllables.

In the first column, the number of data forms is underlined if it is above 100, it is in regular font style if it is between 100 and 51, in italics if it is between 50 and 31, and in brackets if it is between 30 and 1. In the second and fourth columns, the number of data forms is underlined if it is above 50, in regular font style if it is between 50 and 31, in italics if it is between 30 and 16, and in brackets if it is between 15 and 1. Finally, in the third, fifth and sixth columns, the number of data forms is underlined if the number is above 20, in regular font style if the number is between 20 and 11, in italics if it is between 10 and 5, and in brackets if it is between 4 and 1. This type of weighting helps us make a realistic assessment of the data for each area and period.[22] According to this, the value of numbers which are underlined or typed in a regular font style can be considered the most reliable, the numbers in italics should be treated with caution alongside the conclusions drawn from them, while the numbers in brackets should be ignored, considering they are too low for meaningful analysis. Taking into account these restrictions, the data in Tables 1–4 represent the basic data sets for our interpretation to be presented.[23]

In Tables 5.1–5.4, further charts are added for interpreting and summarizing the data displayed in Tables 1–4. They will help us compare and rank the selected provinces as for the chosen aspects, and discover the tendencies of phonological changes between the early and later periods. Accordingly, I shall analyse the charts of Tables 5.1–5.4, and with their help I will try to describe the dialectal position of the selected provinces with special regard to the Danubian ones regarding vowel mergers in the first four centuries AD.

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[21]The method of contrasting the vowel mergers with the *b-w* merger was previously applied in the analysis of African Latin by ADAMS (2007) 642–649 and ADAMIK (2020) 21–22. In any case, the b-w merger data shown in the following Tables help us interpret Herman's concise description of the frequency of this phenomenon in the Danubian provinces, cf. HERMAN (1983=1990) 178: "la confusion V ~ B () se retrouve en Mésie Supérieure, mais limitée à la région Nord-Est de la province, et () près de la Dacie, où ce phénomène se rencontre avec un fréquence appréciable (alors que le fait, presque courant en Dalmatie, semble plus sporadique en Pannonie, compte tenu du nombre des inscriptions)." The relevant data from Table 3 suggest that in the 3rd century this phenomenon was about as sproradic in Dacia (4.4% = 5) as in Pannonia Inferior (2% = 3), Pannonia Superior (3% = 4) and Moesia Inferior (3.7% = 5), but much more frequent in Dalmatia (9.4% = 33) and Moesia Superior (11.9% = 7). In this region, in the 4th century (cf. Table 4), we only have data from Dalmatia, which shows the prevalence of the phenomenon in this province (27.4% = 37).

[22]For this type of weighting, see ADAMIK (2017) 183–194, 185.

[23]All the data displayed in Tables 1–4 represent the status of the LLDB Database on 26/03/2023. To learn more about the search and charting modules of the LLDB Database, see ADAMIK (2016) 13–27.

Table 1. Phonological changes in the 1st century provinces in LLDB

1	2	3	4	5	6
1. Moesia Inferior					
(100% = 25)	(V 40% = 10)	(100% = 10), (E/I 0% = 0, O/U 0% = 0)	(E/I+O/ U = 0 = 0%)	(E/I:O/U =–)	(E/I/O/U:É/Í/Ó/ Ú = 0 : 0 = –)
	(C 60% = 15)	(100% = 15), (B/V 0% = 0)			
2. Moesia Superior					
(100% = 21)	(V 36.4% = 7)	(100% = 7), (E/I 0% = 0, O/U 0% = 0)	(E/I+O/ U = 0 = 0%)	(E/I:O/U =–)	(E/I/O/U:É/Í/Ó/ Ú = 0 : 0 = –)
	(C 63.6% = 14)	(100% = 14), (B/V 0% = 0)			
3. Dacia					
(100% = 0)	(V 0% = 0)	(100% = 0), (E/I 0% = 0, O/U 0% = 0)	(E/I+O/ U = 0 = 0%)	(E/I:O/U =–)	(E/I/O/U:É/Í/Ó/ Ú = 0 : 0 = –)
	(C 0% = 0)	(100% = 0), (B/V 0% = 0)			
4. Pannonia Inferior					
100% = 33	(V 24.2% = 8)	(100% = 8), (E/I 12.5% = 1, O/U 0% = 0)	(E/I+O/ U = 1= 12.5%)	(E/I:O/U = –) 12	(E/I/O/U:É/Í/Ó/ Ú = 1 : 0 = –) 10
	C 75.8% = 25	*100% = 25,* (B/V 0% = 0)			
5. Pannonia Superior					
<u>100% = 121</u>	*V 23.1% = 28*	*100% = 28,* (E/I 7.1% = 2, O/U 0% = 0)	*E/I+O/ U = 2 = 7.1%*	(E/I:O/U = –) 12	(E/I/O/U:É/Í/Ó/ Ú = 1 : 1 = 1)
	<u>C 76.9% = 93</u>	<u>100% = 93,</u> (B/V 0% = 0)			
6. Noricum					
<u>100% = 134</u>	<u>V 47.% = 63</u>	<u>100% = 63,</u> *E/I 6.3% = 4, O/U 0% = 0*	<u>E/I+O/ U = 4 = 6.3%</u>	(E/I:O/U = –) 12	*E/I/O/U:É/Í/Ó/ Ú = 2 : 2 = 1*
	<u>C 53% = 71</u>	<u>100% = 71,</u> (B/V 2.8% = 2)			
7. Dalmatia					
<u>100% = 161</u>	<u>V 43.5% = 70</u>	<u>100% = 70,</u> E/I 14.3% = 10, O/U 1.4% = 1	<u>E/I+O/ U = 11 = 15.7%</u>	E/I:O/U = 10	E/I/O/U:É/Í/Ó/ Ú = 6 : 5 = 1.2
	<u>C 56.5% = 91</u>	<u>100% = 91,</u> B/V 2.2% = 2			

(continued)

Table 1. Continued

1	2	3	4	5	6
8. Venetia et Histria					
100% = 139	V 37.4% = 52	100% = 52, E/I 21.2% = 11, O/U 1.9% = 1	E/I+O/ U = 12 = 23.1%	E/I:O/U = 11	E/I/O/U:É/Í/Ó/ Ú = 9 : 3 = 3
	C 62.6% = 87	100% = 87, (B/V 1.1% = 1)			
9. Picenum					
(100% = 27)	(V 40.7% = 11)	(100% = 12), (E/I 9.1% = 1, O/U 0% = 0)	(E/I+O/ U = 1 = 9.1%)	(E/I:O/ U = –) 12	(E/I/O/U:É/Í/Ó/ Ú = 1 : 0 = –) 10
	C 59.3% = 16	100% = 16, (B/V 6.3% = 1)			
10. Samnium					
100% = 131	V 48.1% = 63	100% = 63, E/I 4.8% = 3, O/U 4.8% = 3	E/I+O/ U = 6 = 9.6%	E/I:O/U = 1	E/I/O/U:É/Í/Ó/ Ú = 5 : 1 = 5
	C 51.9% = 68	100% = 68, (B/V 0% = 0)			
11. Roma					
100%= 810	V 56% = 454	100% = 454, E/I 6.4% = 29, O/U 3.1% = 14	E/I+O/ U = 43 = 9.5%	E/I:O/U = 2	E/I/O/U:É/Í/Ó/ Ú = 30 : 13 = 2.3
	C 44% = 356	100% = 356, (B/V 4.8% = 17)			
12. Apulia et Calabria					
100% = 98	V 38.8% = 38	100% = 38, E/I 13.2% = 5, O/U 7.9% = 3	E/I+O/ U = 8 = 21.1%	E/I:O/U = 1.7	E/I/O/U:É/Í/Ó/ Ú = 5 : 3 = 1.7
	C 61.2% = 60	100% = 60, (B/V 11.7% = 7)			
13. Bruttium et Lucania					
(100% = 14)	(V 50% = 7)	(100% = 7), (E/I 28.6% = 2, O/U 0% = 0)	(E/I+O/ U = 2 = 28.6%)	(E/I:O/ U = –) 12	(E/I/O/U:É/Í/Ó/ Ú = 0 : 2 = –) 0
	(C 50% = 7)	(100% = 7), (B/V 9.1% = 1)			

Table 2. Phonological changes in the 2nd century provinces in LLDB

1	2	3	4	5	6
1. Moesia Inferior					
100% = 271	V 44.6% = 121	100% = 121, E/I 14% = 17, O/U 5.8% = 7	E/I+O/ U = 24 = 19.8%	E/I:O/U = 2.4	E/I/O/U:É/Í/Ó/ Ú = 17 : 7 = 2.4
	C 55.4% = 150	100% = 150, B/V 6.7% = 10			
2. Moesia Superior					
100% = 124	V 40.3% = 50	100% = 50, E/I 22% = 11, O/U 4% = 2	E/I+O/ U = 13 = 26%	E/I:O/U = 5.5	E/I/O/U:É/Í/Ó/ Ú = 10 : 3 = 3.3
	C 59.7% = 74	100% = 74, B/V 13.5% = 10			
3. Dacia					
100% = 249	V 51.4% = 128	100% = 128, E/I 6.3% = 8, O/U 1.6% = 2	E/I+O/ U = 10 = 7.8%	E/I:O/U = 4	E/I/O/U:É/Í/Ó/ Ú = 9 : 1 = 9
	C 48.6% = 121	100% = 121, (B/V 0% = 0)			
4. Pannonia Inferior					
100% = 221	V 42.7% = 95	100% = 95, E/I 6.3% = 6, O/U 1.1% = 1	E/I+O/ U = 7 = 7.4%	E/I:O/U = 6	E/I/O/U:É/Í/Ó/ Ú = 2 : 5 = 0.4
	C 57.3% = 126	100% = 126, (B/V 0.8% = 1)			
5. Pannonia Superior					
100% = 254	V 36.6% = 93	100% = 93, E/I 8.6% = 8, O/U 3.2% = 3	E/I+O/ U = 11 = 11.8%	E/I:O/U = 2.7	E/I/O/U:É/Í/Ó/ Ú = 6 : 5 = 1.2
	C 63.4% = 161	100% = 161, (B/V 2.5% = 4)			
6. Noricum					
100% = 223	V 44.4% = 99	100% = 99, E/I 1% = 1, O/U 10.1% = 10	E/I+O/ U = 11 = 11.1%	E/I:O/U = 0.1	E/I/O/U:É/Í/Ó/ Ú = 11 : 0 = – 10
	C 55.6% = 124	100% = 124, (B/V 2.4% = 3)			
7. Dalmatia					
100% = 202	V 44.6% = 90	100% = 70, E/I 22.2% = 20, O/U 5.6% = 5	E/I+O/ U = 25 = 27.8%	E/I:O/U = 4	E/I/O/U:É/Í/Ó/ Ú = 17 : 8 = 2.1
	C 55.4% = 112	100% = 112, B/V 4.5% = 5			

(continued)

Table 2. Continued

1	2	3	4	5	6
8. Venetia et Histria					
100% = 122	V 48.8% = 59	100% = 59, E/I 23.7% = 14, O/U 8.5% = 5	E/I+O/ U = 19 = 32.2%	E/I:O/U = 2.8	E/I/O/U:É/Í/Ó/ Ú = 14 : 5 = 2.8
	C 51.2% = 63	100% = 63, B/V 7.9% = 5			
9. Picenum					
100% = 33	(V 42.4% = 14)	(100% = 14), (E/I 21.4% = 3, O/U 0% = 0)	(E/I+O/ U = 3 = 21.4%)	(E/I:O/U = –) 12	(E/I/O/U:É/Í/Ó/ Ú = 2 : 1 = 2)
	C 57.6% = 19	100% = 19, (B/V 21.1% = 4)			
10. Samnium					
100% = 142	V 41.5% = 59	100% = 59, E/I 16.9% = 10, O/U 0% = 0	E/I+O/ U = 10 = 16.9%	E/I:O/U = – 12	E/I/O/U:É/Í/Ó/ Ú = 5 : 5 = 1
	C 58.5% = 83	100% = 83, B/V 12% = 10			
11. Roma					
100%= 3195	V 43% = 1373	100% = 1373, E/I 10.6% = 145, O/U 3.6% = 49	E/I+O/ U = 194 = 14.1%	E/I:O/U = 3	E/I/O/U:É/Í/Ó/ Ú = 142 : 52 = 2.8
	C 57% = 1822	100% = 1822, B/V 22.6% = 412			
12. Apulia et Calabria					
100% = 124	V 37.9% = 47	100% = 47, E/I 10.6% = 5, O/U 2.1% = 1	E/I+O/ U = 6 = 12.7%	E/I:O/U = 5	E/I/O/U:É/Í/Ó/ Ú = 4 : 2 = 2
	C 62.1% = 77	100% = 77, B/V 31.2% = 24			
13. Bruttium et Lucania					
100% = 52	V 48.1% = 25	100% = 25, (E/I 8% = 2, O/U 8% = 2)	E/I+O/ U = 4 = 16%	(E/I:O/U = 1)	(E/I/O/U:É/Í/Ó/ Ú = 1 : 3 = 0.3)
	C 51.9% = 27	100% = 27, B/V 25.9% = 7			

Table 3. Phonological changes in the 3rd century provinces in LLDB

1	2	3	4	5	6
1. Moesia Inferior					
100% = 245	V 44.9% = 110	100% = 110, E/I 28.2% = 31, O/U 7.3% = 8	E/I+O/ U = 39 = 35.5%	E/I:O/U = 3.9	E/I/O/U:É/Í/Ó/ Ú = 31 : 8 = 3.9
	C 55.1% = 135	100% = 135, B/V 3.7% = 5			
2. Moesia Superior					
100% = 108	V 45.4% = 49	100% = 49, E/I 14.3% = 7, O/U 6.1% = 3	E/I+O/ U = 10 = 20.4%	E/I:O/U = 2.3	E/I/O/U:É/Í/Ó/ Ú = 7 : 3 = 2.3
	C 54.6% = 59	100% = 59, B/V 11.9% = 7			
3. Dacia					
100% = 211	V 46.4 = 98	100% = 98, E/I 11.2% = 11, O/U 2% = 2	E/I+O/ U = 13 = 13.2%	E/I:O/U = 5.5	E/I/O/U:É/Í/Ó/ Ú = 10 : 3 = 3.3
	C 53.6% = 113	100% = 113, (B/V 4.4% = 5)			
4. Pannonia Inferior					
100% = 315	V 52.4% = 165	100% = 165, E/I 12.7% = 21, O/U 3% = 5	E/I+O/ U = 26 = 15.7%	E/I:O/U = 4,2	E/I/O/U:É/Í/Ó/ Ú = 21 : 5 = 4.2
	C 47.2% = 150	100% = 150, (B/V 2% = 3)			
5. Pannonia Superior					
100% = 241	V 45.2% = 109	100% = 109, E/I 18.3% = 20, O/U 8.3% = 9	E/I+O/ U = 29 = 26.6%	E/I:O/U = 2.2	E/I/O/U:É/Í/Ó/ Ú = 20 : 9 = 2.2
	C 54.8% = 132	100% = 132, (B/V 3% = 4)			
6. Noricum					
100% = 122	V 47.5% = 58	100% = 58, E/I 10.3% = 6, O/U 3.4% = 2	E/I+O/ U = 8 = 13.7%	E/I:O/U = 3	E/I/O/U:É/Í/Ó/ Ú = 6 : 2 = 3
	C 52.5% = 64	100% = 64, (B/V 6.3% = 4)			
7. Dalmatia					
100% = 588	V 40.3% = 237	100% = 237, E/I 27.4% = 65, O/U 3.8% = 9	E/I+O/ U = 74 = 31.2%	E/I:O/U = 7.2	E/I/O/U:É/Í/Ó/ Ú = 52 : 22 = 2.4
	C 59.7% = 351	100% = 351, B/V 9.4% = 33			

(continued)

Table 3. Continued

1	2	3	4	5	6
8. Venetia et Histria					
100% = 83	*V 32.5% = 27*	*100% = 27,* *E/I 25.9% = 7,* *O/U 11.1% = 3*	*E/I+O/* *U = 10 = 37%*	*E/I:O/U = 2.3*	*E/I/O/U:É/Í/Ó/* *Ú = 9 : 1 = 9*
	<u>C 67.5% = 56</u>	<u>100% = 56,</u> *B/V 9.5% = 8*			
9. Picenum					
(100% = 20)	(V 40% = 8)	(100% = 8), *E/I 62.5% = 5,* *O/U 0% = 0*	(E/I+O/ U = 5 = 62.5%)	E/I:O/U = – 12	E/I/O/U:É/Í/Ó/ Ú = 2 : 3 = 0.7
	(C 60% = 12)	(100% = 12), (B/V 33.3% = 4)			
10. Samnium					
100% = 37	(V 35.1% = 13)	(100% = 13), (E/I 15.4% = 2, O/U 7.7% = 1)	(E/I+O/ U = 3 = 23.1%)	(E/I:O/U = 2)	(E/I/O/U:É/Í/Ó/ Ú = 2 : 2 = 2)
	C 64.9% = 24	*100% = 24,* (B/V 4.2% = 1)			
11. Roma					
100%= 962	<u>V 36.9% = 355</u>	<u>100% = 355,</u> <u>E/I 15.2% = 54,</u> <u>O/U 8.2% = 29</u>	<u>E/I+O/</u> <u>U = 83 = 23.4%</u>	<u>E/I:O/U = 1.9</u>	<u>E/I/O/U:É/Í/Ó/</u> <u>Ú = 60 : 23 = 2.6</u>
	<u>C 63.1% = 607</u>	<u>100% = 607,</u> <u>B/V 27% = 164</u>			
12. Apulia et Calabria					
100% = 84	<u>V 34.5% = 29</u>	*100% = 29,* *E/I 20.7% = 6,* *O/U 0% = 0*	*E/I+O/* <u>U = 6 = 20.7%</u>	*E/I:O/U = – 12*	*E/I/O/U:É/Í/Ó/* *Ú = 3 : 3 = 1*
	<u>C 65.5% = 55</u>	*100% = 55,* *B/V 34.5% = 19*			
13. Bruttium et Lucania					
100% = 47	(V 17% = 8)	(100% = 8), (E/I 12.5% = 1, O/U 0% = 0)	(E/I+O/ U = 1 = 12.5%)	(E/I:O/U = –) 12	(E/I/O/U:É/Í/Ó/ Ú = 1 : 0 = –) 10
	C 83% = 39	100% = 39, B/V 43.6% = 17			

Table 4. Continued

1	2	3	4	5	6
8. Venetia et Histria					
100% = 301	V 39.5% = 119	100% = 119, E/I 44.6% = 53, O/U 13.4% = 16	E/I+O/ U = 69 = 58%	E/I:O/U = 3.3	E/I/O/U:É/Í/Ó/ Ú = 55 : 14 = 3.9
	C 60.5% = 182	100% = 182, B/V 22.5% = 41			
9. Picenum					
(100% = 18)	(V 38.9% = 7)	(100% = 8), (E/I 14.3% = 1, O/U 28.6% = 2)	(E/I+O/ U = 3 = 42.9%)	(E/I:O/U = 0.5)	(E/I/O/U:É/Í/Ó/ Ú = 2 : 1 = 2)
	(C 61.1% = 11)	(100% = 12), (B/V 18.2% = 2)			
10. Samnium					
100% = 45	V 46.7% = 21	100% = 21, E/I 23.8% = 5, O/U 9.5% = 2	E/I+O/ U = 7 = 33.3%	E/I:O/U = 2.5	E/I/O/U:É/Í/Ó/ Ú = 4 : 3 = 1.3
	C 53.3% = 24	100% = 24, (B/V 8.3% = 2)			
11. Roma					
100%= 6200	V 35.4% = 2193	100% = 2193, E/I 21% = 461, O/U 8.6% = 189	E/I+O/ U = 650 = 29.6%	E/I:O/U = 2.4	E/I/O/U:É/Í/Ó/ Ú = 483 : 167 = 2.9
	C 64.6% = 4007	100% = 4007, B/V 38.1% = 1528			
12. Apulia et Calabria					
100% = 37	(V 32.4% = 12)	(100% = 12), E/I 16.7% = 2, O/U 33.3% = 4	(E/I+O/ U = 6 = 50%)	E/I:O/U = 0.5	E/I/O/U:É/Í/Ó/ Ú = 3 : 3 = 1
	C 67.6% = 25	100% = 25, B/V 60% = 15			
13. Bruttium et Lucania					
100% = 39	(V 20.5% = 8)	(100% = 8), (E/I 25% = 2, O/U 0% = 0)	(E/I+O/ U = 2 = 25%)	(E/I:O/U = –) 12	(E/I/O/U:É/Í/Ó/ Ú = 1 : 1 = 1)
	C 79.5% = 31	100% = 31, B/V 77.4% = 24			

Let us start with the analysis of the ratio of vocalic and consonantal changes, since this is a very basic, but still significant aspect for creating a dialectological profile of the selected areas in all four centuries AD. The data are displayed in charts 1a, 1b, 1c, and 1d of Table 5.1.

Table 5.1 Percentage of vocalic changes over all phonological errors

a) Percentage of vocalic changes over all phonological errors
1-100 AD

b) Percentage of vocalic changes over all phonological errors
101-200 AD

c) Percentage of vocalic changes over all phonological errors
201-300 AD

d) Percentage of vocalic changes over all phonological errors
301-400 AD

3.1. Analysis by the ratio of vocalic versus consonantal changes

Let us take a look at the provinces ranked by the ratio of vocalic versus consonantal changes in the 1st century (Table 5.1, Chart 1a). Of course, at that time, in addition to the fact that the province of Dacia did not yet exist, most of the Danubian provinces, due to their relatively recent integration into the Roman Empire, were at a rudimentary level of Romanisation and Latinisation. Accordingly, on the one hand, there are provinces that have such a low number of data that the assessment of the situation is completely uncertain: such as Moesia Inferior and Moesia Superior, where the number of data forms is therefore enclosed in brackets. The western half of the region is the one from which we already have sufficient data from the 1st century: Noricum and Pannonia Superior, as well as Pannonia Inferior, which has less data but with some caution can still be evaluated. The two Pannonias (which at that time were administratively still a single province) seem to be uniformly conservative in vocalism, but Noricum clearly has an innovative vocalism, since in Pannonia the rate of vowel changes is much lower, almost half (23.1% and 24.2%) of the expected rate (43%), while in Noricum the rate of vowel changes is slightly higher (47%) than the expected rate of vowel changes (43%). This expected ratio corresponds to the average distribution of vowels and consonants in Latin, according to which about 43% of Latin sounds are vowels and about 57% are consonants.[24]

In the 2nd century, we already have enough data from all Danubian provinces to assess the situation (Table 5.1, Chart 1b). It can be seen that the Danubian provinces do not behave uniformly in terms of the development of vocalism, so they do not show a typical grouping compared to the control provinces. At the same time, it is also noticeable that each province has moved towards a more intensive vocalism development. Dacian Romanism, which appeared in the 2nd century, immediately jumps to the top of the provinces with its vocalism that is more intense than expected (51.4%), while Noricum also remains slightly innovative in vocalism (44.4%), and Moesia Inferior also enters the scene in the same league (44.6%). Pannonia Inferior shows a completely balanced development at this time, as the rate of vowel changes (42.7%) is essentially the same as the expected rate of vowel changes (43%). Moesia Superior (40.3%) and Pannonia Superior (36.6%) appear at the other end of the axis with their slightly conservative vocalism.

After that, in the 3rd century (Table 5.1, Chart 1c), we can see that the Danubian provinces are surprisingly uniformly innovative in the field of vocalism, since all of them have a higher than expected (43%) vowel change ratio (with values between 44.9% and 52.4%). This way they align in a relatively sharp contrast to all the control provinces, which show a slightly or strongly conservative development at this time, meaning they were more innovative in terms of their consonant system. We will see what the real dialectological value of this apparent uniformity is in the subsequent analysis of vowel mergers.

Turning to the analysis of the 4th century (Table 5.1, Chart 1d), we can immediately face the biggest problem of the region: due to the unfavourable historical conditions, Romanism in the

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[24]See HERMAN (1968=1990b) 196. Herman's calculations are essentially confirmed by my own calculations, according to which in a Latin text of 50,070 letters (Cicero, *Ad Atticum*, Liber I) the proportion of vowels is 43.7% (21,892), while that of consonants is 55.2% (27,630), and that of diphthongs is 1.1% (548).

Danubian region began to erode, or even disappeared completely, as in Dacia, which was evacuated at the end of the 3rd century at the latest.[25] Where we still have enough data, such as in Moesia Inferior (61%), and in Pannonia Inferior (61%), it appears that these areas have moved further towards a system with an even more radically innovative vocalism. It is possible that this happened in the other Danubian areas as well, where a sufficient Latin-speaking population may have remained, but the low data density no longer allow reliable conclusions to be drawn regarding the investigated phenomenon, except perhaps in Pannonia Superior, which seems to have the most innovative vocalism (64.3%), and where the number of data forms, 28, is just below the exclusion limit, which is 31.

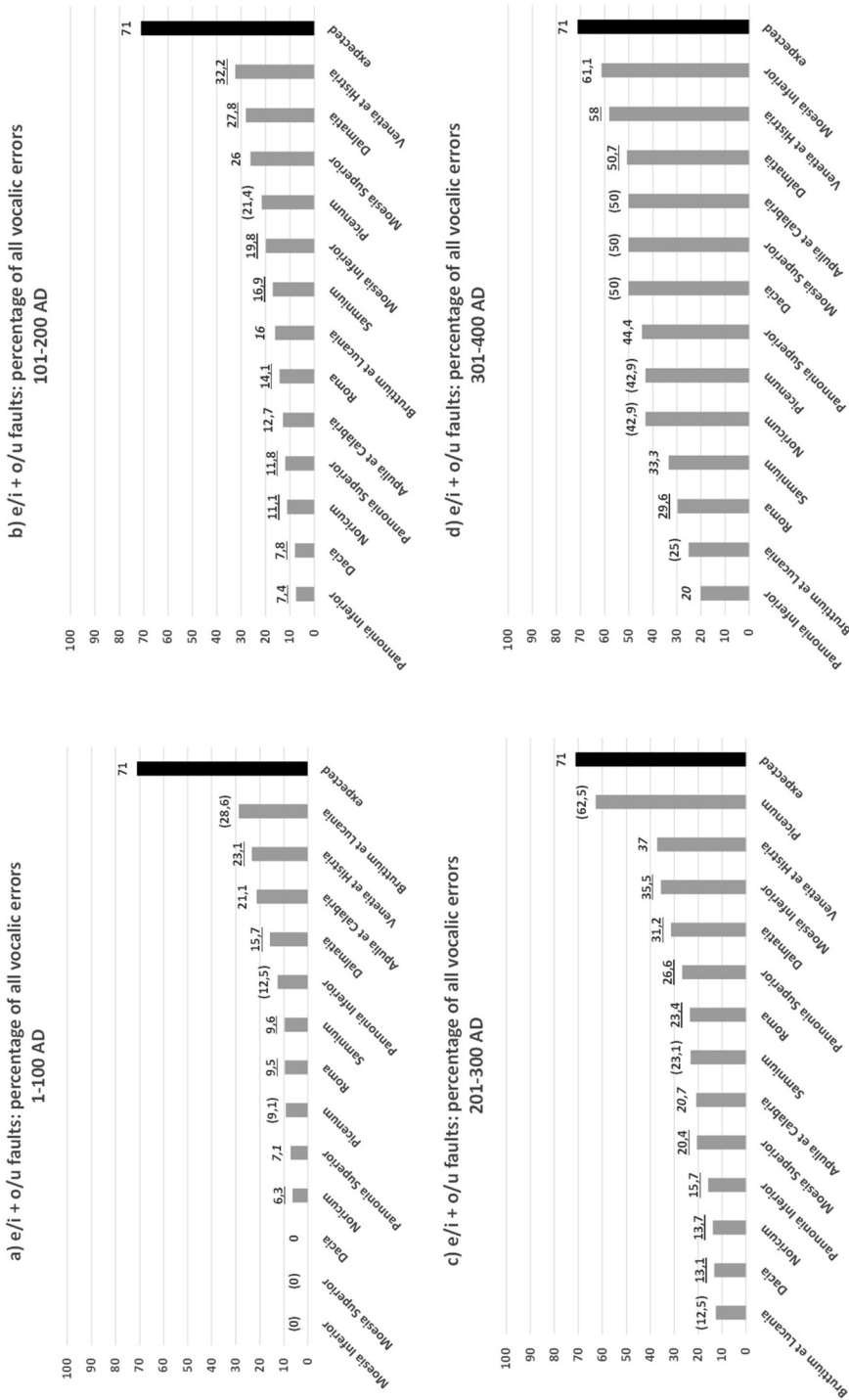## 3.2. Analysis by the percentage of E/I and O/U confusions

Now let us move on to the actual subject of my presentation, the examination of the vowel mergers appearing in E/I and O/U misspellings in the Danubian provinces. First, I examine the percentage of E/I and O/U confusions counted against all vocalic errors and rank the selected provinces in each century accordingly (Table 5.2, Chart 2a–d). If you look at diagram 2a), you can see that the rate of vowel mergers is low everywhere, well below the expected rate (71%), which is in accordance with the rudimentary nature of the change process. This expected 71% ratio corresponds to the average proportion of *e-i* and *o-u* vowels in the Latin vowel system that could have been affected by the vowel merger.[26] At that time, according to the rudimentary level of Romanisation of some of the Danubian provinces, we have no data on E/I and O/U confusions in the two Moesias, and neither in the province of Dacia, which did not exist at the time. We have scattered data on the phenomenon from the other Danubian provinces, of which probable statements can only be made regarding Noricum (6.3%) and Pannonia Superior (7.1%) in light of their sufficient amount of data; these were neighbouring provinces, meaning

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[25]The 4th-century data from the evacuated area of Dacia are all from inscriptions on so-called movable objects (brick, pottery, bronze), most of which were found in the southern part of the former Dacia, near the Danube limes of the two Moesia provinces (Gornea opposite the fortress of Novae, Drobeta, Romula and Sucidava), while some of them came from the more central regions of the former Dacia province (Porolissum, Media); LLDB-143575: í: > E / í > E, REDDERE BES = *reddere vis / bis*, Piso-Gornea p 255, 5 = AE 1981, 721, 5, LLDB-10077: i (+ voc) > ø, [DAR] DANA| = *Dardiana*?, IIFDR 408, 1 = ILD 2, 844c, 1, LLDB-9481: ll > L, PATAELAM = *patellam*, ILD 156, 1 = AE 1976, 581, 1, LLDB-5329: (voc.)-b-(voc.) > V, ZENO|VIVS = *Zenobius*, IDR 3, 4, 187, 1–2 = CIL III 1617, 1–2, LLDB-9713: (voc.)-b-(voc.) > V, Z[ENO]VIVS = *Zenobius*, ILD 755, 1 LLDB-143573: v- > B, PVELLAM BARIAM = *puellam Vari*am, Piso-Gornea p 255, 2 = AE 1981, 721, 2.

[26]Based on Herman's calculations (cf. HERMAN [1968=1990b] 197), this expected ratio would be 81.4%, i.e. (ĕ+ē+ĭ+ī=) 53.7% + (ŏ+ō+ŭ+ū=) 27.7% = 81.4%. However, he also included occurrences in morphological (conjugation and declension) endings whereas I excluded the relevant morphologically or morphosyntactically explainable letter confusions above, cf. n. 4. Moreover, he did not separate occurrences in hiatus, which I also excluded from the present study, as they testify to phonological processes different from vowel mergers, e.g. to consonantisation such as LLDB-27675: e (+ voc) > I, VINIAE for *vineae*, CIL XIII 2465, 2 or LLDB-36045: i (+ voc) > E, VEATOR for *Viator*, CIL XIII 11213, 1. Although Herman's calculations are essentially verified by my own, according to which in a Latin text consisting of 50,070 letters (Cicero, *Ad Atticum*, Liber I), the proportion of vowels *e-i* and *o-u* among all vowels (21,892) is 83% (18,181), i.e. (ĕ+ē+ĭ+ī = 11,206) 51.2% + (ŏ+ō+ŭ+ū = 6,975) 31.9%, the occurrences in relevant morphological endings (1,077) and in hiatus (1,549) must be subtracted from that amount, resulting in 15,555, which corresponds to 71% of all vowels (21,892). In line with this, here I use this 71% as the expected ratio.

Table 5.2. e/i + o/u faults: percentage of all vocalic errors

a) e/i + o/u faults: percentage of all vocalic errors
1-100 AD

b) e/i + o/u faults: percentage of all vocalic errors
101-200 AD

c) e/i + o/u faults: percentage of all vocalic errors
201-300 AD

d) e/i + o/u faults: percentage of all vocalic errors
301-400 AD

that the matching developments might have been related. According to this, this area was the most conservative among the examined provinces, but it was not far behind the conservatism of Central Italy (Samnium 9.6%, Roma 9.5%), while it was significantly behind its southern neighbours, Venetia et Histria (23.1%) and Dalmatia (15.7%), which seem to be main locations that boosted the spread of vowel mergers in the region.

After that, if we look at the 2nd century in diagram 2b), it can be seen that vowel mergers became more common in all areas from which we had data from the 1st century. The Danubian region does not behave uniformly in terms of change. It seems that an innovative eastern region was emerging, where Moesia Inferior (19.8%) and especially Moesia Superior (26%) started to catch up with the most innovative provinces in terms of vowel mergers, i.e. Dalmatia (27.8%) and Venetia et Histria (32.2%). At the same time, a more conservative western region began to take shape, where vowel mergers spread very slowly and were still relatively rare: the most underdeveloped were Pannonia Inferior (7.4%) and Dacia (7.8%), while Noricum (11.1%) and Pannonia Superior (11.8%) seem to be less underdeveloped compared to them.

After that, in the 3rd century (see diagram 2c), we can see that compared to the 2nd century, the frequency of vowel mergers continued to rise slightly, in fact everywhere, even in the very conservative Dacia (13.1%) and Noricum (13.7%). A decrease can be seen only in the case of Moesia Superior (20.4%) and in Bruttium et Lucania (12.5%), but in the latter the extremely low number of data forms from the 3rd century does not allow us to judge the situation well. Apparently, there was also a more conservative and a more innovative group within the Danubian provinces at this time, but they were mostly not next to each other, such as Moesia Inferior (35.5%), which caught up with the innovative Dalmatia (31.2%) and Venetia et Histria (37%), and Pannonia Superior (26.6%), which was catching up with them. The two most conservative provinces, Noricum (13.7%) and Dacia (13.1%) were not next to each other either, as the area between them was occupied by the innovative Pannonia Superior (26.6%). Pannonia Inferior (15.7%) and Moesia Superior (20.4%), on the other hand, were right next to each other and to Dacia, so it might be possible to talk about a relatively uniform development in relation to them, while Moesia Superior, with its higher ratio of 20.4%, still seems to move away from the group in a more innovative direction.

After that, if we look at the developmental characteristics of the areas of the Danubian territories with an acceptable amount of data in the 4th century in the light of diagram 2d), we can see that the remaining Danubian provinces still did not behave uniformly in terms of the frequency of vowel mergers. In this regard, Moesia Inferior (61.1%), ahead of Dalmatia (50.7%) and Venetia et Histria (58%), is considered a clearly radical innovative area. At the same time, Pannonia Superior (44.4%) can be regarded an innovator catching up, and Pannonia Inferior (20%) can be considered conservative and lagging behind, but the low numbers warrants for caution. At this point it is worth mentioning that these three provinces were located in the same order and in roughly the same place on the frequency scale in the 2nd and 3rd centuries (2b and 2c), which may indicate permanently preserved differences in the territorial development of the affected areas. This circumstance can already prompt us to be cautious about the seeming dialectological uniformity of the Danubian region, which we could have deduced from diagram 1c, where we could see that the Danubian provinces were surprisingly consistently innovative in the field of vocalism and in this they seemed to be distinct from the other control provinces.

3.3. Analysis of the E/I to O/U ratios

The picture painted so far should be refined by an analysis of the E/I to O/U ratios in the selected areas in all four centuries, see charts 3a, 3b, 3c and 3d of Table 5.3. While evaluating the rates of *o-u* and *e-i* mergers as displayed there, I use the expected ratio of 1.9 as a reference number. This reference number indicates that the number of E/I confusions in the data pool is approximately the double of O/U confusions. This number also indicates that the two changes took place more or less at the same time and with the same intensity, since the number of the *e-i* sounds is approximately the double of *o-u* sounds in Latin (for comparison, Herman used 2 as his reference number, which is almost the same).[27] Consequently, a numerical value considerably higher than 1.9 indicates that the merger of front vowels *e-i* was more advanced than that of back vowels *o-u* in a given area, or in other words that the merger of back vowels had just started or was underdeveloped compared to the merger of front vowels.

In line with this, let us take a look at the data from the 1st century (Chart 3a). At that time, we have no data from the province of Dacia, which did not exist yet, but there are no examples of vowel mergers either from Moesia Inferior or Moesia Superior. There are only a couple of examples from Pannonia Inferior, Pannonia Superior and Noricum, only for E/I confusion, this is indicated by the purely illustrative technical number 12 in parentheses in diagram 3a). There is one example of O/V confusion from contemporary Dalmatia and Venetia et Histria each, but there are also 10 to 11 E/I confusions, so the indicator number of these two areas is high (10 and 11, respectively). What is also interesting is that in Rome, where the rate of vowel mergers was relatively low (9.5%), the ratio of E/I and O/V confusions compared to each other is 2, so essentially we can observe the expected value (1.9) here, which means that the city of Rome and perhaps Samnium (1) and Apulia et Calabria (1.7) were at the forefront of back vowel merger. This suggests that the merger of back vowels, which at that time almost did not affect Northern Italy at all (the proportion of Venetia et Histria is 11),[28] presumably started to spread from central and southern Italian areas.
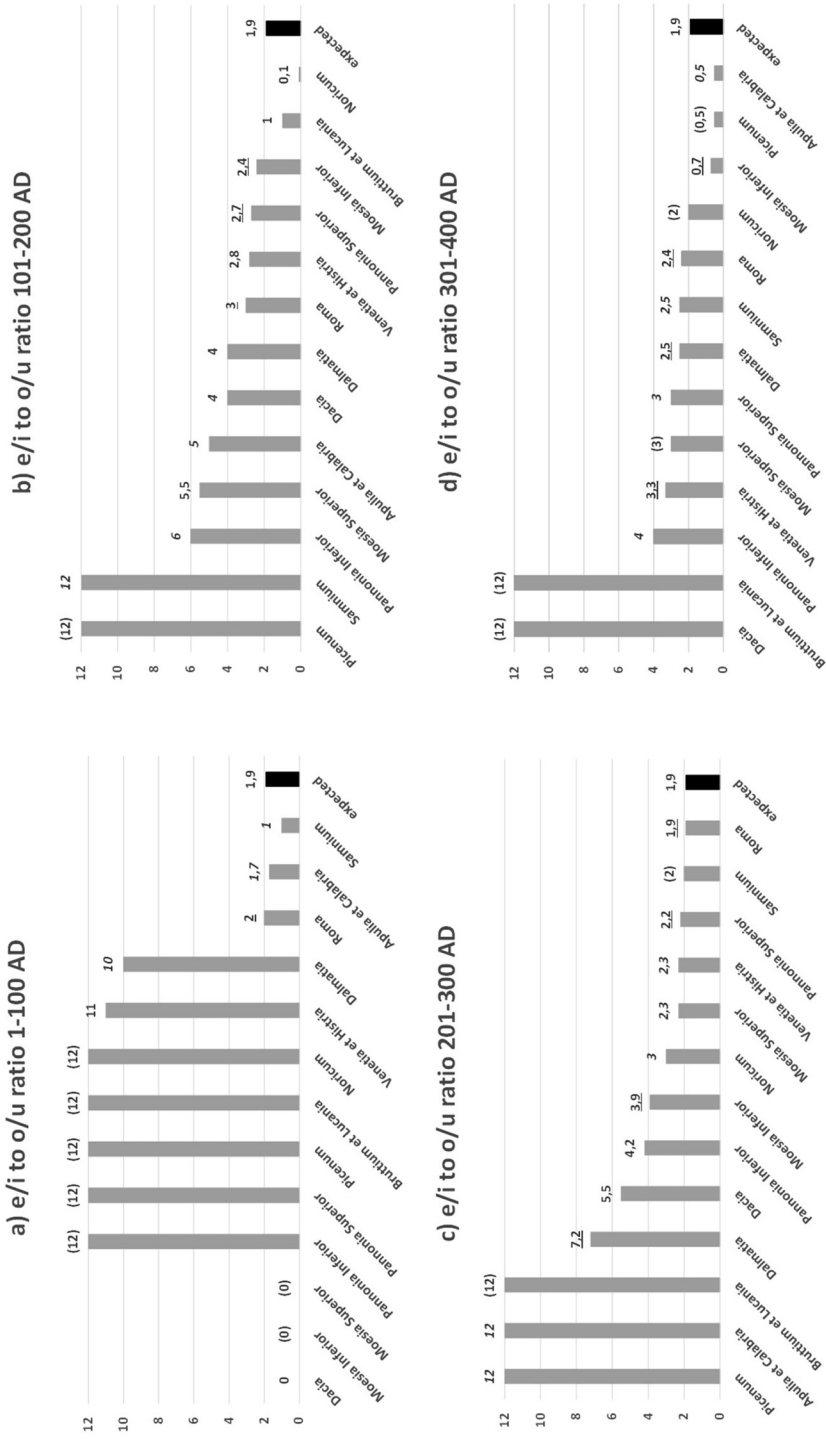
If we now consider the 2nd century with the help of diagram 3b), it can be seen that the merger of back vowels began to spread almost everywhere, but with varying intensity. The Danubian provinces do not show a unified picture in this regard, as they are at different stages of development, and those Danubian provinces showing similar trends are not next to each other. There are only one or two scattered examples of O/V confusion in Pannonia Inferior and Moesia Superior, so the ratio of these two areas is relatively high: 6 and 5.5. There are 2 clear examples of O/V confusion from Dacia, in addition to 8 E/I confusions, which resulted in a ratio of 4, but the low number warrants for caution. Pannonia Superior is considered innovative to a lesser extent (2.7), and Moesia Inferior to a greater extent (2.4), which in the case of the latter is confirmed by the relatively significant number of pieces (17:7). Noricum is an outlier, as almost only O/V confusions are reported here, but the vast majority of the examples are recorded in the

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[27]See HERMAN (1968=1990b) 197. Herman's calculations, i.e. (ĕ+ē+ĭ+ī=) 53.7% : (ŏ+ō+ŭ+ū=) 27.7% = 1.94 (Herman used to refer to this number as a rounded 2, e.g. HERMAN [1971=1990] 139), are not entirely confirmed by my own calculations, according to which in a Latin text of roughly 50,000 letters (Cicero, *Ad Atticum*, Liber I) the ratio of *e-i* and *o-u* vowels is (ĕ+ē+ĭ+ī=) 51.2% : (ŏ+ō+ŭ+ū=) 31.9% = 1.6 (the difference between Herman's and my own calculations is only 0.3). As for the methodology of comparing these mergers, see HERMAN (1971=1990) 139.

[28]In Transpadana, also only E/I confusions occur at this time, 5 in total.

Table 5.3. e/i to o/u ratio

a) e/i to o/u ratio 1-100 AD

b) e/i to o/u ratio 101-200 AD

c) e/i to o/u ratio 201-300 AD

d) e/i to o/u ratio 301-400 AD

Dolichenus epithet, and albeit these happen to be on locally made silver cult objects, it cannot be ruled out with complete certainty that in fact the *Dul-* name variant was intended, which originated from an external location.[29] It is also noteworthy that Northern Italy represented by Venetia et Histria (2.8) not only caught up with Rome (3), but even left it behind in terms of the merger of back vowels, so it can be assumed that Venetia et Histria may have played an important role in spreading this innovation to the Danubian provinces.[30]

Turning to the developments of the 3rd century, at first glance, in the light of diagram 3c), it appears that some kind of unification trend is emerging among the Danubian provinces, somewhat similar to what is depicted in diagram 1c), since almost all Danubian provinces are located next to each other on the diagram (only Venetia et Histria appears to be wedged between Moesia Superior and Pannonia Superior). However, if we take a closer look at the differences in the ratios of these provinces, the structural fragmentation of the region immediately becomes clear. In terms of *o-u* merger, Dacia is the most conservative (11:2=5.5), Pannonia Inferior (21:5=4.2) and Moesia Inferior (31:8=3.9) clearly show more innovative tendencies, Noricum and Moesia Superior are even more innovative (however, the low numbers in these two provinces warrant for caution: 6:2=3 and 7:3=2.3, respectively), and Pannonia Superior (20:9=2.2) was slightly closer to the expected ratio (1.9).

If we only look at the Danubian provinces and take into account aspects of Romance linguistic geography, meaning that we look for traces of asymmetric eastern and symmetric western type development trends in the Latin material, where in diagram 3a–d the former is indicated by the high ratio and the latter by the low ratio, then we could come to the conclusion that while Pannonia Superior (2.2) clearly followed the symmetrical western type of development, Dacia (5.5) clearly took the path of the asymmetrical eastern type of development. Moreover, it seems that Dacia clearly moved forward in the direction of the asymmetrical eastern type system compared to the 2nd century, since its ratio did not decrease but increase: 3b) 4 > 3c) 5.5. If we also consider the well-known fact that the Romanian language developed from one of the branches of Balkan Latin and is clearly of an asymmetric eastern type (where there is only *e-i* merger), we could come to the conclusion that in the development of Latin in Dacia in the 2nd–3rd centuries, we found the antecedent of the relevant characteristic of the later Romanian language. However, such a conclusion may prove to be hasty if the wider context is not taken into account. Not only Dacia (5.5), but also Dalmatia (7.2) shows asymmetric eastern development tendencies at this time, and Dalmatia even more strongly than Dacia. Moreover, not only Dacia, but also Dalmatia seems to move towards the eastern asymmetric system in the 3rd century compared to the 2nd century: 3b) 4 > 3c) 7.2. We now know about Dalmatia that later it turned toward a symmetrical Western type of development, which is clearly visible in the Latin inscriptions of the area already in the 4th century, 3d) 52:21=2.5. We can infer the same

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[29] 8 variants of *Dolicheno* spelled as DVL-, recorded under the 'o > V' code (each from Locus Felicis, AD 151–230): LLDB-59708, LLDB-59703, LLDB-59698, LLDB-59696, LLDB-59692, LLDB-59684, LLDB-59682, LLDB-59677, cf. Vágási (2019). DVL- variants have been recorded from Pannonia Inferior (2), Pannonia Superior (1), Raetia (1), Dacia (2), Moesia Superior (1), and Latium et Campania (1); each from roughly the same period in the AD 2nd–3rd century: 2 definitely from the 2nd half of the 2nd century, 2 definitely from the 1st half of the 3rd century, the rest from the 2nd–3rd century.

[30] The O/V confusion emerges in Transpadana in this century and will outweigh E/I confusions right away, but the low number of recorded data forms warrants for caution (2 E/I : 4 O/V = 0.5).

from the extinct Dalmatian language.[31] While in the case of Dalmatia later Latin material from the 4th, 5th and 6th centuries is also available, in the case of Dacia it is not, so we cannot say in what direction the Latinity of Dacia and its population that emigrated from there developed further in terms of vowel mergers in the 4th and even in later centuries.[32]

Turning briefly to the 4th century, in the light of diagram 3d) it can be concluded that Pannonia Inferior (4) and Pannonia Superior (3) among the Danubian provinces with an amount of data that can still be assessed were probably among the areas catching up in terms of *o-u* merger at the time (although the low figures warrant for caution for both provinces), similarly to Venetia et Histria (3.3) and less similarly to Dalmatia (2.5). The only area with reliable data, Moesia Inferior, clearly shows a western symmetrical development trend (9:13=0.7). About the other Danubian areas it is not possible to make a reliable statement.

3.4. Analysis of the E/I/O/U to É/Í/Ó/Ú ratios

Since Herman also described the relationship between Danubian provinces and the other areas he studied in terms of whether or not there is a difference between stressed syllable and unstressed syllable development of vowel mergers, I will also examine the selected provinces in this regard. Of course, I also use an expected ratio here, 1.7, which expresses that in Latin, 62.8% of vowels in general occur in unstressed syllables and 37.2% in stressed syllables (62.8 : 37.2 = 1.69 = 1.7).[33] To this expected ratio of 1.7 I will compare the observed ratios of the studied areas in all four

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[31]See ADAMIK (accepted for publication b).

[32]Inscription material from the areas south of the Danube does not provide sufficient data for the further investigation of this question. From Thracia, only 6 pieces of vowel data are available from the 4th century AD, including one record of a vowel-merger: LLDB-775: o > V, SECO[LO] = saeculo, AE 1957, 285, 3. Macedonia has 9 pieces of vowel data from the 4th century, including 5 vowel-mergers: LLDB-92214: e > I, VIXILLARIVS = *vexillarius*, AE 2006, 1290, 5, LLDB-92212: e: > I, CENTINARI = *centenarii*, AE 2006, 1290, 5, LLDB-91864 és 91865: e > I, IDISSENSI = *Edessensi*, CIL III 14406, 10, as well as LLDB-92203: o > V, IVBIANI = *Ioviani*, AE 1903, 54, I 2. From the 5th century, there are only 2 pieces of vowel data from Macedonia, including no record of vowel-mergers, and from Thracia, there are only 6 pieces of vowel data, including 5 vowel-mergers: LLDB-143554: í > E, AD SENEXTRO = *ad sinistrum*, IBulgarien 7, 12, LLDB-541: i > E, AD SENEXTRO = *ad sinistrum*, IBulgarien 7, 12, LLDB-77155: e: > I / ae > I, DOMO ITERNA FECIT = *domum aeternam fecit*, CIL III 14207/15, 1, as well as LLDB-776: ú > O, AB ORBE = *ab urbe*, IBulgarien 206, 7 = AE 1937, 98, 7, LLDB-720: o > V, FECIT (|) FL () DOMESTICOS = *fecit () Flavius () domesticus*, CIL III 14207/15, 2–3. From the 6th century, we have no vowel data from Thrace, while from Macedonia we have only 3 pieces of such data, all three vowel-mergers: LLDB-143557: i > E, BELESARIO = *Belisario*, AE 1983, 886, 1, LLDB-92248: e > I, IT = *et*, AE 1983, 886, 2, LLDB-78950: é: > I / é > I , REQVI|ISCIT = *requiescit*, AE 1984, 816, 1–2. From Moesia Superior, there are only 4 pieces of vowel data from the 5th century, including no vowel-mergers, and we have only one piece of vowel data from the 6th century, which is a vowel-merger: LLDB-121579: é > I , EVANGILIVS = *euangelius*, AE 2004, 1225, 8. There are only 9 pieces of vowel data from Moesia Inferior from the 5th century, including 4 vowel-mergers: LLDB-13024: e > I, MIMORIAE = *memoria*, AE 1976, 618, 1, LLDB-763: ó: > V, MAIVRE = *Maioris*, IBulgarien 75, 4, LLDB-19857: o: > V, PROBINV| = *Probino*, IBulgarien 75, 3, LLDB-19822: ú > O, MONI| = *Munni*, IBulgarien 90, 5, while from the 6th century there are only 2 pieces of vowel data from here, including no vowel-mergers. For a further examination of this issue, including other sources, see ADAMIK (2003) 680–681.

[33]See HERMAN (1968=1990b) 197, n. 5. This is also useful for *e-i* and *o-u* mergers because there is no significant difference between the unstressed and stressed syllable occurrence rates of *e-i* and *o-u* sounds. The long or short unstressed *e/i/o/u* occurs in 81.9% of all unstressed vowels, while the long or short stressed *é/í/ó/ú* occurs in 80% of all stressed vowels (see the second table in HERMAN [1968=1990b] 197).

centuries. If the observed ratio in a given area is higher than the expected ratio, vowel mergers were much more intense in unstressed syllables than in stressed ones, and *vice versa*, if the observed ratio is lower than the expected ratio, the vowel mergers were much more intense in stressed syllables than in unstressed ones. If the observed ratio is the same as the expected ratio (1.7) or very close to it, the vowel mergers took place with the same intensity in stressed and unstressed syllables.

If we look at the chart displaying results from the 1st century (Chart 4a), we can see, just as before, that there is either no data from the provinces of the region at all, as shown by the case of Moesia Superior and Moesia Inferior (not to mention the province of Dacia, which did not exist at that time), or if there is, the small amount of data does not allow for drawing conclusions, as shown by the example of Pannonia Inferior (1 piece of data) and Pannonia Superior (2 pieces of data). As before, in the 1st century only the data of Noricum let us draw some sort of conclusion, namely that the stressed syllable may have been affected by vowel mergers to a slightly greater extent than the unstressed syllable (2:2=1), in view of the overall unequal occurrence of vowels in stressed and unstressed syllables, as expressed by the ratio 1.7; however, due to the relatively low number of data, it is reasonable to formulate this conclusion with caution. What seems remarkable is that in most of the control provinces the stressed syllable seems to have been affected by vowel mergers to the expected degree or close to it: this seems clear in Rome (2.3), but it seems probable in Dalmatia (1.2) as well. Venetia et Histria (3) seems somewhat more conservative, as here the unstressed syllable was more affected by vowel mergers than the stressed syllable. The low number of data forms in the other areas does not allow us to draw conclusions about them.
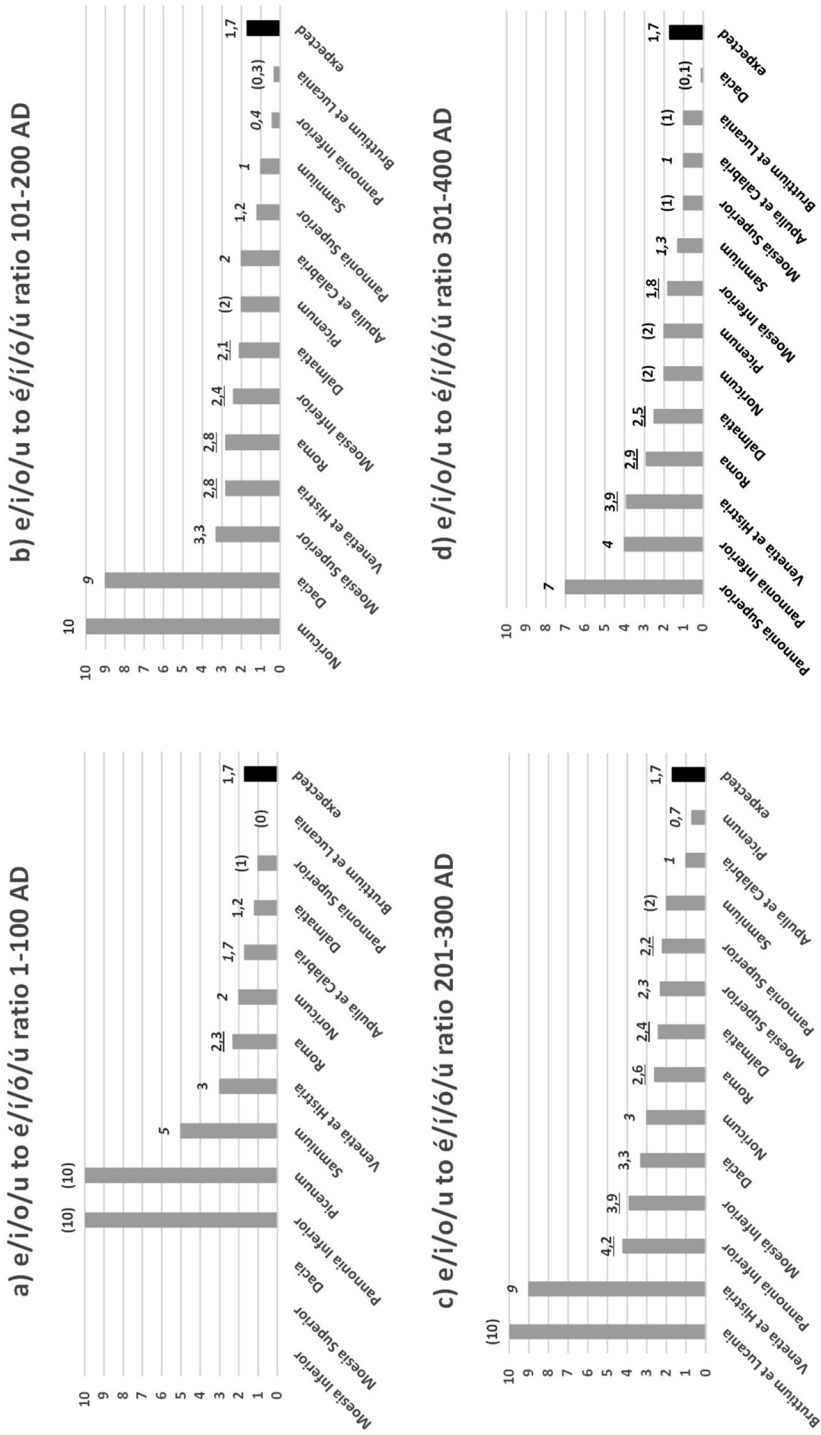
After this, if we turn to the analysis of the 2nd century with the help of diagram 4b), we can see that the Danubian provinces did not behave uniformly at that time. A lagging group can be discerned where the stressed syllable is essentially untouched by vowel merger, including Noricum (where the technical number 10 means that we only have examples of unstressed syllables) and Dacia (9), where there is only one example of stressed syllable confusion at this time. This is followed by a group catching up, where the stressed syllable was already clearly affected by vowel merger, to a lesser extent Moesia Superior (3.3) and to a greater extent Moesia Inferior (2.4). Finally, there was a group where the stressed syllable was even more affected by vowel merger than expected: this includes definitely Pannonia Superior (1.2) and perhaps also Pannonia Inferior (0.4), where the low number of data forms warrants for caution.

In the 3rd century (chart 4c), it seems that the levelling of the Danubian territories had begun, since vowel merger appears in the stressed syllable in Dacia (3.3) and Noricum (3), but it is still clearly far from the expected ratio (1.7). At the same time, it can be seen that the Danubian provinces do not behave uniformly in this respect, since, for example, Pannonia Inferior (4.2) and Moesia Inferior (3.9) seem to be more conservative than Dacia (3.3) and Noricum (3), where the stressed syllable seems to be more resistant to vowel merger than in other Danubian areas. In addition, a group can be detected that can be regarded as almost caught up, where the ratio of vowel mergers approaches the expected value: primarily Pannonia Superior (2.2) with a high number of data, and Moesia Superior (2.3) with a lower number of data can be classified here. We cannot therefore speak of neither complete levelling, nor a territorial unification trend.

In the 4th century (chart 4d), in those areas from which an acceptable amount of data is available, it can be seen that both Pannonia Superior and Pannonia Inferior were lagging behind

Table 5.4. e/i/o/u to é/í/ó/ú ratio

a) e/i/o/u to é/í/ó/ú ratio 1-100 AD

b) e/i/o/u to é/í/ó/ú ratio 101-200 AD

c) e/i/o/u to é/í/ó/ú ratio 201-300 AD

d) e/i/o/u to é/í/ó/ú ratio 301-400 AD

in terms of vowel mergers in stressed syllables, Pannonia Superior to a greater extent (7), and Pannonia Inferior to a lesser extent (4) – as far as the a relatively small amount of data allows any kind of conclusion. Only Moesia Inferior (1.8) seems completely caught-up, with balanced development, since its ratio essentially corresponds to the expected ratio (1.7).[34]

It can already be pointed out that the 4th-century Danubian provinces with sufficient data still available for them display a very similar pattern in terms of all three aspects of vowel mergers, with one exception, they essentially follow each other in the same order. Moesia Inferior has the highest overall vowel merger ratio (2d: 61.1%), the lowest front-back vowel merger ratio (3d: 0.7) and the lowest unstressed-stressed vowel merger ratio (4d: 1.8). As a result, Moesia Inferior can be considered the most western type Danubian region in terms of the development of vowel mergers. The Danubian province with the second highest overall vowel merger ratio is Pannonia Superior (2d: 44.4%), with also the second lowest front-back vowel merger ratio (3d: 3) and the highest unstressed-stressed vowel merger ratio (4d: 7). As such, Pannonia Superior can be considered an area catching up to the Western type in terms of the development of vowel merger, except for the development in stressed syllables, in which this area may have been the most behind. Finally, Pannonia Inferior can be considered the most underdeveloped representative of the Danubian provinces, with the lowest overall vowel merger ratio (2d: 20%), the highest front-back vowel merger ratio (3d: 4) and the second highest unstressed-stressed vowel merger ratio (4d: 4). Pannonia Inferior can therefore be considered an area lagging behind Western development in terms of vowel merger, except for the development in stressed syllables, in which respect this area may have been slightly more innovative, at least compared to Pannonia Superior. In any case, we cannot give an answer to how these areas and the entire Danubian region could have continued to develop in the centuries to come, supposing there was any room for their development in the chaos of the migration period, due to the complete lack of sources.

4. CONCLUSIONS

In my presentation, based on the inscriptional material and the data of the LLDB database, I have formulated what can be known about the linguistic-historical and dialectological development of the Danubian provinces in terms of vowel mergers, a single, albeit crucial linguistic phenomenon from the point of view of Romance linguistic geography. Obviously, this description, which is chronologically more detailed than any other description before, along with its discoveries, must be contrasted with Herman's conclusions, which were formulated in Herman's 1983 summary based on his own research carried out in the 1960s, and the research of others carried out even earlier. Of course, the results cannot match exactly, and many additions and corrections can be expected, as many modern publications of inscriptions supplementing and replacing the basic but old corpus of the CIL have been published since the 1960s for almost all of the Danubian provinces (RIU, TitAqu, ILJug, IMS, IDR, IScM, etc.). These increased our knowledge of the characteristics of Latin in the region with a plethora of new linguistic data, including letter confusions reflecting vowel mergers; for example, Herman did not know one

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[34]In Table 4, section 6, and similarly in Table 5.4, Chart 4d, for Dacia, the technical number of 0.1 means that only stressed confusion occurs (with one example).

sure example of O/V confusion in Dacia, while today we have 4 sure examples of this phenomenon.[35]

The new data from these modern publications are included in the LLDB database, which can be used to reevaluate many statements that are still taken for granted in the literature. For example, Loporcaro inaccurately refers to part of Herman's statements about Dacia and draws unfounded conclusions from it, "in Dacia, on the other hand, only very rare occurrences of <e/i> confusions are found.[36] This squares with the evidence from later Daco-Romance, in which, as shown in (23) with examples from Standard Romanian, the outcomes of Latin ĭ and ē, but not those of ŭ and ō, have merged."[37] In light of my investigation presented here, this claim by Loporcaro seems arbitrary and lacking evidence. In fact, there is no reason why the Dacian rarity of E/I confusions mentioned by Herman should be completely in line with the asymmetric vowel system of the later Balkan Romanian language, showing only *e-i* merger. As it was demonstrated, the dialectological development of the Dacian Latin language is much more complicated than this, and cannot be linked to the relevant characteristics of the later Balkan Romanian language in the same way as, for example, the development of Sardinian Latin to Sardinian Romance, Dalmatian Latin to Dalmatian Romance, or the other western Latin-speaking areas to the corresponding Romance languages that developed later in the same areas. The reason for this is that there are no inscriptional sources from the Danubian region from the late periods (i.e. from the 5th, 6th, and 7th centuries), during which the dialectological development of Latin in other (primarily western) areas can be traced relatively well on the basis of inscriptional sources. At the same time, it is precisely this period of the 5th–6th centuries when the tendencies anticipating the later Romance development of the given area clearly emerge in the inscriptional material.

An instructive case is the example of Sardinia, where the vowel-merger system did not take effect at all in the Sardinian Romance dialects of the island. Here, the inscriptional material in the 4th century does not at all foreshadow the developmental tendencies of later Sardinian Romance; however, if we examine the inscriptional material from the 5th and 6th centuries, it becomes clear that the later Sardinian-type vowel system was obviously emerging at that time, where the long-short vowel pairs were simply merged without any reorganization of vowel quality ($\bar{\imath}\ i > i$, $\bar{e}\ e > e$, $\bar{o}\ o > o$, $\bar{u}\ u > u$).[38] The same is true for Dalmatia, where the analysis of the 5th–6th century inscriptional material can prove that the Latin vowel system of the area definitively moved in the direction of western symmetrical merger development.[39] In order to reveal the exact dialectological development in the Danubian region, we would need access to an inscriptional material from the 5th–6th centuries, but we do not have this kind of material, and probably never will.

Returning to Herman's claims, in light of the above, it can be safely stated that the connection Herman suggested between Dacia and the more conservative regions of southern and central Italy

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[35] LLDB-4829: o > V, PVS| = *posuerunt*, IDR 3, 1, 161, 8, 201–270 AD, LLDB-6538: o > V, CVRNELIE = *Corneliae*, IDR 3, 5, 520, 2 = AE 1983, 810, 2, 131–170 AD, LLDB-9078: o > V, DVLC|[HENO] = *Dolicheno*, IDR 3, 3, 296, 3 = CIL III 7832, 3, 101–300 AD. LLDB-59646: o > V, DVLCEN|O = *Dolicheno*, CCID 138, 2–3 = CIL III 7625, 2–3, 192–270 AD. Cf. also Beu-Dachin (2014) 71–74.

[36] Herman (1983) 103.

[37] Cf. Loporcaro (2015) 54.

[38] See Adamik (accepted for publication a) for details.

[39] See Adamik (accepted for publication b) for details.

is illusory. As we have seen, Dacia appears to be more innovative in terms of the vowel system as a whole, mainly in the 2nd century (1b: 51.4%), but also to a decreasing extent in the 3rd century (1c: 46.4%), while in the 3rd century the southern Italian provinces show a more conservative image (1c: Bruttium et Lucania 17%, Apulia et Calabria 34.5%), which is preserved in the 4th century as well (1d: Bruttium et Lucania: 20.5%, Apulia et Calabria 32.4%). Regarding the frequency of vowel mergers within the vowel system, Dacia is indeed very conservative in the 2nd (2b: 7.8%) and 3rd centuries (2c: 13.2%), but that makes Dacia align with the other provinces of the Danubian region, which are also conservative in this respect, especially Noricum (2b: 11.1%, 2c: 13.7%) and Pannonia Inferior (2b: 7.4%, 2c: 15.7%). In terms of the relative proportions of back and front vowel mergers, Dacia (3b: 4, 3c: 5.5) appears to be primarily similar to Dalmatia (3b: 4, 3c: 7.2). Finally, regarding the distribution of vowel mergers in unstressed and stressed syllables, Dacia (4b: 9, 4c: 3.3) again shows development tendencies very similar to Noricum (4b: 10, 4c: 3). All in all, the Dacian development, which can only be observed in the 2nd–3rd century, can easily be placed among the Danubian provinces, so it is not necessary to connect it with the developmental trends in southern Italy, which otherwise we only know relatively well from the 5th century. Moreover, as it is apparent from the analysis of the material from the 5th century, while Apulia et Calabria clearly developed towards the Italian or Western symmetrical system (11 E/I : 7 O/U = 1.6), Bruttium et Lucania might have started to develop in such a direction (10 E/I : 1 O/U = 10) which resulted in the creation of an asymmetric (Balkan Romanian) type of Italian dialect area in a small part of the present territory of ancient Lucania.[40] However, the fact that the Latin of one of the Danubian or Balkan areas developed towards the asymmetrical system type can only and exclusively be deduced from the modern Romanian language. Based on the currently available material we do not have compelling evidence as to where in the Balkans the Latin dialect which later became the basis of the Romanian language developed, but fortunately, contributing to this very complicated and difficult problem is not the task of this study.

Nevertheless, to sum up, it can be stated that Herman's characterization of the dialectological peculiarities of the Latin of the Danubian provinces can still be considered correct for the most part, although many of its details needed revision and reformulation. His statements made regarding other linguistic phenomena can serve as a basis for further research into the Latin dialects of the region. We can agree with Herman that: "it is very likely that, at almost all points of the system, scrupulous application of a 'microtechnology' would bring out divisions which would undoubtedly destroy the fictitious homogeneity of the Danubian provinces while integrating them in a more concrete and more lively way into the Latin-speaking world."[41]

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[40]See ADAMIK (accepted for publication a) for details.

[41]HERMAN (1983＝1990) 179: "et il est fort vraisemblable que, sur presque tous les points du système, une 'microtechnique' scrupuleuse ferait apparaître des clivages qui détruiraient, sans doute, l'homogénéité fictive des provinces danubiennes tout en les intégrant d'une manière plus concrète et plus vivante dans l'ensemble du monde latin."

BIBLIOGRAPHY

ADAMIK, B. (2003). Die verlorene Romanität in Mösien, Thrakien und Pannonien. In: ERNST, G. – GLESSGEN, M.-D. – SCHMITT, CHR. – SCHWEICKARD, W. (eds.), *Romanische Sprachgeschichte. Ein internationales Handbuch zur Geschichte der romanischen Sprachen 1.* Handbücher zur Sprach- und Kommunikationswissenschaft 23.1. de Gruyter, New York – Berlin, pp. 675–683.

ADAMIK, B. (2012). In Search of the Regional Diversification of Latin: Some Methodological Considerations in Employing the Inscriptional Evidence. In: BIVILLE, Fr. – LHOMMÉ, M-K. – VALLAT, D. (eds.), *Latin vulgaire – latin tardif IX. Actes du IXe colloque international sur le latin vulgaire et tardif, Lyon, 6 – 9 septembre 2009.* Publications de la Maison de l'Orient e la Méditerranée, Lyon, pp. 123–139.

ADAMIK, B. (2016). Computerized Historical Linguistic Database of the Latin Inscriptions of the Imperial Age: Search and Charting Modules. In: GRADVOHL, E. – SZABÓ, Á. (eds.), *From Polites to Magos. Studia György Németh sexagenario oblata.* Hungarian Polis Studies 22. Budapest–Debrecen, pp. 13–27.

ADAMIK, B. (2017). A Study on the Dialectology of Vulgar Latin Vocalic Mergers: The Interaction between Confusion of Vowel Quality, Syncope and Accent. In: GARCIA LÉAL, L. – PRIETO ENTRIALGO, C.E. (eds.), *Latin vulgaire – latin tardif XI: XI Congreso Internacional sobre el Latín Vulgar y Tardío (Oviedo, 1–5 de septiembre de 2014).* Olms, Hildesheim – Zürich – New York, pp. 183–194.

ADAMIK, B. (2020). The Transformation of the Vowel System in African Latin with a Focus on Vowel Mergers as Evidenced in Inscriptions and the Problem of the Dialectal Positioning of Roman Africa. *Acta Classica Universitatis Scientiarum Debreceniensis*, 56: 9–25.

ADAMIK, B. (2022). The Transformation of the Vowel System in Gallic Latin as Evidenced in Inscriptions and the Problem of Dialectal Positioning of Roman Gaul. *Acta Antiqua Academiae Scientiarum Hungaricae*, 62(4): 321–341.

ADAMIK, B. (accepted for publication a). The Dialectological Situation of the Latin Language in Late Italy before and in the Langobard Period as Evidenced in Inscriptions: The Phonological Aspect. In: D'ARGENIO, E. – DELLE DONNE, R. – SORNICOLA, R. (eds.), *Lingue, scritture e società nell'Italia longobarda. Un percorso di sociolinguistica storica.* Federico II University Press, Napoli.

ADAMIK, B. (accepted for publication b). Back Vowel Mergers in Dalmatian Latin and Dalmatian Romance. In: GALDI, G. – AERTS, S. – PAPINI, A. (eds.), Varietate delectamur. *Multifarious Approaches to variation in Latin. Selected Papers from the 14th International Colloquium on Late and Vulgar Latin* (Ghent, 2022). Brepols, Turnhout.

ADAMS, J.N. (2007). *The Regional Diversification of Latin 200 BC–AD 600.* Cambridge University Press, Cambridge.

BEU-DACHIN, E. (2014). *The Latin Language in the Inscriptions of Roman Dacia.* Editura Mega, Cluj-Napoca.

GONDA, A. (2019). Dialects of Vulgar Latin and the Dialectal Classification of the Alps-Danube-Adria Region. *Acta Antiqua Academiae Scientiarum Hungaricae,* 59(1–4): 53–69.

HERMAN, J. (1968=1990a). Latinitas Pannonica. Vue d'ensemble des caractéristique de la latinité pannonienne: un essai. In: HERMAN, J. (ed.), *Du latin aux langues romanes. Études de linguistique historique* (réun. S. Kiss). Niemeyer, Tübingen, pp. 105–120.

HERMAN, J. (1968＝1990b). Statistique et diachronie: essai sur l'évolution du vocalisme dans la latinité tardive. In: HERMAN, J. (ed.), *Du latin aux langues romanes. Études de linguistique historique.* (réun. S. KISS). Niemeyer, Tübingen, pp. 196–203.

HERMAN, J. (1971＝1990). Essai sur la latinité du littoral adriatique à l'époque de l'Empire. In: J. HERMAN (ed.), *Du latin aux langues romanes. Études de linguistique historique.* (réun. S. Kiss). Niemeyer, Tübingen, pp. 121–146.

HERMAN, J. (1983＝1990). Le latin dans les provinces danubiennes de l'Empire romain. Problemes et perspectives de la recherche. In: J. HERMAN (ed.), *Du latin aux langues romanes. Études de linguistique historique.* (réun. S. Kiss). Niemeyer, Tübingen, pp. 164–182.

HERMAN, J. (2000a). *Vulgar Latin.* Trans. by R. Wright. University Park, Pennsylvania.

HERMAN, J. (2000b). Differenze territoriali nel latino parlato dell'Italia tardo-imperiale: un contributo preliminare. In: HERMAN, J. – MARINETTI, A. (eds.), *La preistoria dell'Italiano. Atti della Tavola Rotonda di Linguistica Storica. Università Ca' Foscari di Venezia 11–13 giugno 1998.* Niemeyer, Tübingen, pp. 123–135.

LEDGEWAY, A. (2016). The Dialects of Southern Italy. In: LEDGEWAY, A. – MAIDEN, M. (eds.), *The Oxford Guide to the Romance Languages.* Oxford University Press, Oxford, pp. 246–269.

LOPORCARO, M. (2011). Syllable, Segment and Prosody. In: MAIDEN, M. – SMITH, J.C. – LEDGEWAY, A. (eds.), *The Cambridge History of the Romance Languages. Volume 1: Structures.* Cambridge University Press, Cambridge, pp. 50–108, 684–689.

LOPORCARO, M. (2015). *Vowel Length from Latin to Romance.* Oxford University Press, Oxford.

LUPINU, G. (1999). Contributo allo studio della fonologia delle iscrizioni latine della Sardegna paleocristiana. In: MASTINO, A. – SOTGIU, G. – SPACCAPELO, N. (eds.), *La Sardegna paleocristiana tra Eusebio e Gregorio Magno: atti del Convegno nazionale di studi, 10-12 ottobre 1996.* Pontificia Facoltà teologica della Sardegna, Cagliari, pp. 227–261.

MIHÄESCU, H. (1978). *La langue latine dans le Sud-Est de l'Europe.* Editura Academiei, Bucarest – Les Belles Lettres, Paris.

VÁGÁSI, T. (2019). The Sociolinguistic Research of the Cult of Jupiter Dolichenus. *Acta Antiqua Academiae Scientiarum Hungaricae*, 59(1–4): 537–546.