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LINGUISTIC DISTANCES BETWEEN RHAETIAN, VENETIC, LATIN AND SLOVENIAN LANGUAGES

Abstract

In the attempt of improving our knowledge about the linguistic distances between ancient languages, we decided to consider the Rhaetian language as a possible candidate for a further application of our method of linguistic distance computation used in the past. Our data indicate that the Rhaetian, in the limits of the database considered, has an alphabetic structure close to the Venetic, suggesting a linguistic origin closer to the Venetic than to the Latin. Moreover, because the Rhaetian has an alphabetic structure closer to the Slovenian than to the Latin, the attempts made in the past to translate Rhaetian inscriptions, by means of similarities between Rhaetian and Slovenian and other ancient and modern Slavic languages, appear to be justifiable.

Introduction

Because of the two conflicting affirmations formulated in the past by Lejeune [1]: "This language (the Venetic) is "italic" and, …, closer to the Latin than any other language", and by Bor [2]: "I was unable to find a single (Venetic) inscription that could not be deciphered on the basis of the Slavic languages and the surviving Slovenian dialects, above all the Slovenian archaisms", in a previous paper [3] we proceeded to the computation of the linguistic distances between Latin, Slovenian and Venetic.

In the limits of the databases considered and the sensitivity of our computation method the Venetic language resulted having an alphabetic symbolic structure closer to the Slovenian than to the Latin. This appears to support the Bor's hypothesis [2] with respect to the Lejeune's conjecture [1].

In the attempt of improving our knowledge about the linguistic distances between ancient languages, we decided to consider the Rhaetian language as a possible candidate for a further application of our method.

Materials and Method - General

Despite of the problems in interpreting the Rhaetian, as a first step, we developed the Rhaetian Language Database (RLD) i.e. a file .doc containing Rhaetian published inscriptions with relevant explanations and notes.

As a second step, we derived a corresponding file .txt, to be used for the language distance computations.

As a third step, by applying the word processor Ultraedit to the .txt file so obtained, each alphabetic symbol in the inscriptions of the RLD has been counted and the corresponding frequency value has been put in a column of an Excel file.

As a fourth step, by observing that several Rhaetian alphabetic symbols probably had the same or similar phonetic value and in order to permit, as far as possible, a 1 to 1 correspondence between the alphabetic symbols of the RLD and those in the Latin Language Database (LLD), the Slovenian Database (SLD) and the Venetic Language Database (VLD), the alphabetic symbols of the RLD, where possible, have been aggregated.

As a fifth step, the frequencies of the aggregated alphabetic symbols in the RLD, LLD, SLD and VLD have been represented in form of histograms, to show similarities and differences.

As the sixth step, on the basis of the frequencies of the alphabetic symbols, the average alphabetic coordinates for the Rhaetian (X-rha, Y-rha) have been calculated and the corresponding point represented together with the representative points of the Latin, Slovenian and Venetic for considerations.

Computations and Results - Details

Our linguistic distances computation method, based on the Pythagorean Linguistic Distance, and the databases we used: the Latin Language Database (LLD), the Slovenian Language Database (SLD) and the Venetic Language Database (VLD), are fully described in said our previous paper [3].

The main problems in interpreting the Rhaetian are:

1) The relatively small number of inscriptions: 224, collected by Schumacher [4], many time short, broken and incomplete;
2) The continuous graphics ("continuum") of the inscriptions, i.e. the lack of separation of the words;
3) The unknown meaning of the punctuation signs, cf. Lejeune [1] and Vetter [5], in the inscriptions;
4) Unknown possible pronunciation rules;
5) Local phonetic and alphabetic peculiarities; cf. the San Zeno, Bolzano, Magré alphabets;
6) Possible linguistic and alphabetic modifications of the Rhaetian in the period covered by the inscriptions.

With all of the above-mentioned concerns in mind; in the first step, we developed the Rhaetian Language Database (RLD) i.e. a file .doc containing all the inscriptions published and revised by S. Schumacher [4] and many of his explanations and notes.

In the second step, we derived a file .txt, to be used for the language distance computations, containing all said inscriptions, transliterated according to the following premises based on the principles used by Schumacher [4]:

a) So-called "dental signs":

1. the so-called "Etruscan" t is transliterated as t1;
2. the "St. Andrew-cross" t is transliterated as t2;
3. where no decision is to be taken about t1 and t2, the letter is transliterated as t0;
4. the sign comprising a vertical line crossed by two inclined lines in the inscriptions of Steinberg is transliterated as t3;
5. the sign comprising an inclined line crossed by two inclined lines in the inscriptions of Magré (PID 243/MA-23) is transliterated as z as well as the sign comprising a vertical line crossed by two inclined lines in the inscriptions of Castelrotto (VR-4);
6. the sign χ is transliterated as X1;
7. the sign φ is transliterated as X2;
8. the sign ś is transliterated as X3;
9. the sign θ is transliterated as X4.
10. the "arrow sign" of the alphabet of Bolzano which can be assumed to correspond to t2śi, cf. [4], p. 311, is transliterated as t2X3i;
11. the "three angles sign" of the alphabet of Magré which can be assumed to corresponds too to t2śi, cf. [4], p. 311, is transliterated as t2X3i ;
12. the stroke sign with a dot at the top present in some inscription which can be assumed to corresponds too to t2śi, cf. [4] p. 307, is transliterated as t2X3i .

b) p and l:

1. p is assumed when the "hook" is directed against the orientation of the inscription;

2. l is assumed when the "hook" is directed down in the inscription;

3. from 1. and 2. follows that when a sign is not in opposition to other signs, it could be read as p or l. In this case it will be transliterated as p/l;

c) In Magré and in the inscriptions from Castelrotto (VR-4) there is a sign that seems close to r, but that it could also be p; because p in all inscriptions from Magré and the inscriptions from Castelrotto would be absent, it is transliterated as r2/p;

d) The different representations of a, h, χ, u, have not been taken into consideration;

e) The transliteration x and = have the following meanings:

1. a sign that cannot be transliterated;

2. a sign that can be recognised but cannot be associated with a sign in the known alphabets.

For these reasons the alphabetic symbol x has not been taken in consideration in our computation.

f) Variations: when a sign has two possible interpretations, it is represented, for example, by a group like a/u;

g) Additional signs:

?] lacuna at the begin of an inscription;

[? lacuna at the end of an inscription; the question mark indicates that it is unclear whether in the lacuna there are other signs;

[**e**] lacuna of the width of a letter which is supposed to be e;

[x?] lacuna of the width of a sign, if, after a first sign which cannot be transliterated or cannot be associated transliterated with a sign in the known alphabets, there is another unclear sign;

[xx? inside or at the border of a lacuna are the vestiges of at least two signs which cannot be or cannot be associated with a sign in the known alphabets;

[?] lacuna of the width of a sign; if a sign in the lacuna is unclear;

[x] lacuna of the width of a sign, which cannot be transliterated or cannot be associated with a sign in the known alphabets;

[.] the sign in the lacuna is supposed to be a punctuation sign.

Only transliterations like e have been taken in consideration in our computation.

h) Characters:

1. The personal comments by Schumacher [4] in many inscriptions, i.e.: (characters not sure) or (decorative signs), have not been retained;

2. Punctuation is indicated as points (·, :) in the inscription transliteration.

In the third step, by applying the word processor Ultraedit to the .txt file so obtained, each alphabetic symbol: a, b, c, … , t0, … t3, …, X1, …, X4, y, z, in the inscriptions has been counted and the corresponding frequency value has been put in a column of an Excel file.

In the fourth step, by observing that several alphabetic symbols probably had the same or similar phonetic value and in order to permit, as far as possible, a 1 to 1 correspondence between the alphabetic symbols of the RLD and those in the LLD, the SLD and the VLD, the alphabetic symbols have been aggregated according to the following principles derived from [4]:

- t0, t1, t2, t3, θ have been aggregated as t;
- φ has been aggregated as b;
- χ has been aggregated as g;
- s and ś have been aggregated as s.

The aggregated alphabetic symbols and their corresponding frequency values have been placed in two dedicated columns in said Excel file

In the fifth step, the frequencies of the aggregated alphabetic symbols values of the RLD, LLD, SLD and VLD have been represented in form of histograms (cf. Figures 1-3).

Figures 1-3, in the limit of the set of inscription in the RLD, show that the alphabetic symbols c, d and f are absent in Rhaetian and the o symbol has a very low frequency (0.21) with respect to the corresponding o symbol in Latin (5.72), Slovenian (7.74) and Venetic (11.30).

In the sixth step, on the basis of the frequencies of the alphabetic symbols, the average alphabetic coordinates for the Rhaetian (X-rha = 4.1, Y-rha = 1,53) have been calculated and the point representative of the Rhaetian has been inserted in Figure 4 together with the representative points of the Venetic, Slovenian and Latin.
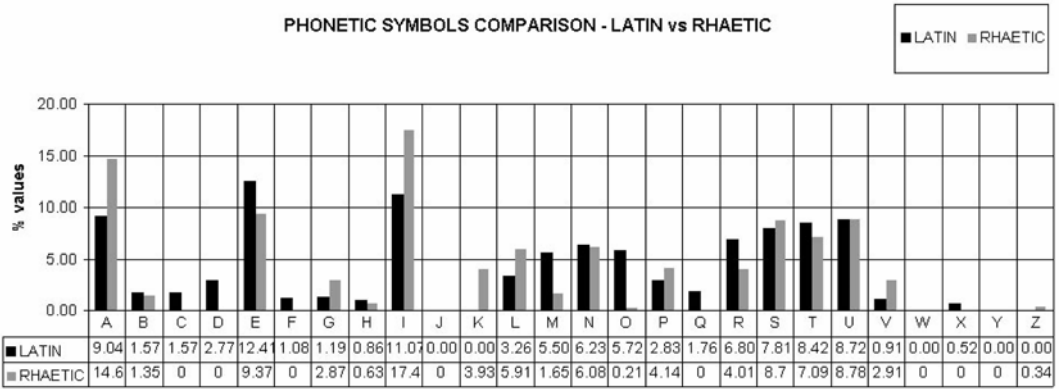
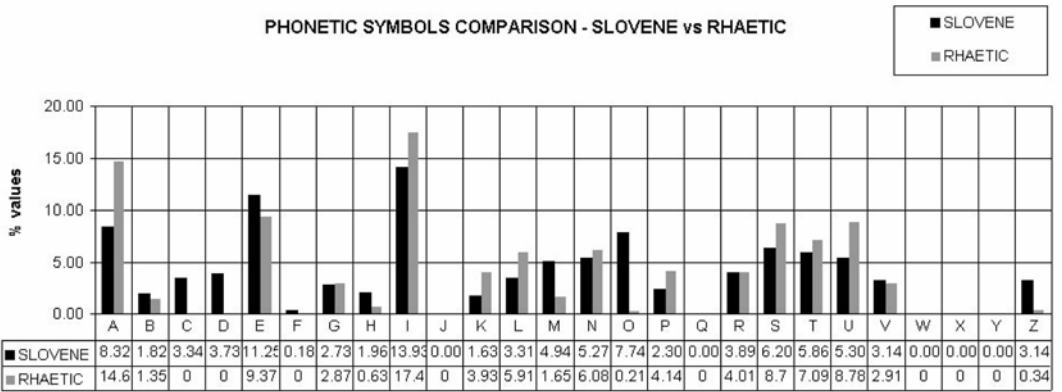*Figure 1. Aggregated alphabetic symbolic values for the LLD and RLD*

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
■ LATIN	9.04	1.57	1.57	2.77	12.41	1.08	1.19	0.86	11.07	0.00	0.00	3.26	5.50	6.23	5.72	2.83	1.76	6.80	7.81	8.42	8.72	0.91	0.00	0.52	0.00	0.00
■ RHAETIC	14.6	1.35	0	0	9.37	0	2.87	0.63	17.4	0	3.93	5.91	1.65	6.08	0.21	4.14	0	4.01	8.7	7.09	8.78	2.91	0	0	0	0.34

Figure 2. Aggregated alphabetic symbolic values for the SLD and RLD

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
■ SLOVENE	8.32	1.82	3.34	3.73	11.25	0.18	2.73	1.96	13.93	0.00	1.63	3.31	4.94	5.27	7.74	2.30	0.00	3.89	6.20	5.86	5.30	3.14	0.00	0.00	0.00	3.14
■ RHAETIC	14.6	1.35	0	0	9.37	0	2.87	0.63	17.4	0	3.93	5.91	1.65	6.08	0.21	4.14	0	4.01	8.7	7.09	8.78	2.91	0	0	0	0.34
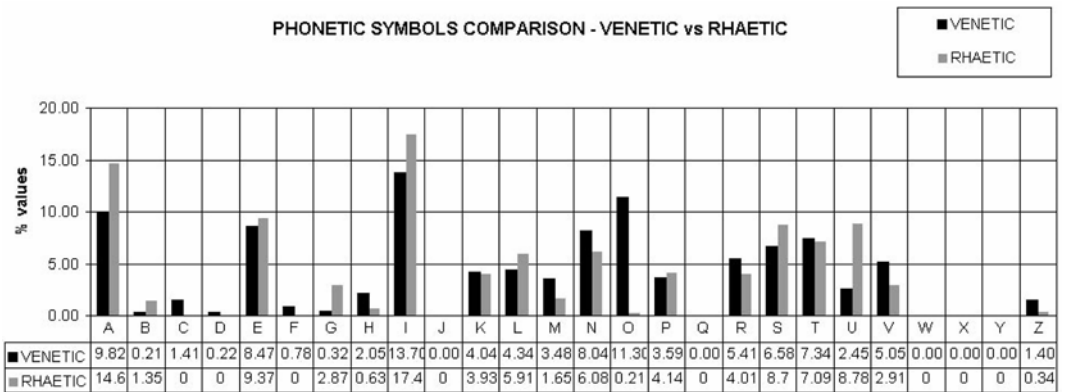
Figure 3. Aggregated alphabetic symbolic values for the VLD and RLD

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
■ VENETIC	9.82	0.21	1.41	0.22	8.47	0.78	0.32	2.05	13.70	0.00	4.04	4.34	3.48	8.04	11.30	3.59	0.00	5.41	6.58	7.34	2.45	5.05	0.00	0.00	0.00	1.40
■ RHAETIC	14.6	1.35	0	0	9.37	0	2.87	0.63	17.4	0	3.93	5.91	1.65	6.08	0.21	4.14	0	4.01	8.7	7.09	8.78	2.91	0	0	0	0.34

All the details of the calculation method and the resulting average alphabetic coordinates for the Venetic (X-ven = 3.8, Y-ven = 1.46), the Slovenian (X-slo = 2.0, Y-slo = 1.31) and the Latin (X-lat = 0.0, Y-lat = 0.0) assumed as reference, are described in our previous
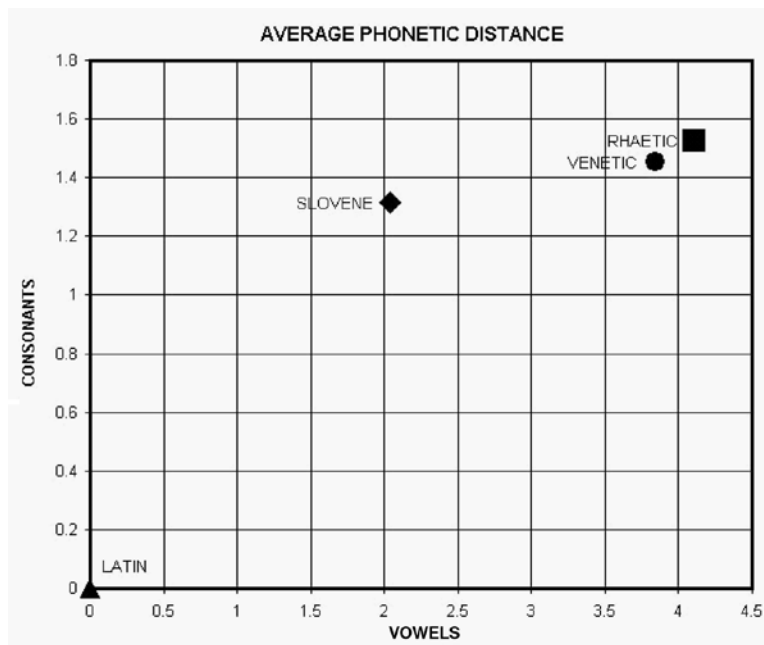
Figure 4. The Average Phonetic Distance between Rhaetian, Venetic, Slovene, and Latin

paper [3]. Surprisingly, as shown in Figure 4, despite of the differences mentioned above, the Rhaetian results to have an alphabetic structure close to the Venetic.

As the seventh step, the Pythagorean Linguistic Distances, see [3], between Venetic, Latin, Slovenian and Rhaetian have been calculated and summarised in Table 1, which corrects and supersedes Table 1 in [3].

Table 1. Pythagorean Linguistic Distance between Latin, Slovene, and Venetic language

Lat.	0			
Ven.	4.1	0		
Slo.	2.4	1.81	0	
Rha.	4. 4	0.27	2.1	0
	Lat.	Ven.	Slo.	Rha.

Conclusion

Figure 3 and Table 1 indicate that the Rhaetian, in the limits of the database considered, has an alphabetic structure close to the Venetic, suggesting a linguisic origin closer to the Venetic than to the Latin. Moreover, because the Rhaetian results to have an alphabetic structure closer to the Slovenian than to the Latin, they appear justifiable the attempts made in the past [6-9] to translate Rhaetian inscriptions by means of apparent similarities between Rhaetian and Slovenian and other ancient and modern Slavic languages.

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Supplementary materials

The files containing the Latin Language Database (LLD), the Slovenian Language Database (SLD), the Venetic Language Database (VLD) and the Rhaetian Language Database (RLD) are available, free of charge, on request, at: gtomezzoli@epo.org.

Povzetek

Jezikovne razdalje med retijskim, venetskim, latinskim in slovenskim jezikom

Da bi vedeli več o oddaljenostih nekdanjih jezikov, sva obdelala z metodo jezikovnih razdalj tudi retijski jezik. Rezultati kažejo, da ima v okviru podatkov, ki so nama na razpolago, retijski jezik podobno glasovno zgradbo kot venetski, tako da je verjetno njegov izvor bliže venetskemu kot latinskemu. Ker ima tudi retijski jezik glasovno zgradbo bliže slovenskemu kot latinskemu, so videti prejšnji poskusi razumevanja retijskih napisov s pomočjo podobnosti s slovenščino upravičeni.