

Etruscan numerals: problems and results of research

The system of Etruscan numerals is restored exclusively on materials of proper Etruscan texts; comparisons with the data of other languages are very rare; in languages, related to Etruscan, we have only one reliable form – *sialχveis* “60” (Stele of Lemnos). In spite of some questions concerning origin, formation and principles of coordination of simple and compounded numerals, it is necessary to underline, that this part of speech is known to us well enough. Etruscan numerals are identified in various types of monuments; a special place among them belongs to a dice found in 1848 in Toscanella (TLE 197) with the sign meanings from 1 up to 6; they caused a breakthrough in the interpretation of the simple numerals, carried out basically on a method of positional statistics. Rate of appearance of different numerals, as well as amount of derivative forms, are not equivalent; some simple numerals and their derivatives are found tens of times whereas, for example, the basis of the word *nurφ* – “9” – appears only once, at that in a derivative adverb. Since Etruscan numerals are used mostly in epitaphs, numbers exceeding the duration of human life are unknown to us.

Sequence of simple cardinal numbers *tu(n)*, *θu(n)* - 1, *zal* - 2, *ki*, *ci* (*χi*?) - 3, *hut*, *huθ* - 4, *maχ* - 5, *śa*, *sa* - 6, *śemφ* - 7, *cezφ* - 8, *nurφ* - 9, for the first time has been established for the first six numbers by H. Stoltenberg [Stoltenberg H. L., 1943, p. 234; cf. Pallottino M., 1976, p. 368; Xarsekin A. I., 1969, p. 44; Pallottino M., 1978, p. 454] and, despite a number of later hypotheses [cf. Xarsekin A. I., 1964, pp. 60-61, etc.], is mostly corroborated. The present system was essentially strengthened after detection of the well-known Etrusco-Phoenician bilingual text from Pyrgi, in which Punic combination *šnt šlš III* “three years” corresponds to Etruscan *ki avil* [cf. Pallottino M., 1978, p. 445]. It is important to note that the criticism of the above mentioned interpretation was carried out basically by the researchers trying to etymologize Etruscan numerals proceeding from hypotheses concerning external relations of Etruscan language, in particular, by V. Georgiev who insisted on the Indo-European character of Etruscan and, accordingly, ignored many Etruscan materials. Today, similar constructions cannot be perceived seriously any more¹.

¹ For the sake of curiosity, V. Georgiev's sequence is provided here: *maχ* - 1, *sa* - 2, *huθ* - 3, *θu* - 4, *ci* - 5, *zal* - 6, *śemφ* - 7, *θun* - 8, *muν*, *nurφ* - 9 [Georgiev V., 1958, p. 192]. As we may see, for first six numbers no correct translation is offered; phonetic variants *θun* and *θu* are

Obviously, most disputes were caused by the problem of interpretation of *huθ* and *śa*; researchers ascribed to them either the meanings “4” and “6” or vice versa.

Meaning *huθ* “4” should not be called in question any more; here we follow classical analogy of pre-Hellenic (apparently, Tyrrhenian) place-name Ὑττηνία, corresponding to Greek “τετράπολις”, “Τετράπτολις” (four Attic cities, i.e. Οἰνότη, Μαραθών, Προβάλινθος and Τροκόρουθος, to what testifies Stephan the Byzantine [Xarsekin A. I., 1964, p. 58]). The given place-name it is not divided in two bases (in Tyrrhenian languages not only basis **tVn-* with a meaning of the type “city” or “settlement” is not known, besides, compounds appear very seldom); as far as the structure is concerned, this form should go back to Tyrrhenian noun **hutena*, “four”, with word-formation suffix *-na*, a very frequent one in Etruscan.

The other frequently challenged interpretation was *cezp* – “8”. Available interpretation is supported, first of all by the gloss TLE 858 *Xosfer* (“Xosfer Tuscorum lingua October mensis dicitur”) the basis of which should be restored as **Chosf-* (mixture of Latin *x* [ks] and Etruscan *χ* is quite natural, taking into account the absence of a corresponding grapheme in Latin writing). As one can see, the name structurally coincides with Latin *October*; it is important to note the shift from *c* and *p* to the corresponding aspirates. Besides, Varro and other authors kept the name of the “eighth” Roman hill *Cespius*, *Cispius* (one of the tops of the *Esquiliae* hill, along with *Oppius*).

About interpretation of the numeral “10” see below; other tens in Etruscan language (except for *zaθrum* “20”) are formed from simple numerals by adding element *-alχ-* (as also in Lemnian *sialχveis* – “60”). Such compounded forms were not used only with the bases *huθ* “4” and *nurφ* “9”. Meaning “20” for *zaθrum* is confirmed by calendar dates in the text of the Zagreb ritual (*liber linteus*, TLE 1); it does not need to be explained that, after the identification of the meaning “30” in date designations, the other form, *zaθrum*, could only mean “20”. Other tens are easily recognized, in spite of some phonetic variations: *cealχ-*, *cialχ-* “30”; *muvalχ-* “50”; *śealχ-* (лемн. *śialχv-*) “60”; *śemφalχ-* “70”; *cezpalχ-* “80”. The basis *maχ-/muv-*, apparently, underwent serious phonetic changes; obviously, it was tied to various types of development of labio-velar **χ^v* which should be restored in the present basis (with the further transformations *-χv* > *-χ* at the end of the word, and *-χv-* > *-v-* before a vowel (as in *muvalχ-*)).

treated as different, as well as *maχ-* and *muv-* (see *muvalχ-* below). The “identity” of *muv-* and *nurφ-* is not explained; *cezp-* is simply ignored.

The numeral “100” is not identified yet, and it is quite natural, since the numerals usually designate age in epitaphs. Hopefully, in due course it will be recognized in the ritual text of the Zagreb mummy, though the basic part of the lexicon used there is not clear to us.

Compounded numerals could be formed in at least two ways. Double-digit numbers with the second element from 1 up to 5 or 6 were formed by adding of a simple number before ten: *maχ cezpalχ avil svalce* “has lived 85 years” (TLE 94). Such designs, not complicated by suffixal parameter, are rare enough; more often both components have genitive suffixes, and if for the first numeral suffix *-s* is used, for the next (except for the word *zaθrum* – “20”) two suffixes, both *-l* and *-s* are used. The numeral *zal* “2” has a specific genitive form *esals*. Cf. the following examples:

TLE 1^{VIII}³ *celi huθis zaθrumś* “on 24-th of September²”;

TLE 142 *avils huθs muvalχls lupu* “has died of 54 years”;

TLE 193 *avils śas amce* “was of 6 years”;

TLE 324 *lupu avils esals cezpalχals* “has died of 82 years”

Other type of formation of compounded numerals is used in numbers with the second element 7, 8, 9 (there is nothing certain to tell about 6). Here from the nearest greater ten, 3, 2 or 1 are subtracted accordingly, and this subtraction is formed by a suffix *-em* (derivatives of the numeral 2, as well as those in other cases, are formed from a basis *esl-*); typologically such forms are similar to Latin *duo-de-viginti*, *un-de-viginti* where preposition *de* is used for subtraction. Consider the following examples:

TLE 134 *θunem muvalχls lupu* “has died of 49 years”;

TLE 192 *θunem zaθrums* “of 19 (years)”;

TLE 1^{VI}¹⁴ *eslem zaθrumś acale* “on 18-th of June³”;

TLE 1^X² *ciem cealχuz* “27”, etc.

Etruscan numerals were usually combined with plural nouns (TLE 719 *ki aiser* “three gods”, TLE 181 *tivrs śas* “six months”, etc.). One obvious exception is a word *avil* “year” which, attaching case suffixes (contrary to the indeclinable *ril* “age”), is used in a singular. We see the same in the Stele of Lemnos inscription: *śivai aviš sialχviś* “has lived 60 years”. It is typical, that this word, used independently, can attach a suffix of collective plural – *avil-χva-l⁴* (TLE 875).

² “Celius Tuscorum lingua September mensis dicitur” (TLE 824).

³ “Aclus Tuscorum lingua Iunius mensis dicitur” (TLE 801).

⁴ This inscription is an “abstract” of a bilingual from Pyrgi TLE 874; the sequence *avilχval* – *pulumχva* corresponds to Phoenician *wšnt l'mš ' lm bbty šnt km hkkbm ' l* lit. “years of a deity in this sanctuary would be (so numerous), as years of those stars”.

Beside genitive forms of simple numerals, one only derivative is known with dative/allative case postposition: *hut-eri*⁵ (TLE 1^X14).

A little is known about ordinal numerals. Besides a basis *θunχ-* “first”, known from several texts, a reliable case of the use of an ordinal numeral may be seen in an archaic inscription from Pyrgi TLE 876. The basis *θunχ-* (TLE 100 *θunχum*) contains a relatively rare Etruscan adjective suffix *-uc, -uχ* (cf. *marunuχ* (TLE 137, 165, 234) “related to m.”) which combines with various suffixes: *θunχerś* (TLE 1^{VI}7) – plural genitive, cf. also compound *θunχule* (TLE 1^{XII}3), *θunχulθe*, *θunχulθl* (TLE 570). Another form, *θunśna* (TLE 1^{VI}13), is not clear. In the mentioned inscription from Pyrgi we read: *hutila tina etiasas acalia* “the fourth day (from) June’s *Idus*⁶”. Apparently, the numeral is formed by a standard genitive (adjective) suffix *-l(a)*. Sometimes a meaning is expressed that the form *zathrumsne* (TLE 1^{VI}9) also represents an ordinal numeral [cf. Xarsekin A. I., 1969, p. 44], however the context in which it is found, rather indicates a cardinal numeral: *zathrumsne lusaś fler hamφisca θezeri laiviśca lustreś* “one shall put twenty gifts both at the right side and at the left side”⁷.

Adverbial numerals in Etruscan are formed by suffix *-zi*, known also as *-z* and *-ze, -za* (?). Cf. the following combinations:

TLE 99 *cizi zilaχnce meθlum nurφzi canθce* “thrice was a z., ruled the city nine times...”;

TLE 136 *eslz zilaχnθas* “was a z. twice”;

TLE 171 *eslz tenu* “held a post twice...”;

TLE 324 *zilχnu cezpz ... purtsvana θunz* “was a z. eight times ... once (held a post) of p.”, etc.

Beside these forms, some individual distributive numerals are known which have been formed by a familiar plural suffix *-r*: *tunur* “singuli” and *zelur* “bini” (both in the inscription TLE 619).

Forms *tuśurθi* (TLE 586), *tuśurθii* (TLE 627), “spouse”, *tusurθir* (TLE 587) “spouses” which clearly is a calque of Latin *con-sors, con-sortis*, provide a unique case of participation of numerals in a composition. The basis has been borrowed with minimal changes and for the lack of a similar prefix for the indication of communality

⁵ About such character of the element *-eri* tells a possibility of its combination with verbal bases for the formation of gerund (cf. *nunθeri* (TLE 2^{11, 12, 20, 25}) “would be brought in as a victim”, etc.).

⁶ Cf. Macrobius’ gloss TLE 838b: “Iduum porro nomen a Tuscis, apud quos is dies Itis vocatur, sumptum est... iduare enim Etrusca lingua dividere est”.

⁷ Here we do not know only the meaning of *lus-*; however, a translation “side, edge” is quite probable; *-treś* in the second case represents a pronominal enclitic.

(Latin *con-*), Etruscan numeral “1” has been used, and that is quite close semantically. In the interpretation of Etruscan numerals one of key problems is a detection of the numeral 10. The ambiguity of such an important form is aggravated by the lack of clarity in the existing model of the Etruscan numerals.

At the same time, considering a significant amount of known Etruscan texts and a substantial size of some of them, such as the Zagreb text or Capuano tile (TLE 2), it seems quite probable that among already known word forms the numeral 10 is also allocated, whereas the most frequently accepted point of view is not convincing enough for us.

It has been stated that the compounded form *huθzar-s* from epitaph TLE 191, which specifies the age of the deceased person (*avils huθzars* i.e. “(has died in the age of) *x* years”) can serve as a key to the solution [Xarsekin A. I., 1964, p. 60]. Taking into account the fact, that the compounded numerals in which the second component was a number from 1 up to 5 or 6, were formed in Etruscan language by putting a simple numeral before ten, a similar pattern was ascribed to *huθzars* and it was judged that *zar* means “10” (for the first time this opinion was stated by S. Cortsen [Cortsen S. P., 1932, p. 59]). Consequently, the form *huθzars* was understood as “14” (or “16”, if one accepts *huθ* as “6”). In addition, a connection between *-zar-* and *śar-* was identified (TLE 1^{VIII} 1, in a combination *ciś śariś* [Xarsekin A. I., 1964, p. 60], which, accordingly, was understood as “of the 13-th” (genitive case)). With insignificant phonetic changes (in the variant *ceś zeriś*) the same combination appears twice in a large inscription from Monte Pitti (TLE 380^{6, 9}, *tabella defixionis*), however it is not possible today to translate this inscription. In our opinion, a word *zar* in the brief inscription TLE 295 also can be interpreted as a numeral, but the context here is rather complex for understanding (*cvl alile hermu zar*). It is not clear, whether it is possible to attribute here the form *zaθriś* from a brief inscription TLE 921, an alternative might be some phonetic development of *zaθrum* “20”. According to A. Nemirovsky, the form *huθzars*, meaning “16”, is formed also by a principle of subtraction, and *-zar-* is interpreted as a variant of *zaθrum* “20” [Nemirovskij A. I., 1983, p. 93]. Such explanation seems completely unsatisfactory for several reasons. Firstly, comparison *-zar-* with *zaθrum* is too hypothetic from the phonetic point of view (other cases of simplification *zaθrum* to *zar* are unknown), whereas connection between *-zar-* and *śar-* is not underlined, so, distinction between *ciem zaθrums* “17” and *ciś śariś* is ignored. Secondly, suffix of subtraction *-em* is lacking here. At last, giving *huθzar-* the meaning “16”, A. Nemirovsky contradicts his

own opinion that *huθ* means “6”, instead of “4”, so, having accepted *huθ* “6”, we should again receive “14” after subtraction.

In the above treatment of *zar* as “10” we have to consider, first of all, the fact that *zar* has nothing in common with the well-known suffix of tens *-alχ-*. It would be more logical to assume that *-alχ-* is based on the numeral meaning “10”. Besides, one has to pay attention to the phonetic similarity not only between *zar* and *zaθrum*, but also between *zar* and *zal* “2”, and if a connection between numerals 10 and 20, or 20 and 2 is obvious, it is rather inconvenient to explain a connection between 10 and 2.

The search for a lexeme, which can be interpreted as a numeral and tied to the element *-alχ-*, has led us to some results. So, a form *halχ* (TLE 2⁴, 1⁴) was found, as well as forms *halχza* (TLE 1^{X21}), *halχze* (TLE 1^{Xγ2}), and also *hilχvetra* (TLE 1^{VI 2}, with a well-known pronominal enclitic). In our opinion, the form *halχ* cannot be divided into components, since, having separated *-alχ*, one is left with a simple aspiration *h-* as the 1st stem which is almost incredible. One may think that *halχ* precisely designates the numeral “10”; the loss of aspirate *h-* in compounded forms is not difficult to explain. However, in order to prove our assumption it is necessary to consider how appropriate forms are used in their context.

In the Capuano inscription reads as follows: *ci tartiria cim cleva acasri halχ tei vacil*. Apparently, the numeral “3” is used here twice; a gerund is formed from a basis *acas-* (“to make, suggest, endow”) with *-ri*; evidently, it is proposed here to perform some action, and certain cult objects (*tartiria*, *cleva*, *vacil*) are listed. If one excludes gerund *acasri* and pronoun *tei*, one may assume that *halχ* refers to the noun *vacil*. We believe, that a rather widespread word *vac(i)l* represents plural form⁸ (cf. TLE 228 *vaci*). In another fragment of the same Capuano text, *halχ* is connected with the form *aper* “ancestors” in which, as it can be seen, the basic Etruscan plural suffix *-r* is used. In the Zagreb book, two forms from the basis *halχ* are present which include element *-za/-ze*. Though the context, in which the word *halχze* is used, is completely unclear, the other form appears in the same fragment with numerals 1, 2, 3: *zal ešic ci halχza θu ešic zal*. Unfortunately, it is very difficult to interpret *ešic*; nevertheless, a connection between some simple numerals is evident here: *2 ešic 3 ... 1 ešic 2*. The use of the given form in this particular context presupposes an adverbial character of the form. Variability of vowels in similar positions, as well as their loss are exceedingly widespread phenomena

⁸ That the suffix *-l* can be not only a genitive formant, but also a plural suffix, may be considered as an established fact: cf. *mi murs arnθal veteš...* (TLE 420) “I am an – an *ossuarium* of Arnth Vete” and *...mursl XX* (TLE 135) “20 *ossuarium*”.

in Etruscan, therefore one can suggest that the suffix which appears as *-zi*, *-z* before known adverbs may also appear as *-za/-ze*.

Thus, it is possible to consider with certain confidence the form *halχ* as a numeral, and its meaning “10” seems to be the most probable. This conclusion is corroborated not only by phonetic similarity of *halχ* and *-alχ-* and by the usage of *halχ*, but also by the function to the well-known adverbial suffix.

Apparently, this basis with some phonetically explainable variants, is present in a certain Etruscan patrimonial name: *hulχenas* (TLE 245), *hulχuniesi* (TLE 90), *hulχniesi* (TLE 84, 91); compare the basis of Latin name *Decimus*. It is difficult to tell, whether the present basis is identical to a non-frequent form *alχu* (TLE 210, 18, 939); the combination with plural *aiser(a)* in this inscription TLE 939 can well specify a numeral. On the other hand, it is more difficult to explain the stable element *-u*, as well as fluctuations in spelling (with *h* and without it) in one and the same text.

Accepting meaning *halχ* “10”, we are compelled to search for a new explanation of *zar-/sar-*. Presence of only two compounded numerals from this basis, mentioned above *ciś śariś* (with a variant *ceś zeriś*) and *huθzars*, as well as phonetic similarity of the first element *zar*, *zathrum* and *zal*, forces us to assume the meaning “12” for *zar*, and similarity to *zal* “2” is here quite reasonable. Forms compounded with 12 can be explained as relics of a duodecimal notation. Bases *śar-* and *zar-* are united by a common phonetic feature – a rather rare Etruscan alternation *z / ś* (i.e. *zal/esl-* “2” and *śar-/zar-* “12”)⁹. Identification of a special lexeme for 12 is also supported by historical and cultural reasons, especially by a unique importance of this number in Etruria. Some other forms containing *zVr-* (TLE 1^{IX} 1, 8 *zarve*, TLE 1^V 2, 22, VII 21, IX 1, 8 *zeri*, etc.), do not provide, as it seems, the bases for comparison with *śar-/zar-* “12”; it is significant that spelling with *z* for *śar-/zar-* “12” is not found in *liber linteus*.

If we add up either *ci* or *huθ* and *zar* by the general rule, we receive consequently “15” and “16”. It is obvious, that an identification of any compounded form containing *zar* with the first component more than 4 (for example, *maχ* “5”) would invalidate our point of view because any such addition would result in a numerical value higher than

⁹ The grapheme *z* is used in Etruscan for designating various sounds, including, apparently, an affricate [tʰ]. Variant *z* sometimes appears in the position of *s* (cf. *cealχuz* (TLE 1^X 2), instead of *cealχus* (TLE 1^{IX} 2), *cealχus* (TLE 1^{XII} 12), *cialχus* (TLE 1^{XII} 50), etc.; *zuθina* (TLE 69, instead of widespread *suθi*, *suθina*); a name *zerturi* (CIE 4355): *sertur*, *serθur* (cf. *Sertorius*), *zpurana* (TLE 421, for *spur-* “city”) can be explained, as it seems, by devocalization of [z], consequently, *z* began to be used for [s]; this phenomenon was reflected in Faliscan inscriptions (when Faliscan underwent a strong Etruscan influence) – cf., for example, the form *zenatuo* (LF 59). On the other hand, *s* is not found in a position of *z*, except for bases *śar-* and *zar-*. This shows that the given bases are rather similar.

“16” (in our example with *maχ* – “17”), whereas the known regular forms are produced by the principle of subtraction¹⁰. Nevertheless, such compounded numerals are unknown; in any case, even if they will be found, they could not be used against interpretation *halχ* as “10”.

Summing up the above, we may draw some valuable conclusions. Firstly, the numeral meaning “10” in Etruscan language is *halχ*, not *zar*, as it was considered earlier, this new interpretation is based on the phonetic shape, as well as on the use and structure of derivative forms. Secondly, the most probable meaning for *zar* is “12”; both the specificity of this form and the structure of some other numeral constructions (numerals of the second ten) is explained by the once existing duodecimal system. Thirdly, the identification of *zar* = “12” makes it possible to interpret of *huθ* only as “4”, not “6”. Hopefully, our hypothesis will revive the discussion about Etruscan numerals.

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¹⁰ There are: *ciemzaθrms* “17” (TLE 166), *eslem zaθrumis* “18” (TLE 1^{VI14}), *θunem zaθrums* “19” (TLE 192).