# Numerical rhyme as an instrument measuring time/space between Indo-European languages 

Foreword: In the Zbornik of the Conference Series 2003/2004 "Origin of the Slovenians" Traces of European Past [ISBN 961 6433-34-2] [ 1.]

I had published the observation that Slavic Numerals Rhyme. It is my desire to elaborate on this observation and to create an instrument which calculates the Space/Time of the Evolution/Devolution of the many IndoEuropean languages from their Proto-Slavic Prototype

The Definition of Numerical Rhyme for the purposes of this paper is a formula, which calculates the sum of consonants, vowel and (in future work) semi-vowels and palatalizations in a set of numerals from one to ten in a given language. The vowels are here identified as $a, e, i, o$, and $u$. The consonants (here) are $b, c, d, f, g, h,(c h$ as in Bach), $k, l, m, n, p, q, r, s, t, v, x$, and $z$. The semi-vowels are $j, w$, and $y$. Palatalizations are especially common in Slavic languages. In Czech they include č, $d^{\prime}$, ě, ň, ř, š, ť and ž. For the purposes of this paper the palatalized consonants - d', ň, t', and l'may use the Slovenian lexicography $=\mathrm{dj}, \mathrm{nj}, \mathrm{tj}$, and lj . The nuances of the Slovenian system are better understood.

In calibrating the degree of rhyme;

- matching consonants will be worth four points,
- matching vowels will be worth two points,
- matching semi-vowels (S-V) and/or matching palatalizations ( $P$ ) will be worth one point (perhaps in a future paper). For now, the Polish lexicography with combinations of c-s-z ... system and the use of diacritical marks ("' and ${ }^{\circ}$ ) used in Czech, Slovenian, Slovak, and those used in Cyrillic are NOT totally compatible. It is very much like comparing the proverbial apples and oranges.... and pears, and peaches, and plums.

The reason for less points for vowels is because vowels are naturally more fugitive and subject to change within the same family of words. Consider English: band, bend, bind, bond, bound, and bundle. (The vowels change the consonants remain the same.) Thus, in additional re-visiting this line of reasoning in the future it may be useful to expand this study into palatalizations.

Allow me to demonstrate how the rhyming points will be calculated in Czech and Russian.

| Russian | odna | dva | tri | četyre | pyat' $^{\prime}$ | šest' | sem' | vosem' | devyat' $^{\prime}$ | desyat' $^{\prime}$ | Total |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Consonants (4) | d | d | tr | tr | t | t | sm | sm | dt | dt | 64 |
| Vowels (2) | a | a |  |  |  |  | e | e | ea | e a | 16 |
|  |  |  |  |  |  |  |  |  |  |  | 80 |


| Czech * | jedna | dva | tři | čtyři | pjet | sjest | sedum | osum | devjet | deset | Total |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Consonants (4) | d | d | tř | t ř | t | t | m | m | dt | dt | 56 |
| Vowels (2) | a | a | i | i | e | e | u | u | e e | e e | 24 |
|  |  |  |  |  |  |  |  |  |  |  | 80 |

Categorically it is the pairings of the lower odd number and the next higher even number which thusly rhyme. Example (in Czech) JedA \& dvA, TŘI \& čTyŘI, pĚT \& šEsT, sed*M \& os*M, DEvĚT \& DEsET. These numerals are the focus of this study. Many other languages rhyme their numerals (Eskimo, Finnish) but among Indo-Europeans only the Slavs do it so profoundly. The related Balts also rhyme their numerals to a lesser degree.

It had not escaped the notice of the author that there are other pairs, which rhyme for more mysterious purposes. For instance: (2) DVĚ \& (9) DeVĚt also display some rhyming features. In Armenian (2) yerk'u and (3) yerek - display rhyming.

We may speculate that stone-age people who fabricated baskets and cloth rhymed their numerals using the dual number for the over/under binary features of such technologies. Contemporary computer science (1011001010001) relies on the same principle. Even in the modern world we have numerical rhymes used to teach knitting and similar productions of fabrics. [3.] Musings of a Knitting Spinning Felting Dyeing Braiding Aficionado http://nurseknit.blogspot.com/2006/11/knitting-rhymes-and-surprise-video.html

While in all of the Indo-European languages there remains the similarity of phonemes representing numerals, (Sed* $m=$ Seven, Tri=Three) it is only in the Slavic Numerals that the rhyme and reason is evident. NonSlavic languages, which are (or were) in contact with Slavic languages, display some similar rhyming. This paper attempts to standardize the correlations between the linguistic distance and time and space of devolution from the original Slavic model. It begs the question if genetic distance will relate to the rhyming distance.

Abstract: Venetic/Slavic Languages rhyme their numerals by twos to a high frequency. In parts of the Slavic continuum the rhyme sometimes becomes "relaxed" as in (3) Trl \& (4) ČetyrE or rhymes simply by the ending phoneme rather than by a final (whole) syllable. Non-Slavic languages seldom rhyme their numerals. IndoEuropean languages which evolved in proximal geographical space to Slavic lands or shared time with the Slavs had retained more of the numerical rhyme than had languages which are distal or did not share history with the Slavic element. Thus, Baltic languages, which share with the Slavs a contiguous boundary as well as membership in the Balto-Slavic group of I-E languages, had retained more of the numerical rhyme than had all the other IndoEuropean tongues. Venetian and Dalmatian dialects display rhyming of numerals while Standard Italian does not. Evidently, this is because these dialects have a long history as well as geographic contact with the Slovenes and Croats. Bavarian dialect rhymes some of its numerals while Standard German rhymes not. Bohemia and Bavaria share an extensive border as well as much common history. Tocharian B (Western) rhymes more of the numerals than Tochatian $\mathbf{A}$ (Eastern), which is located further from Slavic lands. Thus, a general law of relativity is proposed which predicts the frequency of numerals (between one and ten), which rhyme in a particular language. This prediction is based on degrees of proximity (space) and duration (time) of the separation from the compulsive Slavic need to rhyme numerals. The parody to Einstein's Theory of Relativity was at first serendipitous but subsequently useful and deliberate.

Key Words: Numerals, Rhyme, Instrument, Slavic, Veneti, Proximal, Distal, NonSlavic, Dual Gramatical Number, Binary, Digital, Pairings, Masculine JEDEN - Feminine JEDNA-ENA-ODNA..., Gender Dependent Counting,

Rhyme of Numerals used as an instrument to measure the Evolution/Devolution of Indo-European Languages from their Slavic Proto-Type

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If we consider the English kinship terms: father, mother, brother, and sist*er, we aught be struck by the rather consistent endings. Lumping concepts into rhyming clusters as a demotic/heuristic device is quite common (consider hydrogen, oxygen, nitrogen, etc.). The Slavic compulsion to rhyme numerals is most audacious in the case of the dialects of Slovenian in Italy where their words for seven are SÉDAN and just to force the rhyme their word for eight is OÉSAN̊, OSAN or ÓSN. [5.] Jandáček 2004. Categorically in Slavic Languages the words for seven and eight terminate in the sound of " $m$ " as some variants of sed*m and os*m.

Hyper conformity to the rhyme of numerals is the strongest in the lands of the Slavs where the influence of the (preRoman) Veneti was profound. In Poland and Russia the rhyme becomes slightly "relaxed", and thus the Polish words for five and six have dissimilar palatalizations. In Russian the word for seven is SEM' as it had lost the Common Slavic "D" as in "SiDem".

The spelling in genes of identical twins is the same based on only four letters of the genome alphabet:

Adenine, Guanine, Thymine and Cytosine. Alas, in linguistics (with two dozen or more letters) identical twins who both use the Irish form of John can spell their names in many ways;

Shawn, Shaun, Sien, Sean, Shaughn, Shone, Chaun, Chone, and even Šán etc. Thus the soft science of linguistics will never have the rigor of chemistry and the percentage of rhyming numerals must therefore be an "intelligent estimate".

For purposes of handy reference, I provide a Table of Rhyming Slavic Numerals [2.]

| Russian | odna | dva | tri | četyre | pjat' $^{\prime}$ | šest' | sem' | vósem' | dévjat' | désjat' | Total |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Consonants (4) | d | d | tr | tr | t | t | sm | sm | dt | dt | 64 |
| Vowels (2) | a | a |  |  |  |  | e | e | ea | e a | 16 |
|  |  |  |  |  |  |  |  |  |  |  | 80 |


| Belorussian | adzna | dva | try | čatýry | pjac' | šesc' | sem | vósem | dzévjac' | dzésjac' | Total |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Consonants (4) | d | d | tr | tr | c | c | sm | sm | dz c | dz c | 72 |
| Vowels (2) | a | a | y | y |  |  | e | e | ea | e a | 20 |
|  |  |  |  |  |  |  |  |  |  |  | 92 |


| Ukrainian | odna | dva | try | čotýry | $\mathrm{p}^{\prime}$ jat' | šist' | sim | vísim | dév'jat' $^{\prime}$ | désjat' | Total |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Consonants (4) | d | d | tr | tr | t | t | s m | s m | dt | dt | 64 |
| Vowels (2) | a | a | y | y |  |  | e | e | e a | e a | 20 |
|  |  |  |  |  |  |  |  |  |  |  | 84 |


| Polish | jedna | dwa | trzy | cztery | pieć | szesć | siedem | osiem | dziewieć | dziesieć | Total |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Consonants (4) | d | d | tr | t r | c | c | m | m | dz c | dz c | 64 |
| Vowels (2) | a | a | y | y | e | e | e | e | ie ie | ie ie | 32 |
|  |  |  |  |  |  |  |  |  |  |  | 96 |


| Lower Sorbian | jadna | dwa | tso | styro | pěś | šesć | sedym | wósym | źeẃeś | źaseś | Total |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Consonants (4) | d | d | t | t | s | s | m | m | z s | z s | 48 |
| Vowels (2) | a | a | o | o | e | e | y | y | e | e | 20 |
|  |  |  |  |  |  |  |  |  |  |  | 68 |


| Czech | jedna | dva | tři | čty̌̌i | pět | šest | sedum | osum | devět | deset | Total |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Consonants (4) | d | d | tř | t ř | t | t | m | m | dt | dt | 56 |
| Vowels (2) | a | a | i | i | e | e | u | u | e e | e e | 24 |
|  |  |  |  |  |  |  |  |  |  |  | 80 |


| Upper Sorbian | jednaj | dvaj | tři | štyři | pjeć | šěsć | sydom | wósem | dźewjeć | dźesać | Total |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Consonants (4) | d | d | tr | tr | c | c | m | m | dz c | dz c | 56 |
| Vowels (2) | a | a | i | i | e | e |  |  | e | e | 16 |
|  |  |  |  |  |  |  |  |  |  |  | 72 |


| Slovak | jedna | dva | tri | štyry | pät' | šest' | sedem | osem | devät' | desät' | Total |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Consonants (4) | d | d | tr | tr | t | t | m | m | dt | dt | 56 |
| Vowels (2) | a | a | i | y |  |  | e | e | a | a | 16 |
|  |  |  |  |  |  |  |  |  |  |  | 72 |


| Slovenian | ena | dva | trije | štírje | pêt | šêst | séd*m | ós*m | devêt | desêt | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Consonants (4) |  |  | tr | tr | t | t | m | m | d t | dt | 48 |
| Vowels (2) | a | a | ie | ie | e | e | * | * | e e | e e | 28 |
|  |  |  |  |  |  |  |  |  |  |  | 76 |
|  |  |  |  |  |  |  |  |  |  |  |  |
| Doberdob (Italy) | ena | dva | tri | štiri | pet | šest | sédan | ósn | dévat | désat | Total |
| Consonants (4) |  |  | tr | tr | t | t | n | n | dt | dt | $56^{* *}$ |
| Vowels (2) | a | a | i | i | e | e | e |  | ea | e a | 22 |
|  |  |  |  | ${ }^{* *} 8$ extra bonus points for matching $n$ in $7 \& 8$ |  |  |  |  |  |  | 78 |


| Ter (Italy) | dna | dva | tri | četiéri | pét | šèst | sedan | oesań | dévat | désat | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Consonants (4) | d | d | tr | tr | t | t | n | n | dt | dt | $64^{* *}$ |
| Vowels (2) | a | a | i | i | e | e | e a | e a | e a | e a | 28 |
|  |  |  |  | ${ }^{* *} 8$ extra bonus points for matching $n$ in $7 \& 8$ |  |  |  |  |  |  | 92 |


| Savodnje (Italy) | adna | dva | tri | štír | pét | šést | sédam | o̊san | devét | desét | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Consonants (4) | d | d | tr | tr | t | t |  |  | d t | d t | $44^{* *}$ |
| Vowels (2) | a | a |  |  | e | e | a | a | e e | e e | 20 |
|  |  |  |  | ${ }^{* *}$ subtract 4 for lack of $m$ or $n$ match in $7 \& 8$ |  |  |  |  |  |  | 64 |


| Osoane (Italy) | dna | dva | tri | štíre | pet | šèist | se̊dañ | o̊san | dévat | désat | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Consonants (4) | d | d | tr | tr | t | t | n | n | d t | dt | $64^{* *}$ |
| Vowels (2) | a | a |  |  | e | e | a | a | e a | e a | 20 |
|  |  |  |  | ${ }^{* *} 8$ extra bonus points for matching $n$ in $7 \& 8$ |  |  |  |  |  |  | 84 |


| Croatian | jedna | dva | tri | četiri | pet | šest | sedam | osam | devet | deset | Total |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Consonants (4) | d | d | tr | tr | t | t | m | m | dt | dt | 56 |
| Vowels (2) | a | a | i | i | e | e | a | a | e e | e e | 24 |
|  |  |  |  |  |  |  |  |  |  |  | 80 |


| Serbian | jedna | dva | try | četyry | pet | šest | sedam | osam | devet | deset | Total |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Consonants (4) | d | d | tr | tr | t | t | m | m | dt | dt | 56 |
| Vowels (2) | a | a | y | y | e | e | a | a | e e | $\mathrm{e} e$ | 24 |
|  |  |  |  |  |  |  |  |  |  |  | 80 |


| Macedonian | edna | dva | tri | četiri | pet | šest | sedum | osum | devet | deset | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Consonants (4) | d | d | tr | tr | t | t | m | m | d t | d t | 56 |
| Vowels (2) | a | a | i | i | e | e | u | u | e e | e e | 24 |
|  |  |  |  |  |  |  |  |  |  |  | 80 |
|  |  |  |  |  |  |  |  |  |  |  |  |
| Bulgarian | edna | dva | tri | četiri | četiri | šest | sédem | ósem | dévet | déset | Total |
| Consonants (4) | d | d | tr | tr | t | t | m | m | d t | dt | 56 |
| Vowels (2) | a | a | i | i | e | e | e | e | e e | e e | 24 |
|  |  |  |  |  |  |  |  |  |  |  | 80 |

Observation: If one were to consider all of the Slavic Languages on the basis of numerals from one to ten (alone) one would be tempted to consider them to be but a single language, and even the dialects would be nearly same. One would also be struck by the high frequency of rhyme, and the proclivity to revert to rhyme. If one in the pair of numerals drifts away from the standard pronunciation, the other will soon follow.
[2.] Footnote \& SIDEBAR [The original source of the numerals here presented was from
R.J. Schellen, Balto-Slavic Numerals, http://members.tripod.com/rischellen/BaltSlavNums.htm

It was somewhat improved by Anton and Andrej Perdih in 2003. Recently Jandáček needed reassurance that a feminine form "Edna" or "Jedna" could be substituted for the masculine form "Jeden" Anatole Klyosov and Basil Chulev provided such reassurance. Jandáček needed this confirmation that "Jeden" was convertible into the feminine "Jedna" for a more perfect rhyme with Dva.]

In the case of NonSlavic languages the prevailing condition is a minimal rhyming of numerals.

| Old Prussian (BaltoSlavic) | a?ns | de?i | trijan | ketrurj? | p?nkj?i | *usjai | *sept?njai | *ast?njai | *new?njai | des?mtan | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Consonants <br> (4) |  |  | tr | tr |  |  | t n | t n |  |  | 32 |
| Vowels (2) |  |  |  |  | i | i | ai | ai | a | a | 14 |
|  |  | Observe that in OLD PRUSSIAN rhyme is a bit more than $1 / 2$ of typical Slavic 46 |  |  |  |  |  |  |  |  |  |


| Lithuanian <br> (BaltoSlavic) | víenas | du | tr?s | Keturi | penki | ?e?i | septini | a?tuoni | devyni | d??imt | Total |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Consonants (4) |  |  | tr | tr |  |  | t n | t n | d | d | 40 |
| Vowels (2) |  |  |  |  | e | e | i | i | i | ? | 12 |
|  |  |  |  |  |  |  |  |  |  |  | 52 |


| Latvian <br> (BaltoSlavic) | viens | divi | tr?<s | ?etri | pieci | se? | septini | astoni | devini | desmit | Total |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Consonants (4) |  |  | $\operatorname{tr}$ | tr | c | $?$ | tn | t n | d | d | 48 |
| Vowels (2) |  |  |  |  | e | e | i | i | ei | e i | 16 |
|  |  |  |  |  |  |  |  |  |  | 64 |  |


| Standard German | eins | zwei | drei | vier | funf | sechs | sieben | acht | neun | zehn | Total |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Consonants (4) |  |  |  |  |  |  |  |  | $n$ | $n$ | 8 |
| Vowels (2) |  | ei | ei |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  | 12 |  |


| Central Bavarian: (proximal to Czech) | oans | zwoa | drai | viare | fimbfe | sechse | simme | aochte | naine | zene | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Consonants (4) |  |  |  |  |  |  |  |  | n | n | 16 |
| Vowels (2) |  |  |  |  | e | e | e | e | e | e | 12 |
|  |  |  |  |  |  |  |  |  |  |  | 28 |
|  |  |  |  |  |  |  |  |  |  |  |  |
| Italian | uno | due | tre | quatro | cinque | sei | sette | otto | nove | dieci | Total |
| Consonants (4) |  |  | tr | tr |  |  | (tt) | (tt) |  |  | 24 |
| Vowels (2) |  |  |  |  |  |  |  |  |  |  | 0 |
|  |  |  |  |  |  |  |  |  |  |  | 24 |


| Venetian | on | do | tri | cuatro | sinque | sie | sete | oto | nove | diese | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Consonants (4) |  |  | tr | tr | S | S | t | t |  |  | 32 |
| Vowels (2) |  |  |  |  | ie | ie |  |  | e | e | 12 |
|  |  |  |  |  |  |  |  |  |  |  | 44 |
|  |  |  |  |  |  |  |  |  |  |  |  |
| Dalmatian | join | doi | tra | kwatro | chenk | si | sapto | guapto | nu | dik | Total |
| Consonants (4) |  |  | tr | tr |  |  | pt | pt |  |  | 32 |
| Vowels (2) | oi | oi |  |  |  |  | a o | a o |  |  | 16 |
|  |  |  |  |  |  |  |  |  |  |  | 48 |


| Albanian | nje | dy | tre | katér | pesé | gjasté | shtaté | teté | nénté | dgjeté | Total |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Consonants (4) |  |  | tr | tr | s | s | t | t | t | t | 40 |
| Vowels (2) |  |  |  |  | e | e | e | e | e | e | 12 |
|  |  |  |  |  |  |  |  |  |  |  | 52 |


| Greek | éna | dío | tria | tessera | pénde | éksi | eftá | oxtó | ennéa | déka | Total |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Consonants (4) |  |  | tr | tr |  |  | t | t |  |  | 24 |
| Vowels (2) |  |  | a | a |  |  |  |  |  | 4 |  |
|  |  |  |  |  |  |  |  |  |  |  | 28 |


| Hungarian | egy | kett-o | harom | negy | ot | hat | het | nyolc | kilenc | tiz | Total |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Consonants (4) |  |  |  |  | t | t |  |  |  | 4 |  |
| Vowels (2) |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  | 0 |  |


| Finnish | yksi | kaksi | kolme | nelja | viisi | kuusi | saitesman | kahdeksan | yhdeksan | kymmenen | Total |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Consonants (4) | ks | ks |  |  | s | s | n | ks n | ks n | n |  |
| Vowels (2) | i | i |  |  | i | i | a | a |  | 56 |  |
|  |  |  |  |  |  |  |  |  |  | 12 |  |


| Saami-Lapp | okta | guokte | golbma | njeallje | vihtta | guhtta | cielza | gavcci | ovcci | logi | Total |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Consonants (4) | kt | kt |  |  | htt | htt |  | cc | cc |  | 56 |
| Vowels (2) |  |  |  |  | a | a |  | i | i |  | 8 |
|  |  |  |  |  |  |  |  |  |  |  |  |

Anatolian Languages are too fragmented to be of use here

| Armenian | mek | yerk'u | yerek | cors | hing | vec | yot | ut | inn | tasn | Total |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Consonants (4) |  | rk | rk |  |  |  |  |  | n | n | 24 |
| Vowels (2) |  | e | e |  |  |  |  |  |  |  | 4 |
|  |  |  |  |  |  |  |  |  |  |  | 28 |


| English | one | two | three | four | five | six | seven | eight | nine | ten | Total |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Consonants (4) |  |  |  |  |  |  |  |  |  |  |  |
| Vowels (2) |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  | 0 |


| Turkish | bir | iki | uc | dort | bes | alti | yedi | sekiz | dokuz | on | Total |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Consonants (4) |  |  |  |  |  |  |  | kz | kz |  | 16 |
| Vowels (2) |  |  |  |  |  | i | i |  |  |  | 4 |
|  |  |  |  |  |  |  |  |  |  |  | 20 |


| Tocharian B | se | wi | trai | śtwer | piš | skas | sukt | okt | nu | śak | Total |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Consonants (4) |  |  | tr | t r | s | s | kt | kt |  |  | 40 |
| Vowels (2) |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  | 40 |


| Tocharian A | sas | wu | tre | śtwar | pañ | sak | spat | okat | nu | śak | Total |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Consonants (4) |  |  | tr | tr |  |  | t | t |  |  |  |
| Vowels (2) |  |  |  |  |  |  | a | a |  | 24 |  |
|  |  |  |  |  |  |  |  |  | 4 |  |  |

Notice that Tocharian B rhymes more than Tocharian A because it is closer to Slavic lands!

| Avestian | aeuua | duua | traiiǒ | čatBarǒ | panča | xšuuaš | hapta | ašta | nauua | dasa | Total |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Consonants (4) |  |  | $\operatorname{tr}$ | tr |  |  | t | t |  |  | 24 |
| Vowels (2) | uua | uua | o | o |  |  | a | a | a | a | 24 |
|  |  |  |  |  |  |  |  |  |  |  | 48 |


| Sanskrit | eka | dva | tri | catúr | páňca | s.as. | saptá | as.tá | náva | dáca | Total |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Consonants (4) |  |  | tr | tr |  |  | t | t |  |  | 24 |
| Vowels (2) | a | a |  |  |  |  | a | a | a a | a a | 16 |
|  |  |  |  |  |  |  |  |  |  |  | 40 |


| Swedish | en | två | tre | fyra | fem | sex | sju | atta | nio | tio | Total |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Consonants (4) |  |  |  |  |  |  |  |  |  |  |  |
| Vowels (2) |  |  |  |  |  |  |  |  | io | io | 8 |
|  |  |  |  |  |  |  |  |  |  |  | 8 |

[6.] SIDEBAR [The excellent source of the above information is the website Numerals in Over 5000 Languages, http://www.zompist.com/numbers.shtml]
"Poetic license" allows a latitude and a margin of error and bias. The author of this paper is flexible and receptive to other such calibrations. Still, he trusts that you will see at first glance that the Slavic languages rhyme their numerals MORE than others. Other languages rhyme their numerals minimally or not at all. Also it is important to notice that Lithuanian has much more rhyme than does Swedish, Finnish has much more rhyme than Saami-Lapp, Venetian and Dalmatian have more rhyme than Standard Italian, Tocharian B has more rhyme
than Tocharian A, etc. In all cases -- the more proximal the language is to Slavic Lands -- the more rhyming of numerals it has. The more distal the language is to Slavic Lands -- the less rhyme there is in the numerals. In Slavic languages the frequency of rhyme is about 80 points. In the Baltic languages the average of rhyme is about 54 points. The range of rhyme outside of the Slavic and Baltic languages is determined by distance and degree of contact.

## Discussion:

For these reasons I propose that the original Indo-European counting was invented by Stone Age Slavic tribes as a Binary System of mathematics useful in Weaving and Basketry and later punch cards used in looms and first computers. It was based on two Grammatical Genders (Jedna \& Dva).

The original (Slavoform) Indo-European Language had a DUAL Grammatical Number. This DUAL number is still used routinely in Slovenian and other Slavic languages. Even in English it is still evident in words like "either" rather than "any" and "neither" instead of "none" and "both" instead of "all". It is also evident in English measures. e.g.: Two half-pints in a pint, Two pints in a quart, 2 quarts in a Half Gallon and Two Half Gallons in a Gallon 2-4-8-16... ounces. In European Music the octaves work the same as ounces.

These are just a few examples to clarify the DUAL nature of our ancestral counting and measuring which is so well preserved in the RHYME \& REASON OF SLAVIC COUNTING.

Perhaps such "Half-Life" of Numerical Rhyme could be used to date the differentiation of Indo-European Languages.

All Indo-Europeanists are in agreement that the ORIGINAL INDO-EUROPEAN Language used Dual Number.
For more information about the earlier paper (2004) about the Slavic Rhyming of Numerals please see www.jandacek.com -- Click on PROTO-SLAVIC CONCEPTS Jandáček also speculates that the word for FIVE had its origins in the word for FIST and/or sPAN of fingers = PĚsT and/or rozPJAT. The word for six is from S JEŠTě = ŠEST. (Še Vedno in Slovenian) (or as in Russian Ещё разик, ещё да раз!) (in the song "E-E yu Khnem" Jeszcze is the first word of the Polish National Anthem. [7.] SEVEN (SED*M) is likely from SE DvĚMa (With Two). 8-Os*M or VOsZEM may be from VÁŽEM = We bundle and TIE.

* Apologia: The council of a respected colleague (Anton Perdih) proposed that I would use the forms of the first two numerals as JEDEN \& DVA. These two words do not rhyme. When at first I proposed to use the forms jednA \& dvA (because they do rhyme) my friend protested that I erred in using "wishful science". I defend my preference by these five arguements:

1. In Slovenian the normal form is EnA \& DvA.
2. When counting in the twenties $30 \mathrm{~s}, 40 \mathrm{~s}, 50$ s onto infinity -- the form of the numerals in Czech is exclusively (21) Dvacet jednA, (22) Dvacet dvA, (31) Třicet jednA, (32) Třicet dvA....... (91) Devadesát jednA, (92) Devadesát dvA (101) Sto jednA, (102) Sto dvA.......etc.
3. The two genders (feminine jednA) and (Masculine dvA) are consistent with the DUAL Number which I invoke at times in this paper (in other contexts).
4. And, yes, the Rhyme of jednA \& dvA is consistent with (3) TŘI \& (4) čTyŘI, (5) pJET \& (6) šJEsT, (7) sedUM \& (8) osUM and (9) DEvĚT \& (10) DEsET. RHYME.
5. I had consulted with Anatole Klyosov and Basil Chulev and was reassured that one can count Odna \& Dva or Edna \& Dva in other Slavic languages.

Yet another disappointment for me is that thus far I have not been able to use the various systems the Slavs use to designate palatalizations.

## References

1. Traces of European past 2003 ZBORNIK ZALOŽNIŠTVO JUTRO, Jutro d.o.o., Ljubljana 2004, Base ten counting as the extension of the archetypical base five system of Basques and Slavs, Jandacek Petr
2. R.J. Schellen, Balto-Slavic Numerals, http://members.tripod.com/rischellen/BaltSlavNums.htm

It was somewhat improved by Anton and Andrej Perdihin in 2003. Recently Jandáček needed reassurance that a feminine form "Edna" or "Jedna" could be substituted for the masculine form "Jeden" Anatole Klyosov and Basil Culev provided such reassurance. Jandáček needed this confirmation that "Jeden"was convertible into the feminine "Jedna" for a more perfect rhyme with Dva.
3. Website: http://nurseknit.blogspot.com/2006/11/knitting-rhymes-and-surprise-video.html
4. Website: http://www.zompist.com/numbers.shtml Numerals in Over 5000 Languages]
5. Website: www.jandacek.com has additional detailed information about Slavic Rhyming of Numerals
6. Website: http://www.zompist.com/numbers.htm
7. Polish National Anthem : Jeszcze Polska nie zginęła, en.wikipedia.org/wiki/Poland_Is_Not_Yet_Lost

