

MIREK ČEJKA

## LEXICOSTATISTIC DATING AND SLAVONIC LANGUAGES

### *Some Tentative Results*

0.1 A statistic analysis of basic vocabulary can provide very useful and interesting data for determining the approximate absolute and relative chronology of the development of both individual languages and language families. In the last two decades in particular, the glottochronological method, which was worked out in the fifties, chiefly by M. Swadesh, has been the principal one employed.<sup>1</sup> It will be remembered that Swadesh's method is based on the assumptions that the basic vocabulary of any language is comparatively fixed, and that over long periods of time the rate of replacement of the basic vocabulary is almost constant. For example, from one hundred most basic vocabulary items per one thousand years, only about 86 % survives; and 14 % is replaced by other words. On the basis of these assumptions it is possible to calculate the interval of time between two stages of a language whose basic vocabulary is known; it is also possible to calculate the length of time that has elapsed since the disintegration of the original linguistic unity, comparing the contemporary basic vocabularies of as many pairs of cognate languages that owe their origin to the disintegration as is possible.

0.2 It is advisable, however, to adopt a cautious approach when applying the glottochronological method because the initial assumptions of the method are for the most part empirical, and are badly in need of major theoretical justification. Glottochronology also tacitly presupposes that the development of language families from proto-languages is a process of a predominantly divergent character (cf. Schleicher's Stammbaumtheorie). The latter presupposition can certainly be accepted only with considerable limitations, especially in the case of speech communities that are geographically close to each other and/or in an intensive cultural and economical contact, to say nothing of communities bound together into a political or administrative unity. It is necessary to take into account that at certain stages the divergent factors may be suppressed while the convergent ones may become dominant. Such a complex divergent-convergent development has obviously taken place in the Slavonic languages, during the last several centuries in particular. Even considering the earliest periods of existence of the independent Slavonic languages, we must admit that no kind of complete isolation of the separated parts of the Slavonic whole that would lead to a one-way divergent development ever existed. It is true that the great geographical barriers, or divides (the Carpathians, the Alps, the Danube) were of much greater importance

than they are today, but they were neither insurmountable nor hermetic. Nor did the divisions resulting from the intrusion of ethnically foreign elements (like the Magyars or the Germans) between different parts of the Slavonic communities cause complete isolation of the divided Slavs. In the earlier stages at least, the conquerors and colonists only amounted to a very thin stratum of inhabitants in the territory concerned, over a thick layer of the autochthonous Slavonic inhabitants who continued to be in active contact with their Slavonic neighbours and certainly carried out active communication between the separated communities for a long time. In these circumstances we would hardly expect the glottochronological method to prove successful in investigating the development of the Slavonic languages.<sup>2</sup> Surprisingly enough, however, the contrary is the case: investigations produce positive results, and these fit in remarkably well with the conclusions of other linguistic and historical disciplines.

1.1 The first tentative investigations of this sort were made by the author together with A. Lampricht ten years ago; the results were published in 1963—1965.<sup>3</sup> The techniques and procedures as described chiefly in *Swadesh* 1955 and *Gudschinsky* 1956a were employed. For our comparisons we used Swadesh's 100-item list. Later on, after having thoroughly checked and corrected our original lists of the basic vocabulary of the Slavonic languages, I included the list for Macedonian, and made new calculations.<sup>4</sup> The vocabulary data of the following twelve main Slavonic languages have been compared: Byelo-Russian (Br), Bulgarian (Bu), Czech (Cz), Lower Lusatian (Ll), Upper Lusatian (Lu), Macedonian (Mc), Polish (Pl), Russian (Rs), Serbo-Croatian (Sc), Slovak (Sk), Slovene (Sn), Ukrainian (Uk).<sup>5</sup> I have calculated the time-depth  $t$ , taking the retention rate  $r = 0.864$ , for each pair of these twelve languages. The time data have been arranged according to the decreasing time-depth and the eventual approximate date of separation. The figures are of a statistical nature, and for this reason the standard deviation for probability  $p = 0.68$  has been calculated for every figure of time-depth. Such an undifferentiated set of data, however, presents only a very general and vague view of the development of the Slavonic languages. In order to get from the statistical data as much information about the processes of linguistic development as possible, I have isolated the data for each Slavonic language and recorded all pairs containing the language in question along the time-axis. It has been found that every language follows a typical pattern of the distribution of data. The basic types of distribution correspond obviously to three main branches of Slavonic languages: to the eastern, western and southern branches. This analysis is summarized in a synthetic TABLE. The data in the table are classified, according to the nature of pairs, as couples of languages belonging to the different Slavonic branches (external pairs: East—South, West—South, East—West), and as couples of languages belonging to the same Slavonic branch (internal pairs: East—East, West—West, South—South).

1.2 An analysis of the distribution of data for individual Slavonic languages has resulted in tentative conclusions which have been applied in the course of compiling the synthetic table.

1.21 First, attention should be drawn to the special place that the Slovene language occupies among the Slavonic languages. When comparing the lexico-

statistic data for Slovene, a contemporary southern Slavonic language, with the data for more distant southern Slavonic and other Slavonic languages, we can see that it shows a conspicuous similarity to the pattern of the western Slavonic languages, and that it differs considerably from the southern Slavonic one. Of course, this suggests that Slovene is a language of western Slavonic origin which has only in its later development inclined towards the southern Slavonic languages, preserving the western Slavonic lexical core in its basic vocabulary. Such an assumption agrees with the opinion of some contemporary linguists, i.e. that the old linguistic basis of the contemporary Slovene language is identical with what has been termed Alpine Slavonic, namely the language of a community which originally inhabited western Pannonia and the eastern part of the Ostmark, and had the character of a mixed transitional, rather western Slavonic language, up to the end of the 13<sup>th</sup> century. This is borne out by data of a purely linguistic character (e.g., some features in the phonemics, morphology and vocabulary of the contemporary Slovene language); philological data (as, e.g., Freising Leaves); and some data of a purely toponymical, archaeological and historical nature. In this connection, F. Bezlaj's hypothesis concerning the northern Slavonic nature of the original Slovene speech community that has developed under a strong southern Slavonic influence seems to be, in my opinion, extremely important and very appropriate.<sup>6</sup> (The rather late figures for Sn—Sc may be interpreted as obvious evidence of the above-mentioned southern Slavonic influence, or, in other words, as an instance of dominance of the convergent factors over the divergent ones; cf. 0.2.) For these reasons and for the sake of consistency I decided to present Slovene as a western Slavonic language in the table.

1.22 The section 'External Pairs' shows a remarkable concentration of the pairs of languages in the comparatively short intervals of two centuries. In my opinion, it is a clear reflection of the disintegration of the original Common Slavonic linguistic unity. According to the lexicostatistic data, the lower limit of this disintegration goes back to the 8<sup>th</sup> century and the upper limit reaches up to the turn of the 11<sup>th</sup> century. Again it is possible to refer to many important theoretical contributions in the field of Slavonic studies that present roughly the same delimitation of the disintegration of the Common Slavonic unity.<sup>7</sup> The interesting feature, namely that the lexicostatistic data fit in with the results of other linguistic disciplines to a remarkably high degree, has already been discussed elsewhere.<sup>8</sup> The occurrence of several pairs deviating in both directions from the centres of the densest accumulation can be explained partly as a random effect following from the statistic nature of the method itself, partly as a consequence of the functioning of some convergent factors (e.g., Pl—Br, Sk—Br, and perhaps Cz—Sc, Sk—Sc, too).

1.23 It has already been stated that in its attempts to determine the absolute chronology of linguistic changes, the glottochronological method presents considerable difficulties. A number of technical corrections and improvements of Swadesh's method have already been devised and suggested.<sup>9</sup> Some troublesome points could be avoided by using the results of glottochronological investigations for the determination of mere relative chronology.<sup>10</sup> If the data of absolute chronology are available (however dubious we might be as to their exactness) those of relative chronology follow automatically. For

instance, it can be clearly seen that there is an indication of relative chronology in the gradual disintegration of the initial Common Slavonic unity in the table. Since it is possible to assume that at the earlier stages of development of the Slavonic languages the divergent factors dominated over the convergent ones in a more straightforward manner than in later times, and, consequently, that the application of the glottochronological method is more adequate for the period of separation of the Slavonic branches than for the later period of the origin of the independent Slavonic languages; then it is quite probable that this representation is true and that it roughly corresponds to the actual state of affairs in the past. The data of relative chronology as indicated in our table are represented in a schematic way in the form of a DIAGRAM.

2. It may be said, I suppose, that the acceptable results obtained by a method based on empirical assumptions do increase the weight of these assumptions and the confidence in their usefulness and applicability. Let us quote *Hymes* 1960 on the results of glottochronological investigations: 'The vast bulk of the cases are found to fit external evidence or not to violate it.' It is my belief that this article may be looked upon as a confirmation of the words just quoted.

#### NOTES AND ACKNOWLEDGEMENTS

- <sup>1</sup> Cf. *Swadesh* 1950, 1952, 1954a, b, 1955, *Lees* 1953, *Gudschinsky* 1956a, *Hymes* 1960. References to more recent publications cf. *Index of Abstracts and Translations*, IJAL, 31 (1965), 1, 86.
- <sup>2</sup> An attempt to disprove the validity of glottochronology cf. *Fodor* 1961. Critical remarks to Fodor cf. *Čejka—Lamprecht* 1963, footnote 1. A discussion of the same matter on a more general level cf. *Fodor* 1965. A critical review of this book cf. *Dyen* 1971.
- <sup>3</sup> Cf. *Čejka—Lamprecht* 1963a, b, 1965.
- <sup>4</sup> The greater part of the new results was included in my lecture given at the School of Slavonic and East European Studies in London, 1968.
- <sup>5</sup> The 100-item lists for the twelve investigated Slavonic languages together with Swadesh's list for English follow as an APPENDIX. My appreciation is due particularly to A. Lamprecht (Brno) for his frequent aid in solving different etymological problems and for the valuable additions and modifications of this article which he suggested. To my colleagues I. Dorovský (Brno) and V. Majdič (Ljubljana) also go my thanks for checking the lists for Macedonian, Bulgarian, Serbo-Croatian and Slovene.
- <sup>6</sup> Cf. *Bezljaj* 1967. Bezljaj's hypothesis has been quoted recently by *Petr* 1971. Cf. also *Stanislav* 1956, 1960, *Grafenauer* 1966, *Piuk* 1950.
- <sup>7</sup> Cf. *Auty* 1964, *Birnbaum* 1970, *Čejka—Lamprecht* 1963a, b, 1965, *Dostál* 1963a, b, *Durnovo* 1929, *Furdal* 1961, *Havránek* 1963, 1968, *Jakobson* 1929 (1962), *Lamprecht* 1956, *Lunt* 1959, *Mareš* 1956, 1961, *Toporov* 1959, *Trubeckoj* 1922, 1924, 1954, *Wijk* 1927, 1949/50, 1956.
- <sup>8</sup> Cf. *Čejka—Lamprecht* 1963a, b, 1965.
- <sup>9</sup> Cf., e. g., *Dyen* 1964, *Dyen—James—Cole* 1967.
- <sup>10</sup> Cf., e. g., *Rodrigues* 1957, *Klimov* 1961.

#### REFERENCES

- Auty, R., *Community and divergence in the history of the Slavonic languages*. SEER, 42 (June 1964), 99, 256—273.
- Bezljaj, F., *Eseji o slovenskem jeziku*. Ljubljana, 1967.
- Birnbaum, H., *Zur Problematik der zeitlichen Abgrenzung des Urslavischen*. Zeitschrift für slavische Philologie 35 (1970), 1, 1—62.

- Cejka, M.—Lamprecht, A., *Jak staré jsou slovanské jazyky*. Věda a život, February 1963a, 2, 100—103.
- , *K otázce vzniku a diferenciacie slovanských jazyků*. Sborník prací filosofické fakulty brněnské university, A 11 (1963b), 5—20.
- , *K voprosu o slavjanskom jazykovom jedinstve v period prichoda v Moraviju Konstantina i Mefodija*. Magna Moravia: Sborník k 1100. výročí příchodu byzantské mise na Moravu. (= Spisy University J. E. Purkyně v Brně, filosofická fakulta, No. 102.) Prague, 1965, pp. 461—468.
- Dostál, A., *Několik úvah o praslovanštině*. Studia linguistica in honorem Thaddaei Lehr—Splawiński. Warsaw, 1963a, pp. 71—79.
- , *Staroslověnský jazyk, jeho strukturní charakteristika a lokální typy*. Československé přednášky pro V. mezinárodní sjezd slavistů v Sofii. Prague, 1963b, pp. 11—28.
- Durnovo, N. N., *K voprosu o vremeni raspadenija obščeslavjanskogo jazyka*. Sborník prací I. sjezdu slovanských filologů v Praze 1929, Vol. II: Přednášky. Prague, 1932, pp. 514—526.
- Dyen, I., *On the validity of comparative lexicostatistics*. Proceedings of the Ninth International Congress of Linguists, Cambridge, Mass., August 27—31, 1962. Ed. Horace G. Lunt. The Hague, 1964, pp. 238—252.
- Dyen, I.—James, A. T.—Cole, J. W. L., *Language divergence and estimated word retention rate*. Language 43 (March 1967), 1, 150—171.
- Dyen, I., *review of Fodor 1965*. IJAL 37 (1971), 2, 130—134.
- Fodor, I., *The validity of glottochronology on the basis of the Slavonic languages*. Studia Slavica 4 (1961), 7.
- , *The rate of linguistic change*. The Hague, 1965.
- Furdal, A., *Rozpad języka prasłowiańskiego w świetle rozwoju glosowego*. Wrocław, 1961.
- Grafenauer, B., *Die ethnische Gliederung und geschichtliche Rolle der westlichen Südslawen im Mittelalter*. Bericht für den I. Balkanologischen Kongress in Sofija, vom 26. VIII. — 1. IX. 1966 (ungekürzte Fassung). Ljubljana, 1966.
- Gudschinsky, S. C., *The ABC's of lexicostatistics (glottochronology)*. Word, 12 (1956a), 175—210.
- , *Three disturbing questions concerning lexicostatistics*. IJAL, 22 (1956b), 212—213.
- Havránek, B., *Počátky slovanského písma a psané literatury v době velkomoravské*. Velká Morava (Tisíciletá tradice státu a kultury). Prague, 1963, pp. 77—96.
- , *Cyrillo-Methodianische Fragen, Slavische Philologie und Altertumskunde*. Acta Congressus historiae Slavicae Salisburgensis in memoriam SS. Cyrilli et Methodii anno 1963 celebrati. Wiesbaden, 1968. (= Annales Instituti Slavici, I, 4, ed. F. Zagiba.)
- Hoijer, H., *Lexicostatistics — A critique*. Language, 32 (1956), 49—60.
- Hymes, D. H., *Lexicostatistics so far*. Current Anthropology, 1 (1960), 1.
- Jakobson, R., *Remarques sur l'évolution phonologique du russe comparée à celle des autres langues slaves*. TCLP, 2 (1929). Reprinted in Roman Jakobson: Selected writings I. The Hague, 1962.
- Klimov, G. A., *O leksiko-statističeskoj teorii M. Svodeša*. Voprosy teorii jazyka v sovremennoj zarubežnoj lingvistike. Moscow, 1961, pp. 239—253.
- Lamprecht, A., *Neskolko zamečanij o razvitii fonetičeskoj sistemy praslavjanskogo jazyka*. Sborník prací filosofické fakulty brněnské university, A 4 (1956), 17—23.
- Lees, R. B., *The basis of glottochronology*. Language, 29 (1953), 113—127.
- Lunt, H. G., *Old Church Slavonic grammar*. The Hague, 1959 (2<sup>nd</sup> rev. ed.).
- Mareš, F. V., *Vznik slovanského fonologického systému a jeho vývoj do konce období slovanské jazykové jednoty*. Slavia, 25 (1956), 443—495.
- , *Drevneslavjanskij literaturnyj jazyk v Velikomoravskom gosudarstve*. VJa, 10 (1961), 2, 12—23.
- Petr, J., *Základy slovinštiny*. Prague, 1971.
- Piuk, K., *Zur Frage der Slawen in Pannonien im 9. Jahrhundert*. Wiener slavistisches Jahrbuch, 1 (1950), 112—130.

- Rodrigues, A. dall'Igna, *Eine neue Datierungsmethode der vergleichenden Sprachwissenschaft*. Kratylos, 2 (1957), 1.
- Stanislav, J., *Dejiny slovenského jazyka I*. Bratislava, 1956.
- , *Zo slovanského miestopisu v neslovanských krajinách. (Podunajské a alpské územie v Rakúsku, Panónia.)* Jazykovedný časopis, 11 (1960), 63–77.
- Swadesh, M., *Salish internal relationships*. IJAL, 16 (1950).
- , *Lexico-statistic dating of prehistoric ethnic contacts, with special reference to North American Indians and Eskimos*. Proceedings of the American Philosophical Society, 96 (1952), 452–463.
- , *Perspectives and problems of American comparative linguistics*. Word, 10 (1954a).
- , *Time depths of American linguistic groupings*. American Anthropologist, 56 (1954b).
- , *Towards greater accuracy in lexicostatistic dating*. IJAL, 21 (1955), 121–137.
- Toporov, V. N., *Nekotoryje soobraženija otnositelno izučeniija istorii praslavjanskogo jazyka*. Slavjanskoje jazykoznanije. Sbornik statej. Moscow, 1959, pp. 3–27.
- Trubeckoj, N. S., *Essai sur la chronologie de certains faits phonétiques du slave commun*. RES, 2 (1922), 217–234.
- , *Einiges über die russische Lautentwicklung und die Auflösung der gemeinrussischen Sprachinheit*. Zeitschrift für slavische Philologie, 1 (1924), 287–319.
- , *Altkirchenslavische Grammatik*. Vienna, 1954. (= Österr. Akad. d. Wiss., Philos.-hist. Kl., Sb., 228 : 4.)
- Wijk, N. van, *O dwóch okresach w rozwoju języka prasłowiańskiego i o ich znaczeniu dla językoznawstwa ogólnego*. PF, 12 (1927), 395–404.
- , *K istorii fonologičeskoj sistemy v obščeslavjanskom jazyke pozdnego perioda*. Slavia, 19 (1949/50), 293–313.
- , *Les langues slaves. De l'unité à la pluralité*. The Hague, 1956. (= Janua Linguarum, II.)

## APPENDIX

## 100-Item Lists of the Basic Vocabulary

## English (After Swadesh 1955)

1 I	26 root	51 breast	76 rain
2 thou	27 bark	52 heart	77 stone
3 we	28 skin	53 liver	78 sand
4 this	29 meat	54 drink	79 earth
5 that	30 blood	55 eat	80 cloud
6 who	31 bone	56 bite	81 smoke
7 what	32 fat	57 see	82 fire
8 not	33 egg	58 hear	83 ashes
9 all	34 horn	59 know	84 burn
10 many	35 tail	60 sleep	85 road
11 one	36 feather	61 die	86 mountain
12 two	37 hair	62 kill	87 red
13 big	38 head	63 swim	88 green
14 long	39 ear	64 fly	89 yellow
15 small	40 eye	65 walk	90 white
16 woman	41 nose	66 come	91 black
17 man	42 mouth	67 lie	92 night
18 person	43 tooth	68 sit	93 hot
19 fish	44 tongue	69 stand	94 cold
20 bird	45 claw	70 give	95 full
21 dog	46 foot	71 say	96 new
22 louse	47 knee	72 sun	97 good
23 tree	48 hand	73 moon	98 round
24 seed	49 belly	74 star	99 dry
25 leaf	50 neck	75 water	100 name

## Byelo-Russian

1 ja	26 koran'	51 hrudzi	76 doždž
2 ty	27 kara	52 serca	77 kamen
3 ny	28 skura	53 pečan'	78 pjasok
4 hety	29 mjasa	54 pic'	79 zjamlja
5 toj	30 krou	55 jesoi	80 voblaka
6 xto	31 kosc'	56 kusac'	81 dym
7 što	32 tlušč	57 bačyc'	82 ahon'
8 ne	33 jajoo	58 čuc'	83 popel
9 uvos'	34 roh	59 znac'	84 palyc'
10 šmat	35 xvost	60 spac'	85 daroha
11 adzin	36 pjaro	61 pamerci	86 hara
12 dva	37 valaasy	62 zabie'	87 tyrvony
13 vjaliki	38 halava	63 plyc'	88 zjaljony
14 douhi	39 vuxa	64 ljacec'	89 žouty
15 malen'ki	40 voka	65 isci	90 bely
16 žančyna	41 nos	66 pryjsci	91 čorny
17 mužčyna	42 rot	67 ljažac'	92 noč
18 čalavek	43 zub	68 sjadzec'	93 haračy
19 ryba	44 jazyk	69 stjajac'	94 xalodny
20 ptuška	45 kipcjur	70 dac'	95 pouny
21 sabaka	46 naha	71 skazac'	96 nowy
22 voš	47 kalena	72 sonca	97 dobry
23 dreva	48 ruka	73 mesjac	98 kruhly
24 semja	49 žyvot	74 zara	99 suxi
25 list	50 šyja	75 vada	100 imja

## Bulgarian

1 az	26 koren	51 grădi	76 dăžd
2 ti	27 kora	52 sărdce	77 kamăk
3 nie	28 koža	53 drob	78 pjasăk
4 toj	29 meso	54 pija	79 zemja
5 tozi	30 krăv	55 jada	80 oblak
6 koj	31 kost	56 xapja	81 dim
7 kakvo	32 maz	57 gledam	82 ogăn
8 ne	33 jajee	58 čuja	83 pepel
9 vsičko	34 rog	59 znaja	84 palja
10 mnogo	35 opaška	60 spija	85 păt
11 edin	36 pero	61 umiram	86 planina
12 dva	37 kosa	62 ubivam	87 červen
13 goljam	38 glava	63 plavja	88 zelen
14 dălăg	39 uxo	64 letja	89 žălt
15 mal	40 oko	65 idam	90 bjal
16 žena	41 nos	66 idvam	91 čeren
17 măž	42 usta	67 ležam	92 nošt
18 čovek	43 zăb	68 sjadam	93 gorešt
19 riba	44 ezik	69 stoja	94 studen
20 ptica	45 nokăt	70 davam	95 pălen
21 kuče	46 krak	71 kaža	96 nov
22 văška	47 koljano	72 slănca	97 dobăr
23 drăvo	48 răka	73 luna	98 krăgăl
24 seme	49 korem	74 zvezda	99 sux
25 list	50 vrat	75 voda	100 ime

## Czech

1 já	26 kořen	51 prsa	76 déšť
2 ty	27 kůra	52 srdce	77 kámen
3 my	28 kůže	53 játra	78 písek
4 tento	29 maso	54 pít	79 země
5 onen	30 krev	55 jíst	80 mrak
6 kdo	31 kost	56 kousat	81 kouř
7 co	32 tuk	57 vidět	82 oheň
8 ne	33 vejce	58 slyšet	83 popel
9 všechno	34 roh	59 znát	84 pálit
10 mnoho	35 ocas	60 spát	85 cesta
11 jeden	36 pero	61 zemřít	86 hora
12 dva	37 vlasy	62 zabít	87 červený
13 velký	38 hlava	63 plavat	88 zelený
14 dlouhý	39 ucho	64 letět	89 žlutý
15 malý	40 oko	65 jít	90 bílý
16 žena	41 nos	66 přijít	91 černý
17 muž	42 ústa	67 ležet	92 noc
18 člověk	43 zub	68 sedět	93 horký
19 ryba	44 jazyk	69 stát	94 studený
20 pták	45 dráp	70 dát	95 plný
21 pes	46 noha	71 říci	96 nový
22 veš	47 koleno	72 slunce	97 dobrý
23 strom	48 ruka	73 měsíc	98 kulatý
24 semeno	49 břicho	74 hvězda	99 suchý
25 list	50 krk	75 voda	100 jméno

## Lower Lusatian

1 ja	26 korjeń	51 brust	76 dešč
2 ty	27 škora	52 wutšoba	77 kamjeń
3 my	28 koža	53 jětša	78 pěsk
4 ten	29 měso	54 piš	79 zemja
5 wony	30 kšej	55 jěšć	80 mrok
6 ohto	31 kosć	56 kusaš	81 dym
7 co	32 tuk	57 wižeš	82 wogeń
8 ně	33 jajo	58 słyšaš	83 popjel
9 wšen	34 rog	59 znaš	84 pališ
10 wjele	35 wopuš	60 spaš	85 droga
11 jaden	36 pjero	61 mrěš	86 gora
12 dwa	37 wlosy	62 zabiš	87 cerwjeny
13 wjeliki	38 głowa	63 plěš	88 zeleny
14 dlujki	39 wucho	64 lešeš	89 žolty
15 mały	40 woko	65 hyš	90 běly
16 žona	41 nos	66 pišić	91 carny
17 muž	42 guba	67 lažaš	92 noc
18 cłowjek	43 zub	68 sejžeš	93 gorucy
19 ryba	44 jězyk	69 stojaš	94 zymny
20 ptašk	45 pazora	70 daš	95 połny
21 pjas	46 noga	71 groniš	96 nowy
22 weš	47 koleno	72 słyńco	97 dobry
23 bom	48 ruka	73 mjasec	98 kulowaty
24 semje	49 brjuch	74 gwězda	99 suchy
25 łopjeno	50 šyja	75 woda	100 mě



## Upper Lusatian

1 ja	26 korjeń	51 hruź	76 deść
2 ty	27 skora	52 wutroba	77 kamjeń
3 my	28 koža	53 jatra	78 pěsk
4 tón	29 mjaso	54 pić	79 zemja
5 wony	30 krej	55 jěsć	80 mrok
6 štó	31 kósć	56 kusać	81 dym
7 što // čo	32 tuk	57 widžeć	82 woheń
8 ně	33 jejo	58 słyšeć	83 popjel
9 wšo	34 rón	59 znać	84 palić
10 wjele	35 wopuš	60 spać	85 puć
11 jedyn	36 pjero	61 mrěć	86 hora
12 dwaj	37 włosy	62 zabić	87 čerwjeny
13 wulki	38 hłowa	63 plować	88 zeleny
14 dołhi	39 wucho	64 lećeć	89 žołty
15 mały	40 woko	65 hić	90 běly
16 žona	41 nós	66 přińć	91 čorny
17 muž	42 huba	67 ležeć	92 nóc
18 čłowjek	43 zub	68 sedžeć	93 horcy
19 ryba	44 jazyk	69 stać	94 zymny
20 ptak	45 pazor	70 dać	95 pozny
21 pos	46 noha	71 rjec	96 nowy
22 woš	47 koleno	72 slónceo	97 dobry
23 štom	48 ruka	73 měsáčk	98 kulowaty
24 symjo	49 brjuch	74 hwězda	99 suchi
25 łopjeno	50 šija	75 woda	100 mjeno

## Macedonian

1 jas	26 koren	51 gradi	76 dožd
2 ti	27 kora	52 sree	77 kamen
3 nie	28 koža	53 (crn) drób	78 pesok
4 ovoj	29 meso	54 pijam	79 zemja
5 onoj	30 krv	55 jadam	80 mrak
6 koj	31 koska	56 kasam	81 dim
7 što	32 maz	57 gledam	82 ogan
8 ne	33 jajce	58 čuvam	83 pepel
9 se	34 rog	59 znam	84 goram
10 mnogu	35 opaška	60 spijam	85 pat
11 eden	36 pero	61 unram	86 planina
12 dva	37 kosi	62 ubivam	87 crven
13 golem	38 glava	63 plivam	88 zelen
14 dolg	39 uvo	64 letam	89 žolt
15 mal	40 oko	65 idam	90 bel
16 žena	41 nos	66 doad'am	91 crn
17 muž	42 usta	67 ležam	92 not'
18 čovek	43 zab	68 sedam	93 žežok
19 riba	44 jazik	69 stojam	94 studen
20 ptica	45 gandži	70 dam	95 poln
21 kuće	46 noga	71 veljam	96 nov
22 voška	47 koleno	72 sonce	97 dobar
23 drvo	48 raka	73 mesečina	98 trkalezen
24 seme	49 mev	74 dzvezda	99 suv
25 list	50 vrat	75 voda	100 ime

## Polish

1 ja	26 korzeń	51 pierś	76 deszcz
2 ty	27 kora	52 serce	77 kamień
3 my	28 skóra	53 wątroba	78 piasek
4 ten	29 mięso	54 pić	79 ziemia
5 ów	30 krew	55 jeść	80 chmura
6 kto	31 kość	56 gryźć	81 dym
7 co	32 tłuszcz	57 widzieć	82 ogień
8 nie	33 jajko	58 słyszeć	83 popiel
9 wszystko	34 róg	59 znać	84 palić
10 wiele	35 ogon	60 spać	85 droga
11 jeden	36 pióro	61 umrzeć	86 góra
12 dwa	37 włosy	62 zabić	87 czerwony
13 duży	38 głowa	63 pływać	88 zielony
14 długi	39 ucho	64 lecieć	89 żółty
15 mały	40 oko	65 iść	90 biały
16 kobieta	41 nos	66 przyjść	91 czarny
17 męzozyczna	42 usta	67 leżeć	92 noc
18 człowiek	43 ząb	68 siedzieć	93 gorący
19 ryba	44 język	69 stać	94 zimny
20 ptak	45 pazur	70 dać	95 pełny
21 pies	46 noga	71 powiedzieć	96 nowy
22 wesz	47 kolano	72 słońce	97 dobry
23 drzewo	48 ręka	73 księżyc	98 okrągły
24 siemię	49 brzuch	74 gwiazda	99 suchy
25 list	50 szyja	75 woda	100 imię

## Russian

1 ja	26 koren'	51 grud'	76 dožd'
2 ty	27 kora	52 serdce	77 kamen'
3 my	28 škura	53 pečen'	78 pesok
4 etot	29 mjaso	54 pit'	79 zemlja
5 tot	30 krov'	55 jest'	80 tuča
6 kto	31 kost'	56 kusat'	81 dym
7 što	32 žir	57 videt'	82 ogon'
8 ne	33 jajco	58 slyšat'	83 zola
9 ves'	34 rog	59 znat'	84 žeč'
10 mnogo	35 xvost	60 spat'	85 doroga
11 odin	36 pero	61 umeret'	86 gora
12 dva	37 volosy	62 ubit'	87 krasnyj
13 bolšoj	38 golova	63 plyt'	88 zelenyj
14 dlennyj	39 uxo	64 letet'	89 želtyj
15 malen'kij	40 glaz	65 itti	90 belyj
16 ženščina	41 nos	66 priiti	91 černyj
17 mužčina	42 rot	67 ležat'	92 noč'
18 čelovek	43 zub	68 sidet'	93 gorjačij
19 ryba	44 jazyk	69 stojat'	94 xolodnyj
20 ptica	45 kogot'	70 dat'	95 polnyj
21 sobaka	46 noga	71 skazat'	96 novyj
22 voš'	47 koleno	72 solnce	97 xorošij
23 derevo	48 ruka	73 luna	98 kruglyj
24 semja	49 život	74 zvezda	99 suxoj
25 list	50 šeja	75 voda	100 imja

## Serbo-Croatian

1 ja	26 koren	51 grudi	76 kiša
2 ti	27 kora	52 srce	77 kamen
3 mi	28 koža	53 (crna) džigerica	78 pesak
4 ovaj	29 meso	54 piti	79 zemlja
5 onaj	30 krv	55 jesti	80 oblak
6 ko	31 kost	56 gristi	81 dim
7 što	32 mast	57 videti	82 vatra
8 ne	33 jajce	58 čuti	83 pepeo
9 sve	34 rog	59 znati	84 paliti
10 mnogo	35 rep	60 spavati	85 put
11 jedan	36 pero	61 umreti	86 gora
12 dva	37 kosa	62 ubiti	87 crven
13 velik	38 glava	63 plivati	88 zelen
14 dug	39 uho	64 leteti	89 žut
15 mali	40 oko	65 ići	90 beo
16 žena	41 nos	66 doći	91 crn
17 muškarac	42 usta	67 ležati	92 noć
18 čovek	43 zub	68 sedeti	93 vruć
19 riba	44 jezik	69 stajati	94 studen
20 ptica	45 kandža	70 dati	95 pun
21 pas	46 noga	71 reći	96 nov
22 uš	47 koleno	72 sunce	97 dobar
23 drvo	48 ruka	73 mesec	98 okrugao
24 seme	49 trbuh	74 zvezda	99 suh
25 list	50 vrat	75 voda	100 ime

## Slovak

1 ja	26 koreň	51 prsia	76 dážd
2 ty	27 kora	52 srdce	77 kameň
3 my	28 koža	53 pečeň	78 piesok
4 tento	29 mäso	54 piť	79 zem
5 onen	30 krv	55 jesť	80 mrak
6 kdo	31 kost	56 hrýzt	81 dym
7 čo	32 tuk	57 vidieť	82 oheň
8 nie	33 vajce	58 (po)čut	83 popol
9 všetok	34 roh	59 znat	84 páliť
10 veľa	35 chvost	60 spať	85 cesta
11 jeden	36 pero	61 zomrieť	86 hora
12 dva	37 vlasy	62 zabíť	87 červený
13 veľký	38 hlava	63 plávať	88 zelený
14 dlhý	39 ucho	64 letieť	89 žltý
15 malý	40 oko	65 ísť	90 biely
16 žena	41 nos	66 prísť	91 čierny
17 muž	42 ústa	67 ležať	92 noc
18 človek	43 zub	68 sedieť	93 horúci
19 ryba	44 jazyk	69 stáť	94 studený
20 vták	45 pazúr	70 dať	95 plný
21 pes	46 noha	71 povedať	96 nový
22 voš	47 koleno	72 slnko	97 dobrý
23 strom	48 ruka	73 mesiac	98 gulatý
24 semeno	49 brucho	74 hviezda	99 suchý
25 list	50 krk	75 voda	100 meno

## Slovene

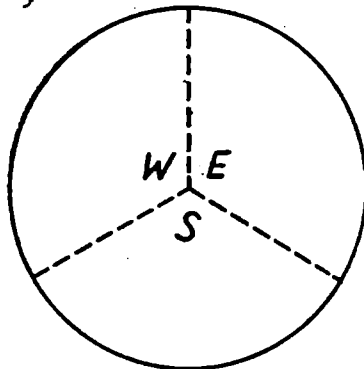
1 jaz	26 korenina	51 prsi	76 dež
2 ti	27 skorja	52 srce	77 kamen
3 mi	28 koža	53 jetra	78 pesek
4 ta	29 meso	54 piti	79 zemlja
5 oni	30 kri	55 jesti	80 oblak
6 kdo	31 kost	56 gristi	81 dim
7 kaj	32 mast	57 videti	82 ogenj
8 ne	33 jajce	58 slišati	83 pepel
9 vse	34 rog	59 znati	84 kuriti
10 mnogo	35 rep	60 spat	85 cesta
11 eden	36 pero	61 umreti	86 gora
12 dva	37 lasje	62 ubiti	87 rdeč
13 velik	38 glava	63 plavati	88 zelen
14 dolg	39 uho	64 leteti	89 rumen
15 majhen	40 oko	65 iti	90 bel
16 ženska	41 nos	66 priti	91 črn
17 moški	42 usta	67 ležati	92 noč
18 človek	43 zob	68 sedeti	93 vroč
19 riba	44 jezik	69 stati	94 mrzel
20 ptič	45 krempelj	70 dati	95 poln
21 pes	46 noga	71 reči	96 nov
22 uš	47 koleno	72 sonce	97 dober
23 drevo	48 roka	73 mesec	98 okrogel
24 seme	49 trebuh	74 zvezda	99 suh
25 list	50 vrat	75 voda	100 ime

## Ukrainian

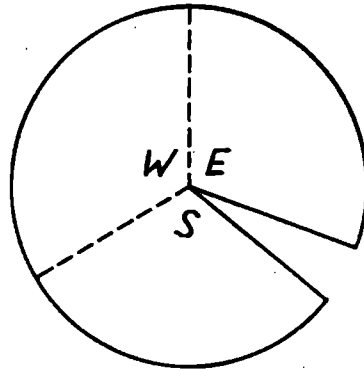
1 ja	26 korin'	51 hrudy	76 došč
2 ty	27 kora	52 serce	77 kamin'
3 my	28 škira	53 pečinka	78 pisok
4 cej	29 m'jaso	54 pyty	79 zemlja
5 toj	30 krov	55 jisty	80 xmara
6 rto	31 kistka	56 kusaty	81 dym
7 ščo	32 žyr	57 bačyty	82 vohon'
8 ne	33 jajce	58 čuty	83 zola
9 ves'	34 rih	59 znaty	84 palyty
10 bahato	35 xvist	60 spaty	85 doroha
11 odyn	36 pero	61 umerty	86 hora
12 dva	37 volosy	62 zabyty	87 červonyj
13 velykyj	38 holova	63 plysty	88 zelenyj
14 dovhyj	39 vuxo	64 letity	89 žovtyj
15 malen'kyj	40 oko	65 ity	90 bilyj
16 žinka	41 nis	66 pryjty	91 čornyj
17 čolovik	42 rot	67 ležaty	92 nič
18 ljudyna	43 zub	68 sydity	93 harjačyj
19 ryba	44 jazyk	69 stojaty	94 xolodnyj
20 ptax	45 kihot'	70 daty	95 povnyj
21 sobaka	46 noha	71 skazaty	96 novyj
22 voša	47 kolino	72 sonce	97 dobryj
23 derevo	48 ruka	73 misjac	98 kruhlyj
24 sim'ja	49 žyvit	74 zorja	99 suxyj
25 lyst	50 šyja	75 voda	100 im'ja

# DIAGRAM

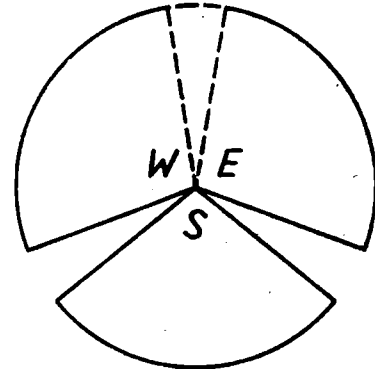
## Relative Chronology of the Disintegration of the Slavonic Unity



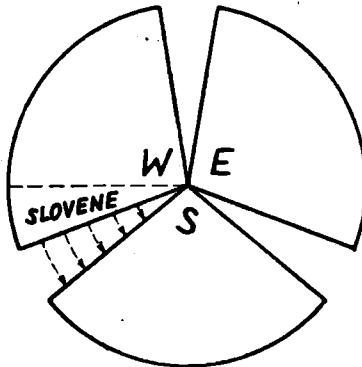
Until 8<sup>th</sup> cent.



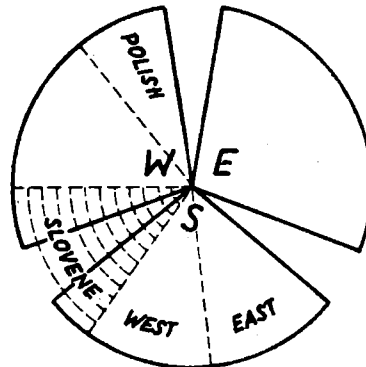
9<sup>th</sup> - 10<sup>th</sup> cent.



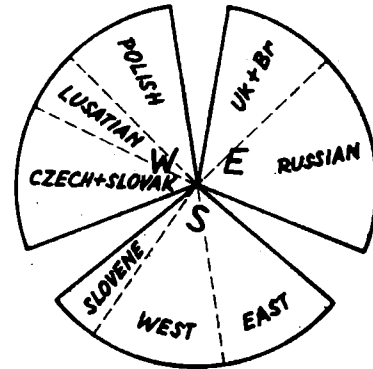
10<sup>th</sup> - 11<sup>th</sup> cent.



11<sup>th</sup> - 12<sup>th</sup> cent.



12<sup>th</sup> - 14<sup>th</sup> cent.



15<sup>th</sup> - 16<sup>th</sup> cent.

LEXIKOSTATISTICKÉ DATOVÁNÍ A SLOVANSKÉ  
JAZYKY

Statistická analýza základního slovníku dvanácti slovanských jazyků provedená s pomocí glottochronologické metody poskytuje soubor údajů o předpokládané absolutní i relativní chronologii rozpadu praslovanské jednoty. Vychází se z porovnání 100 nejzákladnějších slov u všech dvojic zkoumaných slovanských jazyků a vypočítává se přibližné datum divergence. Údaje pro všechny dvojice, do nichž jistý jazyk vstupuje, tvoří na časové ose jistý distribuční vzorec. Syntetická tabulka ukazuje zřetelně vývojové procesy rozpadu slovanské jednoty do tří hlavních větví. Základní diferenciacie na jižní, západní a východní větev proběhla v intervalu mezi začátkem 8. – koncem 11. století s centrem divergenční aktivity ve století 10. V souboru údajů se slovinština projevuje daleko více jako jazyk západoslovanský než jihoslovanský. Převážná většina dat získaných lexikostatistickou metodou se shoduje s údaji, jež byly získány jinými jazykovědnými metodami.