Some Properties of Rhyme

by

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Contents

1. Introduction

It is impossible to write a full analysis even of a short text. A text, just like the world, has as many aspects as we are able to discover or to define in it. Since science develops, the number of aspects increases, too. The aspects are determined by us according to our interest. Something in the text is important for literary science, something else for politics, culture, psychology, cooking, or the news reported by it. There are many books written about text analysis; in them, one has discovered a lot of regularities some of which attained the status of laws, i.e. they have been derived from a theory constructed in the background, its individual hypotheses have been positively tested and one has found links between the given and other properties of the text. Quantitative text analysis becomes slowly unfathomable and the production of books increases quickly using mechanical computing machines. Here we shall restrict ourselves to a smaller circle of problems, namely those of rhyme and shall not try to construct a theory but rather derive some concrete hypotheses and describe some properties of the given texts. The result should help to make a step into the depth.

Rhyme is represented by the phonetic similarity of words occurring – in our case – at the end of the lines of a poem. There are, of course, also internal or initial rhymes but we can omit them here. Since they are constructed of words or parts of words, e.g. syllables, morphemes, clitics, or simply vowels, they have a number of properties many of which have been at least stated and classified. There are descriptions in many languages. Inventories of properties can be found also on the Internet in many languages (e.g.https://de.wikipedia.org/wiki/ Reim# Reime_nach_ phonologischer_Struktur or https://en.wikipedia.org/wiki/ Rhyme). Needless to say, in every language there are also poems without rhyme.

Rhyme, just as any other linguistic entity, has as many properties as we are able to define. If it consists of words, it has all the properties of a word. These properties can be quantified, measured, and ordered according to size and one can fit a mathematical model to this order. One fits it either tentatively, inductively, i.e. one seeks a function or distribution which expresses the order of numbers adequately; or one works deductively and starts with an hypothesis containing some factors which are active during the writing of the text.

Rhyme is a linguistic construct and as such it is a part of a dynamic system – called language – underlying self-organization and self-regulation. The simplest process concerning rhyme is the development of its properties in time. One can conjecture that without any development, rhymes can become trivial, expected and aesthetically inefficient. In order to avoid this state, there are already rhyme dictionaries in some languages. Since rhyme has an aesthetic function, it must change its form just as anything else in art. Further, since it is a linguistic structure, its properties must be in some association with other linguistic properties; that means, there are some links between the rhyme-type and the other words of the verse, or between the rhyme and some properties of language, or between the various properties of rhyme. However, it is not always easy to find them. Are the rhyme properties associated with the properties of the given poem?

But how should one define the properties of poems? And what is more: how do we quantify and measure them?

The classification of rhymes is merely a problem of definitions, the first activity in any type of research, but the quantification of their properties, interrelations and development is a continuation of this first step landing finally somewhere in mathematics. Needless to say, one cannot scrutinize everything at once but one can show a way which could be followed, corroborated or rejected. One can try to look behind the curtain of surface and make a step into the depth.

Here we shall be concerned with the numeric evaluation of some properties both with individual writers and in language as a whole. There are few historical investigations up to now. We can mention e.g. the study of the evolution of the open rhyme in Slovak which displays a clear tendency (cf. Štukovský, Altmann 1965, 1966). Does it exist in other languages, too?

In what follows, we shall investigate the length of the rhyme word, its appartenance to a part of speech, the open and closed rhyme words, and the pairs of rhyme words; we shall compare poems, writers, languages, types of poetry. We shall try to quantify each aspect, set up models and perform significance tests. It is not possible to study all forms of rhyme because the number of types is enormous and we must restrict ourselves to a small number of languages. For each problem we use some poems in different languages but not necessarily all of our data. A detailed analysis of all poems by the Romanian poet M.Eminescu has already been presented (cf. Popescu et al. 2015), here we shall try to generalize it.

It must be remarked that the last word of the line is taken into account only if it forms a rhyme with the last word of some other verse. The not rhymed verses were simply omitted; if three verses formed a rhyme than all three were counted and there were two subsequent pairs.

As will be shown, the mathematical modeling of rhyme properties is no simple matter. Since we have to do with different languages, different authors who wrote the poems in their private development, different age, different contents, different styles, etc., we must expect that every point of view brings at least one model, and there will always be exceptions that cannot be satisfactorily captured. But the striving for high artistic performance forces the poet to go his own way which is not the same as with other authors. From our point of view, we strive merely to capture formally the regularities – if there are any – leaving the comment concerning exceptions to a collaboration of literary scientists and ”qualitative” linguists.

A very complex question which has not been even touched up to now is the relation between rhyme words. The question is: are the rhymed words in some relation to one another? Consider for example the rhymed words in the first strophe of *Der Erlkönig* by Goethe: *Wind – Kind; Arm – warm* (wind – child; arm – warm). There is surely no semantic relation. But there may be poems in which one finds something. Hence poems can be distinguished also according to the degree of semantic relations of rhymed words. The question is how to measure the degree of semantic or grammatical, or phonetic relation. Could one take into account historical issues, earlier occurrence together, the extent of phonetic

similarity, etc. Could one consider the rhyme words as belonging to various hrebs (= entities defined by L. Hřebíček) and measure their weight? An analysis of hrebs in Romanian can be found in Tătar; Lupea; Altmann 2014.

One may obtain an indicator which has many properties, but the differences must be testable and one must place this phenomenon in some control cycle. There are a number of questions that may be asked and we hope that these aspects will be inserted in a future rhyme theory.

The types of rhyme may depend both on the writer, on the language and its evolution, on the poetry type, onomatopoetic coloring, etc. It is not possible to study all aspects but step by step one can obtain individual results. It can even be expected (and hoped) that for each aspect of rhyme there will be created a different theory.

2. Length of the Rhyme Word

Length of words can be measured in terms of syllable numbers which has great importance especially in poetry, or in terms of morpheme numbers, having importance in grammar. The size of compounds can be measured in terms of numbers of compounding words. The length of sentence is measured in terms of clause numbers, not word numbers. It makes no sense to measure word length in terms of phoneme numbers because the phoneme is not its immediate constituent, and it makes absolutely no sense to measure it in the number of letters because one skips one level and one cannot scrutinize languages having no letters. The best examples of the inadequacy of letter for measuring length are English and French which cannot overcome the historical stagnation. English becomes slowly a hieroglyphic writing using Latin letters as components of hieroglyphs.

Usually, the rhyme words are very short. Even if there may be a tendency to occupy the subsequent positions in the sentence with words of increasing length (cf. Uhlířová 1997), in poetry a kind of rhythm may oppress this tendency and the last word – the rhymed one – may be very short. Consider e.g. the German poem *Der Erlkönig* by J.W.v.Goethe, where we obtain the sequence of rhyme word lengths (syllable numbers) as follows:

S(*Der Erlkönig*) = [1,1,1,1,2,1,1,3,1,1,1,2,1,2,1,1,1,1,1,1,1,1,2,1,2,2,1,2,2,1,1,1].

Here only 9 of 32 words have length greater than 1.

However, in the Hungarian poem *Szeptember végén* by S. Petöfi, we obtain the sequence:

S(*Szeptember végén*) = [3,2,3,2,1,3,1,3,2,2,1,3,4,4,3,3,2,2,3,1,2,3,2,2],

where out of 24 words only 4 have length 1, the rest, i.e. 20 words, are longer. This may depend either on style or on language. If a language is monosyllabic, the problem is irrelevant. Sequences like the above ones open a series of questions especially for those who are interested in regularities in time series, runs, distances between equal lengths, chains, motifs, etc. Of course, not all are relevant for text analysis but all of them open a door to the search for some laws concealed in texts.

If one wants to find a formal background function of rank-frequencies, then it can be tried with data having at least 3 length classes because the functions have at least one parameter. This is rather a technical problem. One can add a highest length having zero frequency (x_{max},0) whereby the number of length classes will increase. Mostly it is sufficient to test whether there is a tendency to use longer than monosyllabic words and this can be done using the binomial probability. In strongly agglutinating languages, the words may be longer and for longer poems it is reasonable to perform a frequency count of lengths. A very thorough investigation of rhyme-word length has been performed by Mihaiela Lupea (cf. Popescu, Lupea, Tătar, Altmann 2015: 74-84) but only for the Roma

nian poet M. Eminescu. Here, the Poisson, hyper-Poisson, Ferreri-Poisson and Conway-Maxwell-Poisson distributions have been found in 141 poems. Though all these distributions belong to one family, here we shall try to find a common model for all and apply it to other languages, too.

It may happen, that the rhyme consists of two words, e.g. in Slovak, in the poem *Roky a veky* by A. Sládkovič, we find the rhyming of "tuho" and "nedostihnú ho". In such cases the first rhyme word consists of 2 syllables, the second of 5, because the last but one word has been involved in the rhyme, too (*ho, "*him*"* can be considered also a clitic, just as e.g. *sa* (reflexive pronoun) or zero-syllabic prepositions which are considered proclitics. If there are some triples of lines having the "same" rhyme, the number of verses may be odd. In some languages rhyme is considered quite specifically, e.g. it is sufficient if the last phonemes of the verse are equal, or if the consonants of the last words are equal, or the first rhyme word ends with a vowel and the second with a consonant but the rest is almost identical, one finds also rhymes in which only the vowels are identical, etc. Hence there may be different definitions of rhyme. The researcher should present his own way of defining rhyme.

It may also happen that there is no rhyme word of length 1. In that case one can either consider its frequency as zero or one can omit the length 1. Nevertheless, if the zeros occur between positive length values, one may take them into account (cf. e.g. *Când amintirile…*in Romanian). If one fits a continuous function instead of a distribution, i.e. if one does not consider the normalization, one may omit the zero frequencies.

In what follows, we shall replace the fitting of distributions by the fitting of a function which has the same basis in the unified theory (cf. Wimmer, Altmann 2005). Modeling by discrete or continuous models, i.e. whether normalized or not, is no offence against mathematics because mathematics does not represent truth, it is merely a formal expression of our concepts which can be manipulated exactly. Here we shall apply the Zipf-Alekseev function derived from the unified theory in the form of a differential equation

$$(2.1) \quad \frac{dy}{y} = \frac{A + B\ln x}{Cx}\,dx$$

telling us that the relative rate of change of frequency (dy/y) is proportional to the change of length (dx), and the proportionality function consists of a language constant A variegated by the effort of the writer represented by the function B*ln(x) reminding us of the Weber-Fechner law; the whole is "braked" by the function the hearer/reader Cx.

The effort of the writer and the reader are simple functions. The interpretations may, of course, be different. The solution of (2.1) after reparametrization is

$$(2.2) \quad y = cx^{a + b\ln x}$$

applied currently to any kind of length in language (cf. Popescu, Best, Altmann 2014). The results for several texts in several languages are presented in Table 2.1. The number of exceptions is very small (cf. Table 2.2).

Table 2.1
Fitting the Zipf-Alekseev function to rhyme-word lengths

Text	Lengths	*a*	*b*	*c*	R^2
Romanian (M.Eminescu)					
Adânca mare…	8,3,1,2	-2.0348	0.6181	8.0221	0.9664
Adio	5,23,19,1	5.0787	-4.0764	4.8582	0.9933
Ah, mierea buzei tale	8,17,10,1	3.0211	-2.6792	7.8011	0.9502
Amicului F.I.	11,26,10,1	3.6543	-3.4564	10.9318	0.9936
Andrei Mureşanu	4,37,30,12,2,1	6.2701	-3.8215	3.0356	0.9965
Atât de fragedă…	9,19,6,2	3.4630	-2.4528	9.0234	0.9975
Aveam o muză	11,27,27,6,0,1	3.5181	-2.4899	8.7440	0.8868
Basmul ce i l-aş spune ei	15,40,27,8	3.2217	-2.4926	14.5256	0.9787
Călin (File de poveste)	36,130,69,20,3	4.1270	-3.2301	35.3586	0.9980
Când amintirile…	4,14,3,2,0,0,1	5.0706	-4.7442	4.0284	0.9758
Când crivăţul cu iarna	18,38,29,7,2	2.8120	-2.2722	17.0266	0.9456
Când marea	6,7,6,1	1.4074	-1.4955	5.8618	0.8047
Când priveşti oglinda mării	7,14,9,2	2.6838	-2.3245	6.8456	0.9602
Care-i amorul meu în astă lume	-,20,12,3,1,1	7.0019	-4.6197	1.4369	0.9968
Ce e amorul?	6,11,6,4	2.0588	-1.7957	6.0930	0.9692
Ce-ţi doresc eu ţie, dulce Românie	2,11,15,4	14.5001	-7.6699	0.0189	0.9643
Cine-i?	9,14,6,1	2.5177	-2.6880	8.9667	0.9925
Crăiasa din poveşti	-,8,4,2	0.0997	-1.0098	12.1273	1.0000
Criticilor mei	1,9,3,1	6.6374	-5.1352	1.0612	0.9944
Cugetările sărmanului Dionis	2,35,18,7	6.7584	-4.5882	2.8964	0.9905
Cu mâne zilele-ţi adaogi…	6,6,3,0,1	1.3937	-1.9730	5.9850	0.9510
Cum negustorii din Constantinopol	1,10,2,2,1	7.3020	-6.0008	1.1239	0.9294
Cum oceanu-ntărâtat	-,4,8,1,1	23.7715	-12.3171	0.0001	0.9728
De câte ori, iubito…	1,4,5,3,1	5.6828	-3.0015	0.3492	0.9470
De-aş muri ori de-ai muri	8,15,10,2,1	2.5768	-2.2751	7.7953	0.9624
De ce să mori tu?	4,13,8,1,1,0,1	3.9401	-3.0754	3.8020	0.9709

De-oi adormi (variantă)	10,19,3,1,2,1	4.2584	-4.4130	10.0108	0.9795
De-or trece anii…	5,6,4,1	1.4747	-1.6535	4.9500	0.9456
Departe sunt de tine	6,10,2	3.7063	-4.2839	6.0000	1.0000
Despărţire	19,15,4,1	1.6120	-2.0706	18.0010	1.0000
Din lyra spartă	1,4,3,2,2	2.6327	-1.5804	1.2490	0.8605
Din noaptea	4,8,4	2.7095	-2.4663	4.0000	1.0000
Din străinătate	7,9,10,7,1,1,1	1.6581	-1.2871	6.3046	0.8404
Doi aştri	2,6,4	3.2159	-2.3529	2.0000	1.0000
Doina	8,22,21,5,3,1,1	3.5249	-2.4326	6.6907	0.9346
Dorinţa	7,3,0,1,1	-0.7575	-0.9001	7.0233	0.9323
Ecò	30,69,39,10,2	3.0986	-2.6609	29.4373	0.9902
Egipetul	13,39,22,12, 3,1	3.2963	-2.5286	13.2206	0.9924
Epigonii	10,42,38,20,4	4.2659	-2.6385	8.0547	0.9734
Făt-Frumos din tei	7,24,14,1	4.2047	-3.3209	6.5807	0.9597
Floare-albastră	3,27,16,8,1,0, 0,1	5.4203	-3.6295	3.5489	0.9891
Freamăt de codru	-,23,15,9,1	3.6359	-2.5551	6.2873	0.9712
Frumoasă şi june	8,5,3	-0.3110	-0.5296	8.0000	1.0000
Ghazel	-,21,15,4	8.9017	-5.4313	0.5968	1.0000
Glossa	-,52,23,4,1	8.1835	-5.6913	2.7547	0.9999
Horia	6,9,5,1,1	2.1079	-2.1512	5.9623	0.9794
Iar când voi fi pământ	6,11,2,0,0,1	4.1212	-4.6824	5.9982	0.9898
Icoană şi privaz	42,96,40,9,1	3.4099	-3.1758	41.7625	0.9983
Împărat şi proletar	27,79,68,29, 5,1,1	3.5517	-2.4380	23.1086	0.9710
În căutarea Şeherezadei	-,72,66,11,5, 1,1	14.5931	-8.2674	0.1547	0.9973
Îngere palid	4,5,3	1.3199	-1.4398	4.0000	1.0000
Înger şi demon	7,39,37,14,7,3	5.1072	-3.0669	5.1088	0.9848
Întunericul şi poetul	5,14,10,5	2.9761	-2.1379	4.9819	0.9998
Iubind în taină	-,6,6,1,0,1	16.0444	-8.9551	0.0066	0.9714
Iubită dulce, o, mă lasă	6,23,16,8,3	3.6753	-2.5281	6.0452	0.9992
Iubitei	18,26,15,3,1, 0,1	2.0951	-2.1751	17.7895	0.9835
Junii corupţi	7,23,25,19,4	3.8646	-2.1767	4.8168	0.8872
Kamadeva	1,7,2	6.5280	-5.3677	1.0000	1.000
La Bucovina	8,15,9,3,1	2.4879	-2.2193	7.9020	0.9926
La mijloc de codru	2,5,5,4	2.1312	-1.1799	2.0063	0.9999
La moartea lui Heliade	9,18,14,7	2.2090	-1.6757	8.8714	0.9870
La moartea lui	6,9,7,5,2	1.4871	-1.2261	5.9175	0.9661

Neamţu					
La moartea principelui Ştirbey	2,7,7	2.9477	-1.6451	2.0000	1.0000
La mormântul lui Aron Pumnul	5,7,7,4,1,0,1	1.7659	-1.4234	4.6315	0.8998
La o artistă (Credeam ieri)	9,14,4,1	2.9609	-3.3546	9.0034	0.9998
La Quadrat	1,10,4,0,1	7.1000	-5.2920	0.9304	0.9804
Lasă ţi lumea…	3,30,16,2,1	6.9756	-4.8356	2.4533	0.9944
La steaua	3,8,4,1	3.5028	-2.9792	2.9730	0.9964
Lebăda	2,8,2	5.4190	-4.9326	2.0000	1.0000
Lida	2,9,4,1	4.8193	-3.8148	1.9944	0.9999
Locul aripelor	5,10,10,3	2.5053	-1.8105	4.5931	0.8135
Luceafărul	91,169,100, 29,3	2.5752	-2.3412	89.4355	0.9843
Mai am un singur dor	13,16,4,1,1,1	2.5519	-3.2575	13.0119	0.9926
Melancolie	8,17,10,3	2.7855	-2.3968	7.9062	0.9895
Mortua est!	7,36,22,5	4.9434	-3.5395	6.4951	0.9912
Mureşanu	58,103,46,12, 3,1	2.7012	-2.6829	57.8003	0.9987
Noaptea	2,11,2,4,0,1	5.5734	-4.7595	2.2224	0.8155
Nu voi mormânt bogat (variantă)	12,17,3,1,2,1	3.3622	-4.1330	12.0121	0.9779
O, adevăr sublime…	10,21,8,5	2.8929	-2.7011	10.1514	0.9619
O arfă pe-un mormânt	-,11,4,3,5	-9.0247	3.5319	1052.13	0.9921
O călărire în zori	13,40,22,11	3.3853	-2.6153	13.2784	0.9919
O, mamă	10,7,1	2-1887	-3.9000	10.0000	1.0000
Ondina (Fantezie)	30,84,66,21,5	3.4045	-2.4826	27.4182	0.9653
Oricâte stele…	-,-,7,4,3	-5.1365	1.2843	419.4415	1.0000
O stea prin ceruri	2,10,1,3	6.7413	-6.4236	2.0378	0.8280
Pe aceeaşi ulicioară	3,11,3,1	4.9652	-4.4800	3.0215	0.9959
Pe lângă plopii fără soţ	17,17,8,1,1	1.4527	-2.0575	16.9506	0.9876
Peste vârfuri	2,5,4,1	3.0978	-2.3209	1.8704	0.9237
Povestea codrului	10,13,3	2.8990	-3.6364	10.0000	1.0000
Povestea teiului	4,40,36,5,3	15.6268	-8.8722	0.0562	0.9840
Privesc oraşul furnicar	5,19,11,3	4.1611	-3.1507	4.8707	0.9953
Pustnicul	9,33,17,3,2	4.2720	-3.3935	8.8002	0.9924
Replici	8,13,3	3.4241	-3.9294	8.0000	1.0000
Rugăciunea unui dac	6,20,13,7	3.3313	-2.3773	6.1485	0.9945
S-a dus amorul	9,27,5,6,1	4.6735	-4.5129	9.1535	0.9306
Sara pe deal	-,13,10,0,1	42.8327	-24.2666	1.92E-007	0.9920
Scrisoarea I	16,68,50,18,4	4.3154	-2.9523	14.4436	0.9904

Scrisoarea II	8,37,28,8,1	4.8071	-3.2486	6.5139	0.9790
Scrisoarea III	38,122,87,31, 4,2,0,1	3.7229	-2.7107	35.0799	0.9886
Scrisoarea IV	17,71,47,10, 2,0,0,1	4.5482	-3.2917	15.1661	0.9872
Scrisoarea V	17,46,39,12, 5,1	3.3468	-2.3942	15.1753	0.9623
Şi dacă…	4,5,1,1,0,1	2.4855	-3.1588	4.0162	0.9192
Singurătate	10,6,3,1	0.0614	-1.1245	9.9917	0.9971
Somnoroase păsărele	-,8,4,4	0.9960	-1.2981	7.4061	0.8602
Sonete	1,22,10,5,3,1	6.3012	-4.3586	2.1997	0.9576
Speranţa	11,24,7,2,1	3.6678	-3.6792	11.0290	0.9976
Steaua vieţii	4,6,1,0,1	3.7194	-4.5237	4.0011	0.9608
Sus în curtea cea domnească	11,10,4,5	0.2734	-0.7814	11.1178	0.8399
Te duci…	10,14,13,4,2,1	1.7848	-1.5746	9.5405	0.9163
Trecut-au anii	-,7,4,2,1	1.2415	-1.4640	5.9824	1.0000
Unda spumă	-,7,8,1	19.8654	-10.9033	0.0014	1.0000
Veneţia (de Gaetano Cerri)	-,5,7,2	14.2316	-7.4797	0.0095	1.0000
Venere şi Madonă	7,17,13,8,2,1	2.7408	-1.9652	6.7067	0.9789
Viaţa	7,40,25,5,0,1	5.4060	-3.8026	5.9781	0.9890
Viaţa mea fu ziuă	4,9,2,0,1	4.2682	-4.4699	4.0004	0.9802
Vis	13,6,5,3	-1.1163	0.1076	12.9730	0.9878
Slovak					
J.Smrek: *Zápalky*	-,10,9,3	8.9400	-5.1345	0.2400	1.0000
J.Stacho, *Za život na smrť*	4,9,7	2.2991	-1.6291	1.0000	1.0000
A.Sládkovič, *Kykymora*	43,59,7,1	21.8508	-11.7600	0.0032	0.9998
A.Sládkovič, *Roky a veky*	-,71,37,12,1	5.2721	-3.8306	11.5694	0.9986
A.Sládkovič, *Ctibor*	2,62,50,14,1	9.7908	-5.7624	1.1165	0.9989
A.Sládkovič, *Marína*	102,1225, 1381,172,16	18.7007	-10.8306	0.2616	0.9941
A.Sládkovič, *Ohlasy*	4,43,30,10,4	6.1199	-3.8920	3.9247	0.9988
S.Chalupka, *Mor ho!*	3,101,62,6	16.3011	-9.7709	0.1368	0.9988
S.Chalupka, *Pozdrav*	10,35,24,10,1	3.8121	-2.7376	9.4605	0.9875
V.Turčány, *Súmrak*	1,8,10	4.5456	-2.2298	1.0000	1.0000
V.Turčány, *Zem*	1,1,34,0,1	66.9482	-32.7660	5.795E-14	0.9974
V.Turčány, *List Vítězslavovi Nezvalovi*	9,22,20,3	3.5598	-2.5417	6.8445	0.8470
P.O.Hviezdoslav, *Krvave sonety*(1914)	108,334,348,9, 4,10,1	4.5895	-2.9375	63.3766	0.9089
M.Rázus, *Matka*	-,42,1,3,2	-23.6341	8.9050	7579371	0.9965

Czech					
A.Sládkovič, *Ctibor*	2,71,42,12,1	8.1879	-5.2652	3.0445	0.9987
German					
F.Schiller, *An die Freude*	33,34,26,13,1	1.0468	-1.2752	32.4406	0.9346
F.Schiller, *Der Taucher*	71,59,24,8	0.9995	-1.8229	70.9830	0.9998
H.Heine, *Affrontenburg*	1,23,7,1,2	8.9505	-6.6099	1.1119	0.9893
R.M.Rilke,*Die Waise*	35,21,8,3	0.2990	-1.4947	35.0001	1.0000
French					
Ch.Baudelaire, *Benediction*	19,31,18,6,2	2.2015	-2.1047	18.8327	0.9932
Ch.Baudelaire, *Confession*	13,15,10,2	1.4433	-1.6804	12.8647	0.9335
P.Verlaine, *Adieu*	20,11,4,1	0.2679	-1.6215	19.9952	0.9994
P.Verlaine,*Ecoutez le chanson bien douce*	13,12,2,1	2.4336	-3.6827	13.0044	0.9958
Italian					
Dante Alighieri, *Inferno, Canto I*	1,79,50,4	18.5667	-10.9921	0.0400	0.9998
Dante Alighieri, *Inferno, Canto II*	3,73,50,12,3	8.7862	-5.4362	2.2568	0.9996
Dante Alighieri, *Inferno, Canto III*	-,81,46,8,1	10.7005	-6.7510	1.2472	0.9999
Hungarian					
J.Arany, *Szondi két apródja*(1856).	16,43,12,5	4.1497	-3.9524	16.1016	0.9914
D.Kosztolányi, *Hajnali részegség*	10,72,35,22, 2,1	4.9821	-3.5341	12.0972	0.9689
J.Arany, *Válasz Petöfinek*	1,12,11,5,1,2	6.1389	-3.5632	0.9467	0.9792
J.Arany, *Czakó sírján*	5,8,16,2,1	24.3361	-12.6300	0.0002	0.8222
J.Arany, *Év kezdetén*	2,23,14,9	5.0049	-3.2285	3.2344	0.9495
Russian					
M.Lermontov, *Mtsyri*	215,429,139,8	3.5019	-3.5998	214.3606	0.9952
M.Tsvetaeva, *Babushke*	2,10,8, (0)	55.2714	-31.1547	7.28E-10	0.9412
A.Dementjev, *A mne prisnilsja son..*	11,18,7,7,1	1.9691	-1.9459	11.2096	0.9042
F.Tjutčev, *Est' v oseni pervonačal'noj…*	1,7,3,0,1	6.0859	-4.6437	0.9639	0.9621

M.Boroditskaya, *Koldunya*	3,4,11,3,3	23.2773	-11.3667	7.06 E-005	0.8497

In the poem *Somnoroase păsărele* we added the fifth class containing zero, otherweise the number of classes had been too small.

Here, parameter *c* has something to do with the relation of the first frequency to the other ones. Parameters *a* and *b* are more characteristic and tell something about the behaviour of the writer and possible readers.

As is usual, some boundary or subsidiary conditions which are supposed to exist but are not known may modify the basic model (for example, caused by pauses in writing, additional changes, etc.). About 9% of texts are exceptions that cannot be fitted by the Zipf-Alekseev function for different reasons.

We collected them in Table 2.2 in order to give the reader the possibility of searching for causes. One can see that the poems are very short hence a model can be found only exceptionally. But as long as we have only a small number of exceptions there is no need (and possibility) for searching for explanations.

The data marked with an asterisk in Table 2.2 can be well fitted by the Lorentzian function with 3 parameters; those marked with two asterisks by a Lorentzian with 4 parameters. The formulas are:

$$(2.3) \quad y = \frac{a}{\left[1+\left(\frac{x-b}{c}\right)^2\right]} \qquad (2.4) \quad y = a + \frac{b}{\left[1+\left(\frac{x-c}{d}\right)^2\right]}.$$

However, some data cannot be fitted and we conjecture the presence of a subsidiary condition which will never be discovered. It would be, of course, possible to find some functions but some of the data are not monotonic and we want to avoid the use of polynomials.

Table 2.2
No good fittings by the Zipf-Alekseev function

Text	Data
M.Eminescu (Romanian)	
Amorul unei marmure *	8,9,15,10,2
*Ce te legeni ...***	6,6,8,3,1
*Copii eram noi amandoi**	8,14,21,6,2
De-aş avea	2,7,3,11,0,1
Din Berlin la Posdam *	3,4,5,2
Foaia veştedă (după Lenau)	3,4,5,0,1,0,1
La o artistă (Ca a nopţii poezie)	7,8,7,14,1,1
Misterele nopţii	4,7,8,11,1,1
Nu e steluţă	2,4,3,1,2

*Nu mă-nţelegi**	4,8,9,1,2
*Pajul Cupidon…**	3,5,8,2
Revedere	4,13,6,11,1,0,1
Stelele-n cer	12,5,10,3,4,2
V.Turčány, *Mám svoje mesto rád* (Slovak)	4,37,7,16
Ch.Baudelaire, *UneMartyre (*French)*	13,21,21,5
J.Arany, *Emléklapra* (Hungarian) *	7,14,20,12
J.Arany, *Alkalmi vers* (Hungarian) *	-,13,7,1,0,3
S.Esenin, *Pismo k materi* (Russian)*	7,7,17,5

Even if the frequencies indicate why the chosen function does not capture them adequately (we accepted a fitting with determination coefficient $R^2 \geq 0.8$) literary scientists may propose some boundary conditions. In most cases, the distribution has a bell form, or one of the central frequencies is too small and the frequencies may oscillate. Both cases are evidently boundary conditions: the author emphasized or avoided some lengths.

There is still another problem that must be taken into consideration: if the parameters of the function are represented by numbers too large or too small, one must reckon with boundary conditions, e.g. in the Slovak poem *Zem* by V.Turčány. Here the sequence of ranks has a very extreme course, evidently caused by some purposeful motivation of the author. Further, if the poem is too short, no model may be adequate.

The results automatically lead to further questions that can be verified by analyzing other texts:

(a) Is the above mentioned regularity a characteristic of the given texts? How can the differences be interpreted?

(b) Are the parameters characteristic for the given poet or are they generally valid?

(c) Do the parameters of the Zipf-Alekseev function change in the course of time?

(d) If the poetry develops, can one model this motion?

(e) Does the type of language play any role? This is both a literary as well as typological problem.

(f) Which are the other properties of words linked with the length of rhyme-words? In order to solve this question, one must apply synergetic considerations (cf. Köhler 2005), but in our case, one automatically thinks about the type of language. For strongly analytic languages one expects shorter rhyme-words; for strongly synthetic ones there are rather longer words because the rhyme-words obtain a number of endings expressing grammatical categories. The ending need not be syllabic but many of them surely prolong the word. The measurement of analytism/synthetism is an independent problem. Further, has the length of the rhyme words to do something with the part-of-speech to which the word belongs?

(g) Is the poem long enough in order to express some tendency?

In order to compare languages, the first step may be the analysis of a poem and its (rhymed) translations into other languages. Languages may differ as

wholes from one another, as is well known from typology. In our case, there will surely be differences at least in the parameters. In order to exemplify this conjecture, we compare the Hungarian poem *Szeptember végén* by S. Petöfi with its translations into English (by G. Szirtes), German (by M. Remané), Slovak (by J. Smrek), and French (by E. Guillevic). The results are presented in Table 2.3. All distributions are bell-shaped. But it does not mean that in the course of scrutinizing other languages one may not find other models.

Table 2.3
The Hungarian poem and its translations – rhyme-word length (Zipf-Alekseev)

S. Petöfi, *Szeptember végén*					
Language	**Lengths**	***a***	***b***	***c***	$\mathbf{R^2}$
Hungarian	4,9,9,2	2.9376	-2.0966	3.5271	0.8028
Slovak	7,10,5,2	1.9271	-2.0360	6.9983	1.0000
English	9,10,5	1.3265	-1.6944	9.0000	1.0000
German	7,12,5	2.6305	-2.6732	7.0000	1.0000
French	10,12,2	3.2171	-4.2618	10.0000	1.0000

In all cases the fit is satisfactory; the greatest differences appear in parameter *c* but the number of cases is too small to formulate some generalizations. Since the translators were bilinguals, the influence of the source language to the second language might play a certain role. A preliminary ordering may, nevertheless, suggest that the parameter *c* is here associated with typological circumstances. One can merely say that in Hungarian the author was free in forming the rhyme words, while in translations, the translators cared for the exact reproduction of the contents and perfect rhyming. As can be seen, the determination coefficient is in all translations 1.0.

The comparison of individual languages may be performed by a direct consideration of frequencies or by comparing the parameters.

A simple characterization of the length of rhyme words may be given by the usual average or some other indicators known from statistics, e.g. moments or their functions, entropy, repeat rate, Ord's criterion, etc.

Some of the indicators are presented in Table 2.4. Here m_1` is the mean; $m_2$ and $m_3$ are the central moments of second and third order ($m_2$ is the variance); I and S are Ord's indicators, namely $I = m_2/m_1$`, $S = m_3/m_2$, H is the usual Shannon's entropy and RR is the Repeat rate. The last two indicators show the concentration of the frequencies. All indicators are testable and comparable.

Table 2.4
Some indicators of the texts in Table 2.1

Text	$\mathbf{m_1}$`	$\mathbf{m_2}$	$\mathbf{m_3}$	**I**	**S**	**H**	**RR**
Romanian (M. Eminescu)							
Adânca mare	1.7875	1.1684	1.4038	0.6543	1.2015	1.6106	0.3980
Adio	2.3333	0.4722	0.0509	0.2024	-0.1078	1.4941	0.3976

Ah, mierea buzei tale	2.1111	0.5988	0.0768	0.2836	0.1283	1.6503	0.3503
Amicului F.I.	2.0208	0.5204	0.1133	0.2575	0.2177	1.5540	0.3898
Amorul unei marmure	2.7500	1.2784	-0.0938	0.4649	-0.0733	2.1332	0.2448
Andrei Mureşanu	2.6977	0.8621	0.6467	0.3196	0.7502	1.8568	0.3291
Atât de fragedă…	2.0278	0.6381	0.3079	0.3147	0.4825	1.6491	0.3719
Aveam o muză	2.4444	0.8848	0.5089	0.3624	0.5745	1.8598	0.3117
Basmul ce i l-aş spune ei	2.3111	0.7254	0.1373	0.3139	0.1892	1.7823	0.3232
Călin (File de poveste)	2.3178	0.7207	0.3427	0.3109	0.4756	1.7643	0.3510
Când amintirile…	2.3333	1.5556	4.2407	0.6667	2.7262	1.7492	0.3924
Când crivăţul cu iarna	2.3298	0.8806	0.3801	0.3780	0.4317	1.9055	0.3013
Când marea	2.1000	0.7900	0.1620	0.3762	0.2051	1.7884	0.3050
Când priveşti oglinda mării	2.1875	0.7148	0.1538	0.3268	0.2152	1.7661	0.3223
Care-i amorul meu în astă lume	2.6757	0.8678	1.3649	0.3243	1.5729	1.5821	0.4054
Ce e amorul?	2.2963	0.9492	0.3154	0.4134	0.3323	1.9003	0.2867
Ce te legeni	2.4583	1.2483	0.3957	0.5058	0.3070	2.0944	0.2535
Ce-ţi doresc eu ţie, dulce Românie	2.6562	0.6006	-0.0588	0.2261	-0.0979	1.6670	0.3574
Cine-i?	1.9667	0.6322	0.2299	0.3215	0.3637	1.6622	0.3489
Copii eram noi amândoi	2.6078	1.0227	0.1654	0.3922	0.1618	2.0048	0.2849
Crăiasa din poveşti	2.5714	0.5306	0.3324	0.2063	0.6264	1.3788	0.4286
Criticilor mei	2.2857	0.4898	0.2711	0.2143	0.5536	1.4299	0.4694
Cugetările sărmanului Dionis	2.4839	0.5401	0.2640	0.2174	0.4889	1.4988	0.4168
Cu mâne zilele-ţi adaogi…	2.0000	1.1250	1.5000	0.5625	1.3333	1.7641	0.3203
Cum negustorii din Constantinopol	2.5000	1.0000	1.1250	.4000	1.1250	1.6738	0.4297
Cum oceanu-ntărâtat	2.9286	0.6378	0.4942	0.2178	0.7749	1.5216	0.4184
De câte ori, iubito	2.9286	1.0663	0.1574	0.3641	0.1476	2.0670	0.2653
De-aş avea	3.1250	1.4427	0.0820	0.4617	0.0569	1.8991	0.3194
De-aş muri ori de-ai muri	2.2500	0.9097	0.5521	0.4043	0.6069	1.8971	0.3040

De ce să mori tu?	2.5000	1.5357	3.4286	0.6143	2.2326	1.9464	0.3214
De-oi adormi (variantă)	2.1389	1.3974	2.7206	0.6533	1.9470	1.8176	0.3673
De-or trece anii	2.8077	1.3861	-0.5394	0.4937	-0.3891	1.8861	0.2929
Departe sunt de tine	1.7778	0.3951	0.0521	0.2222	0.1319	1.3516	0.4321
Despărţire	1.6667	0.5812	0.4387	0.3487	0.7549	1.5081	0.3964
Din Berlin la Potsdam	2.4286	0.9592	-0.0262	0.3950	-0.0174	1.9242	0.2755
Din lyra spartă	3.0000	1.5000	0.5000	0.5000	0.3333	2.1887	0.2361
Din noaptea	2.0000	0.5000	0.0000	0.2500	0.0000	1.5000	0.3750
Din străinătate	2.8056	1.9900	2.3071	0.7093	1.1593	2.3629	0.2176
Doi aştri	2.1667	0.4722	-0.0741	0.2179	-0.1569	1.4591	0.3889
Doina	2.6721	1.4663	2.0349	0.5487	1.3878	2.1486	0.2755
Dorinţa	1.8333	1.6389	3.1574	0.8939	1.9266	1.5511	0.4167
Ecò	2.3333	0.7922	0.3861	0.3547	0.4873	1.8285	0.3238
Egipetul	2.5111	1.1388	0.8982	0.4535	0.7887	2.0461	0.2874
Epigonii	2.7018	0.9461	0.2590	0.3502	0.2738	1.9771	0.2865
Făt-Frumos din tei	2.1957	0.5052	0.0221	0.2301	0.0437	1.5454	0.3885
Floare-albastră	2.6786	1.2538	2.8494	0.4681	2.2726	1.8585	0.3380
Foaia veştedă (după Lenau)	2.7143	2.4898	5.3003	0.9173	2.1288	2.0670	0.2653
Freamăt de codru	3.1379	1.2913	0.7389	0.4115	0.5722	1.9058	0.2842
Frumoasă şi junĕ	1.6875	0.5898	0.2710	0.3495	0.4594	1.4772	0.3828
Ghazel	2.5750	0.4444	0.2183	0.1726	0.4914	1.3509	0.4263
Glossa	2.4250	0.4194	0.4135	0.1729	0.9861	1.2161	0.5078
Horia	2.1818	1.0579	0.9624	0.4848	0.9098	1.9299	0.2975
Iar când voi fi pământ	2.0000	1.2000	3.0000	0.6000	2.5000	1.5438	0.4050
Icoană şi privaz	2.1011	0.6653	0.3132	0.3167	0.4708	1.7033	0.3582
Împărat şi proletar	2.5857	1.0712	0.7596	0.4143	0.7091	2.0342	0.2826
În căutarea Şeherezadei	2.7179	0.7410	1.0981	0.2726	1.4820	1.5621	0.3981
Îngere palid	1.9167	0.5764	0.0613	0.3007	0.1064	1.5546	0.3472
Înger şi demon	2.8505	1.2487	1.0869	0.4381	0.8704	2.1037	0.2789
Întunericul şi poetul	2.4412	0.8348	0.1328	0.3420	0.1591	1.8598	0.2993
Iubind în taină	2.8571	1.1224	2.0554	0.3929	1.8312	1.5917	0.3776
Iubită dulce, o, mă lasă	2.6250	1.0558	0.5441	0.4022	0.5153	2.0162	0.2851
Iubitei	2.1719	1.2048	2.0768	0.5547	1.7237	1.9277	0.3018
Junii corupţi	2.8718	1.0861	0.0609	0.3782	0.0560	2.0739	0.2597
Kamadeva	2.1000	0.2900	0.0120	0.1381	0.0414	1.1568	0.5400

La Bucovina	2.2778	0.9784	0.6077	0.4295	0.6211	1.9508	0.2932
La mijloc de codru	2.6875	0.9648	-0.1274	0.3590	-0.1321	1.9238	0.2734
La moartea lui Heliade	2.3958	0.9058	0.1332	0.3781	0.1470	1.9070	0.2821
La moartea lui Neamţu	2.5862	1.4150	0.5860	0.5471	0.4141	2.1925	0.23187
La moartea Principelui Ştirbey	2.3125	0.4648	-0.1538	0.2010	-0.3309	1.4186	0.3084
La mormântul lui Aron Pumnul	2.7200	1.9616	2.8297	0.7212	1.4425	2.2874	0.2256
La o artistă (Ca a nopţii poezie)	2.9211	1.6517	-0.0031	0.5654	-0.0019	2.1794	0.2493
La o artistă (Credeam ieri)	1.8929	0.5957	0.2998	0.3147	0.5034	1.5991	0.3750
La Quadrat	2.3750	0.7344	0.9961	0.3092	1.3564	1.4238	0.4609
Lasă-ţi lumea	2.3846	0.5444	0.3919	0.2283	0.7199	1.5089	0.4327
La steaua	2.1875	0.6523	0.1890	0.2982	0.2897	1.7028	0.3526
Lebăda	2.0000	0.3333	0	0.1667	0	1.2516	0.5000
Lida	2.2500	0.5625	0.1875	0.2500	0.3333	1.5919	0.3984
Locul aripelor	2.3929	0.8099	0.0205	0.3385	0.0253	1.8501	0.2985
Luceafărul	2.1938	0.8145	0.3404	0.3712	0.4180	1.8469	0.3104
Mai am un singur dor	2.0000	1.2778	2.5000	0.6389	1.9565	1.8337	0.3426
Melancolie	2.2105	0.7452	0.2043	0.3371	0.2741	1.7884	0.3188
Misterele nopţii	3.0312	1.4678	0.0811	0.4842	0.0553	2.1967	0.2461
Mortua est!	2.3571	0.5724	0.1268	0.2429	0.2215	1.6223	0.3784
Mureşanu	2.1121	0.8619	0.7356	0.4081	0.8535	1.8353	0.3266
Noaptea	2.6000	1.4400	1.9920	0.5538	1.3833	1.8192	0.3650
Nu e steluţă	2.7500	1.6875	1.0312	0.6136	0.6111	2.1887	0.2361
Nu mă-nţelegi	2.5417	1.1649	0.7397	0.4583	0.6350	1.9796	0.2882
Nu voi mormânt bogat (variantă)	2.0833	1.4653	2.8831	0.7033	1.9676	1.8571	0.3457
O, adevăr sublime	2.1818	0.8306	0.4046	0.3807	0.4871	1.7988	0.3254
O arfă pe-un mormânt	3.0870	1.4707	1.0070	0.4764	0.6847	1.8097	0.3233
O călărire în zori	2.3605	0.7887	0.2282	0.3341	0.2894	1.8083	0.3210
O, mamă	1.5000	0.3611	0.1667	0.2407	0.4615	1.2327	0.4630
Ondina (Fantezie)	2.4515	0.8884	0.3504	0.3624	0.3944	1.9246	0.3011
Oricâte stele…	3.7143	0.6327	0.2799	0.1703	0.4424	1.4926	0.3776
O stea prin ceruri	2.3125	0.8398	0.6196	0.3632	0.7378	1.5016	0.4453
Pajul Cupidon	2.5000	0.8056	-0.1667	0.3222	-0.2069	1.8163	0.3148
Pe aceeaşi ulicioară	2.1111	0.5432	0.2620	0.2573	0.4823	1.5275	0.4321

Pe lângă plopii fără soţ	1.9091	0.8554	0.8249	0.4481	0.9644	1.7555	0.3326
Peste vârfuri	2.3333	0.7222	0.0741	0.3095	0.1026	1.7842	0.3194
Povestea codrului	1.7308	0.4275	0.0956	0.2470	0.2236	1.3897	0.4112
Povestea teiului	2.5795	0.6528	0.4091	0.2531	0.6267	1.6485	0.3804
Privesc oraşul furnicar	2.3158	0.6371	0.1544	0.2751	0.2423	1.6919	0.3573
Pustnicul	2.3125	0.7773	0.5845	0.3361	0.7519	1.7619	0.3594
Replici	1.7917	0.4149	0.0600	0.2316	0.1447	1.3824	0.4201
Revedere	2.8889	1.6543	1.6084	0.5726	0.9722	2.1236	0.2654
Rugăciunea unui dac	2.4565	0.8133	0.1605	0.3311	0.1974	1.8343	0.3091
S-a dus amorul	2.2292	0.9266	0.8301	0.4157	0.8958	1.7510	0.3785
Sara pe deal	2.5417	0.4983	0.5731	0.1960	1.1501	1.1964	0.4688
Scrisoarea I	2.5256	0.8391	0.3649	0.3322	0.4349	1.8803	0.3172
Scrisoarea II	2.4756	0.7128	0.2290	0.2879	0.3213	1.7800	0.3394
Scrisoarea III	2.4897	1.0075	1.0640	0.4061	1.0561	1.9475	0.3063
Scrisoarea IV	2.4189	0.8921	1.3729	0.3688	1.5390	1.7878	0.3490
Scrisoarea V	2.5417	1.0816	0.7251	0.4255	0.6704	2.0375	0.2844
Şi dacă…	2.2500	2.0208	4.2188	0.8981	2.0876	1.9508	0.3056
Singurătate	1.7500	0.7875	0.6562	0.4500	0.8333	1.6477	0.3650
Somnoroase păsărele	2.7500	0.6875	0.2812	0.2500	0.4091	1.5000	0.3750
Sonete	2.7619	1.1814	1.4764	0.4278	1.2497	1.8759	0.3515
Speranţa	2.0667	0.7733	0.7117	0.3742	0.9203	1.7198	0.3709
Steaua vieţii	2.0000	1.1667	2.0000	0.5833	1.7143	1.6258	0.3750
Stelele-n cer	2.6667	2.3889	2.0926	0.8958	0.8760	2.3198	0.2299
Sus în curtea cea domnească	2.1000	1.1567	0.7520	0.5508	0.6510	1.8775	0.2911
Te duci…	2.4773	1.4313	1.3192	0.5778	0.9217	2.1724	0.2510
Trecut-au anii	2.7857	0.8827	0.7915	0.3168	0.8968	1.6894	0.3571
Unda spumă	2.6250	0.3594	00.0820	-0.1369	0.2293	1.2718	0.4453
Veneţia (de Gaetano Cerri)	2.7857	0.4541	0.0875	0.1620	0.1926	1.4316	0.3980
Venere şi Madonă	2.6667	1.3472	0.9259	0.5052	0.6873	2.1840	0.2500
Viaţa	2.4103	0.7035	0.6292	0.2919	0.8944	1.6670	0.3780
Viaţa mea fu ziuă	2.1250	1.3594	3.3633	0.6397	2.4741	1.5919	0.3984
Vis	1.9259	1.1056	0.8387	0.5741	0.7586	1.7927	0.3278
Slovak							
J.Smrek, *Zápalky*	2.6818	0.4900	0.1814	0.1826	0.3705	1.4365	0.3926
J.Stacho, *Za život na smrť*	2.1500	0.5275	-0.0908	0.2453	-0.1720	1.5129	0.3650
A.Sládkovič, *Kykymora*	1.6909	0.3954	0.1416	0.2338	0.3581	1.3263	0.4446

A.Sládkovič, *Roky a veky*	2.5289	0.4971	0.3856	0.1966	0.7756	1.3618	0.4477
A.Sládkovič, *Ctibor*	2.6172	0.5331	0.2387	0.2037	0.4477	1.5369	0.3920
A.Sládkovič, *Marína*	2.5770	0.4666	0.0664	0.1811	0.1423	3.4708	0.1087
A.Sládkovič, *Ohlasy*	2.6444	0.8069	0.5501	0.3051	0.6817	1.7929	0.3452
S.Chalupka, *Mor ho!*	2.4128	0.3470	0.1218	0.1438	0.3515	1.2524	0.4763
S.Chalupka, *Ozdrav*	2.4625	0.8236	0.2708	0.3345	0.3288	1.8719	0.3129
V.Turčány, *Súmrak*	2.4736	0.3546	-0.1365	0.1433	-0.3849	1.2364	0.4571
V.Turčány, *Zem*	2.9730	0.2425	-0.0073	0.0816	-0.0303	0.5345	0.8466
V.Turčány, *Mám svoje mesto rád*	2.5469	0.8728	0.4514	0.3427	0.5172	1.5562	0.4126
V.Turčáany, *List Vítězslavovi Nezvalovi*	2.3148	0.6602	-0.0065	0.2852	-0.0099	1.7210	0.3340
P.O.Hviezdoslav, *Krvavé sonety*	2.5162	0.7816	0.1337	0.3106	0.1710	1.8536	0.3162
M.Rázus, *Matka*	2.2708	0.5725	1.1608	0.2521	2.0276	0.7260	0.7717
French							
Ch.Baudelaire, *Benediction*	2.2237	0.9894	0.6538	0.4450	0.6608	1.9471	0.2919
Ch.Baudelaire, *Confession*	2.0250	0.7744	0.2669	0.3824	0.3447	1.7737	0.3112
Ch.Baudelaire, *Une Martyre*	2.3000	0.8100	0.0440	0.3522	0.0543	1.8370	0.3000
P.Verlaine, *Adieu*	1.6111	0.6265	0.5676	0.3889	0.9059	1.4896	0.4151
P.Verlaine, *Ecoutez le chan-son bien Douce*	1.6786	0.5753	0.4808	0.3427	0.8358	1.4815	0.4056
Italian							
A.Dante, *Inferno, Canto I*	2.4254	0.3191	0.1204	0.1315	0.3772	1.1841	0.4877
A.Dante, *Inferno, Canto II*	2.5674	0.5859	0.4088	0.2282	0.6977	1.5610	0.4019
A.Dante, *Inferno Canto III*	2.4779	0.4113	0.3085	0.1660	0.7500	1.2668	0.4726
German							
R.M.Rilke, *Die Waise*	1.6866	0.7227	0.6655	0.4285	0.9209	1.5807	0.3874

F.Schiller, *An die Freude*	2.2056	1.0792	0.4845	0.4893	0.4489	1.9774	0.2700
F.Schiller, *Der Taucher*	1.8086	0.7473	0.5410	0.4132	0.7239	1.6747	0.3691
H.Heine, *Affrontenburg*	2.4118	0.7128	1.0497	0.2956	1.4726	1.3906	0.5052
Hungarian							
D.Kosztolányi, *Hajnali részegség*	2.5563	0.8665	0.6280	0.3390	0.7247	1.8182	0.3471
J.Arany, *Szondi két apródja*	2.0789	0.6253	0.3251	0.3008	0.5198	1.6169	0.3937
J.Arany, *Válasz Petfinek*	2.9688	1.3428	1.5947	0.4523	1.1876	2.0412	0.2891
J.Arany, *Czakó sírján*	2.5625	0.8711	0.0396	0.3399	0.0455	1.8247	0.3418
J.Arany, *Emléklapra*	2.6981	0.9277	-0.2266	0.3438	-0.2443	1.9088	0.2809
J.Arany, *Év kezdetén*	2.6250	0.6927	0.2979	0.2639	0.4301	1.6709	0.3116
J.Arany, *Alkalmi vers*	3.3409	1.2701	0.7750	0.3802	0.6102	1.9238	0.2934
Russian							
M.Lermontov, *Mtsyri*	1.9241	0.4922	0.0950	0.2506	0.1970	1.4974	0.3990
M. Tsvetaeva, *Babushke*	2.3000	0.4100	-0.0960	0.1783	-0.2341	0.6805	0.3480
A.Dementjev, *A mne prisnilsja son*	2.2955	1.1627	0.7391	0.5065	0.6357	0.8594	0.4109
F.Tjutčev, *Est' v oseni pervonačal'noj*	2.4167	0.9097	1.2072	0.3764	1.3270	0.6680	0.3333
M.Boroditskaya, *Koldunya*	2.9583	1.2899	0.1196	0.4360	0.0928	0.8922	0.4087
S.Esenin, *Pismo k materi*	2.5556	0.9136	-0.3052	0.3575	-0.3341	0.9127	0.4093

In order to show the formation of this view, we present some figures representing the relation between I and S of the criterion of Ord.

As can be seen in Figure 2.1, all but two Romanian texts (by M. Eminescu) are situated above the Ord-line S = 2I-1. One automatically asks whether this is a property of Eminescu or of Romanian. The area of Eminescu could be inserted between two straight lines or in an elliptic area.

In Slovak represented by Figure 2.2, one sees the same phenomenon. One of the texts has a very high S but by collecting further texts the empty area could be filled.

In French, Figure 2.3, we have few data but the situation is similar.

For Italian, we have merely the 3 texts by A.Dante presented in Figure 2.4. They lie high above the Ord's line. Further research will show some more precise positioning.

In Russian, there is only one text under the Ord's line. Here, too, much research will be necessary.

One may ask here a number of questions, e.g. does an indicator develop in time (with a given author, in the given type of poetry, in the given language); do the mean indicators differ among authors, languages; does some mean indicator of rhyme word length differs as compared with the other words of the poem, etc. As can be seen, the study of rhyme word length develops to a complex discipline needing many analyses in many languages.

To express the situation in Ord's sense (1972), the great majority of points are placed in the hypergeometric domain. Some of them, especially in Romanian, are placed in the Beta-Pascal domain. However, none of the points attained up to now lies under the Ord's line, $S = 2I-1$.

Automatically the question arises whether we have to do with a text law. In order to state it, one needs not only many other analyses in many languages but also the placing of the property "rhyme-word-length" into some part of Köhler's synergetic circuit. Since we have to do with a special text type, it may belong to a quite different control circuit. A method which could lead to a result would be the study of all words of the given poem, compute their mean length and search for a possible dependence of the rhyme-word to this mean.

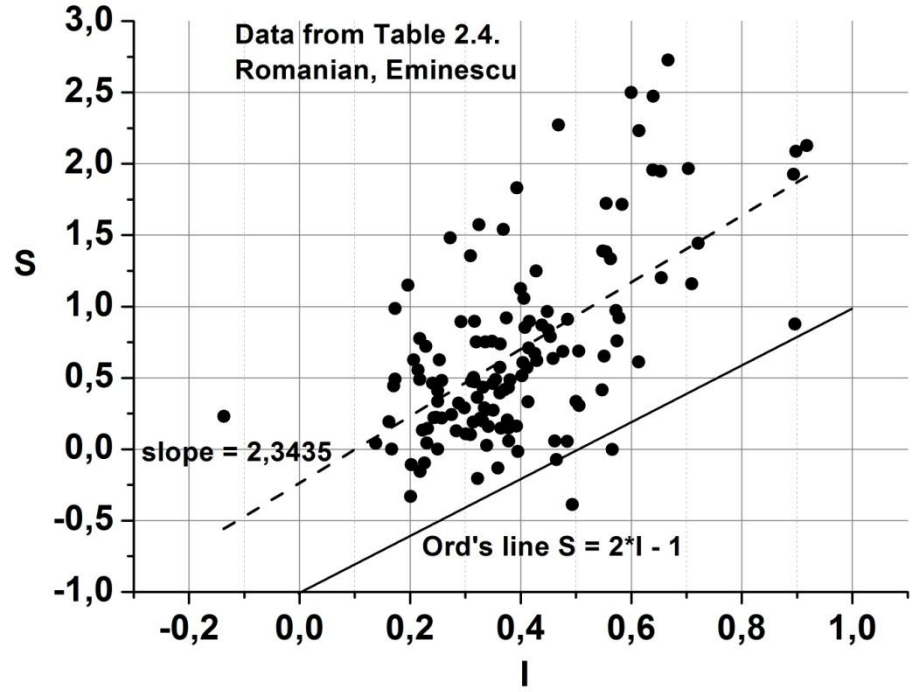

Figure 2.1. Ord's criterion for Romanian data

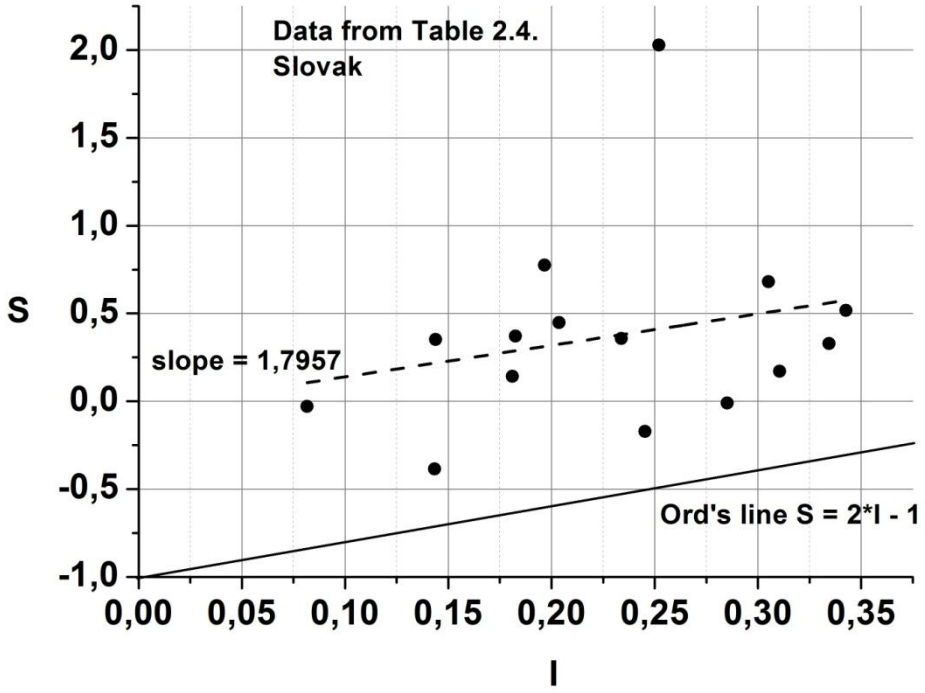

Figure 2.2. Ord's criterion for Slovak data

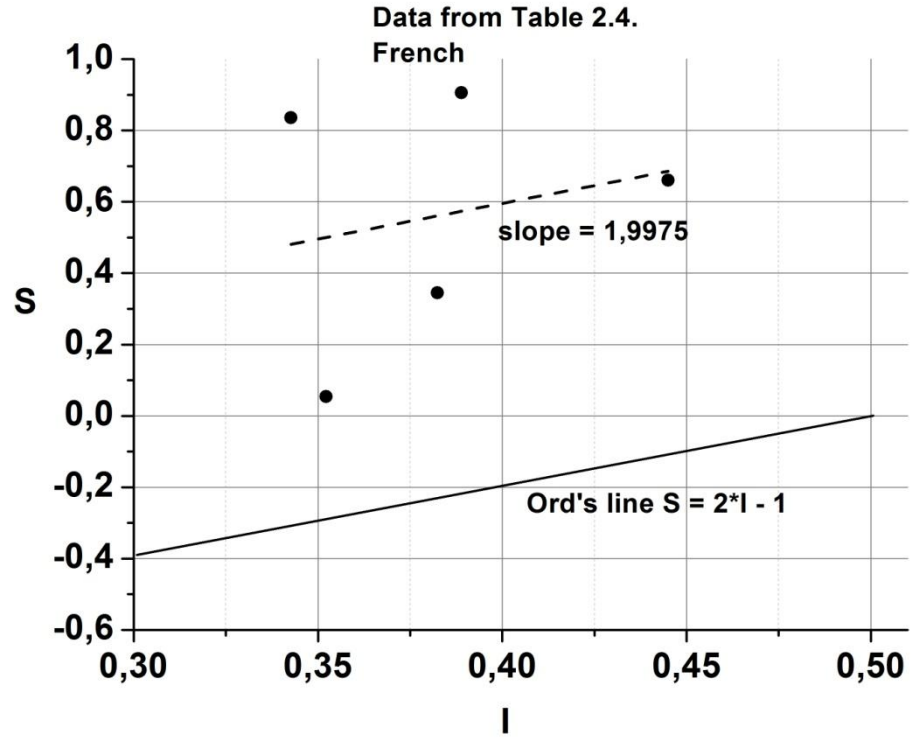

Figure 2.3. Ord's criterion for French data

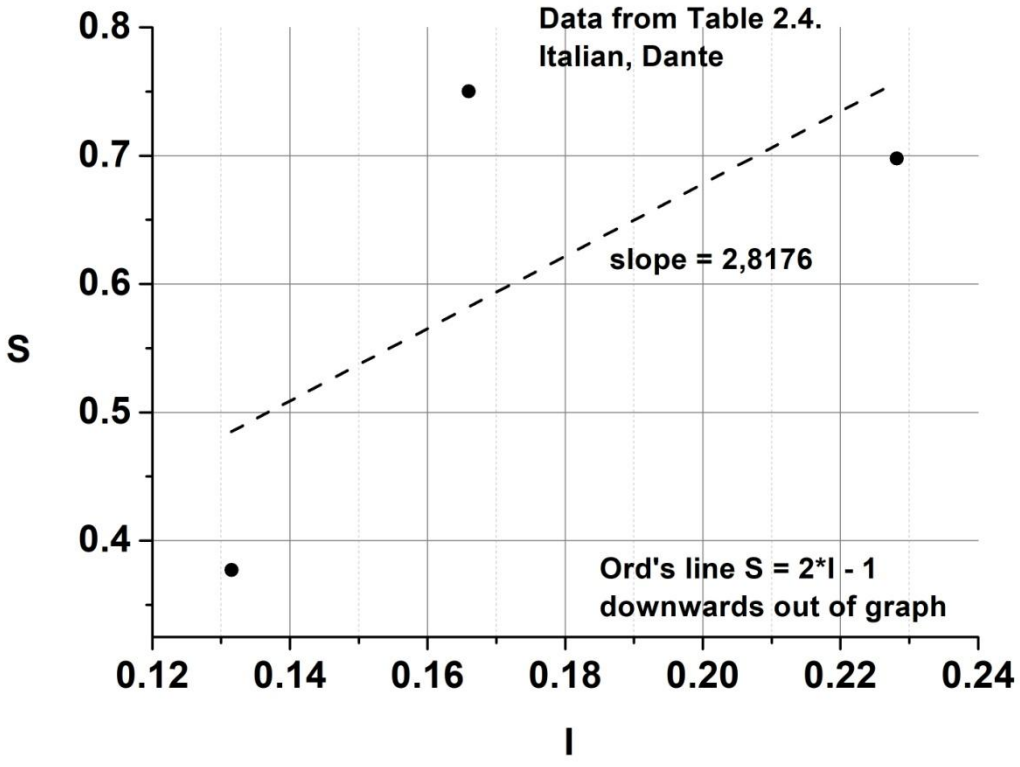

Figure 2.4. Ord's criterion for Italian data

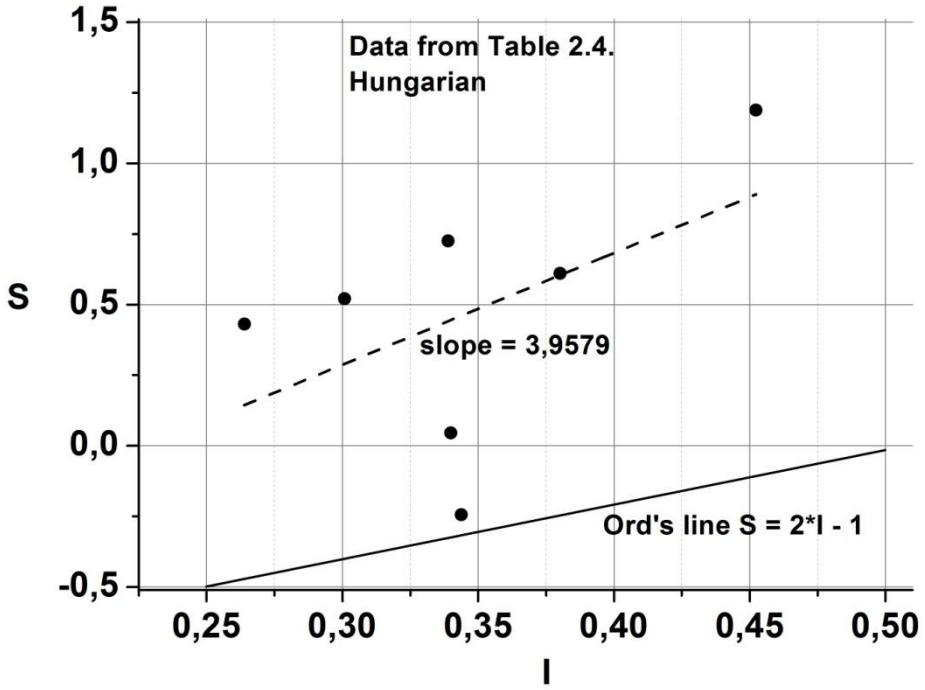

Figure 2.5. Ord's criterion for Hungarian data

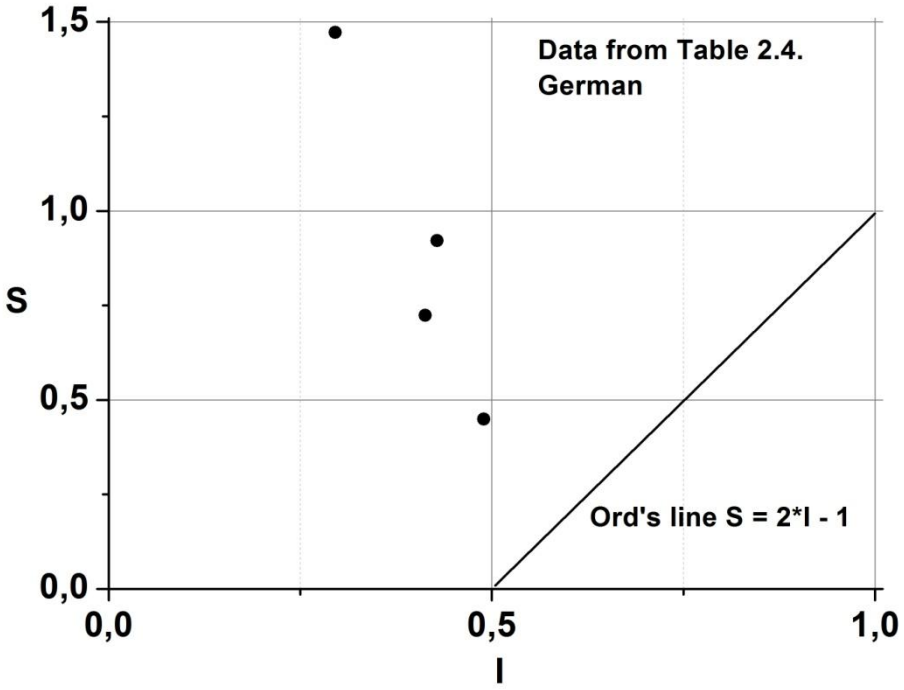

Figure 2.6. Ord's criterion for German data

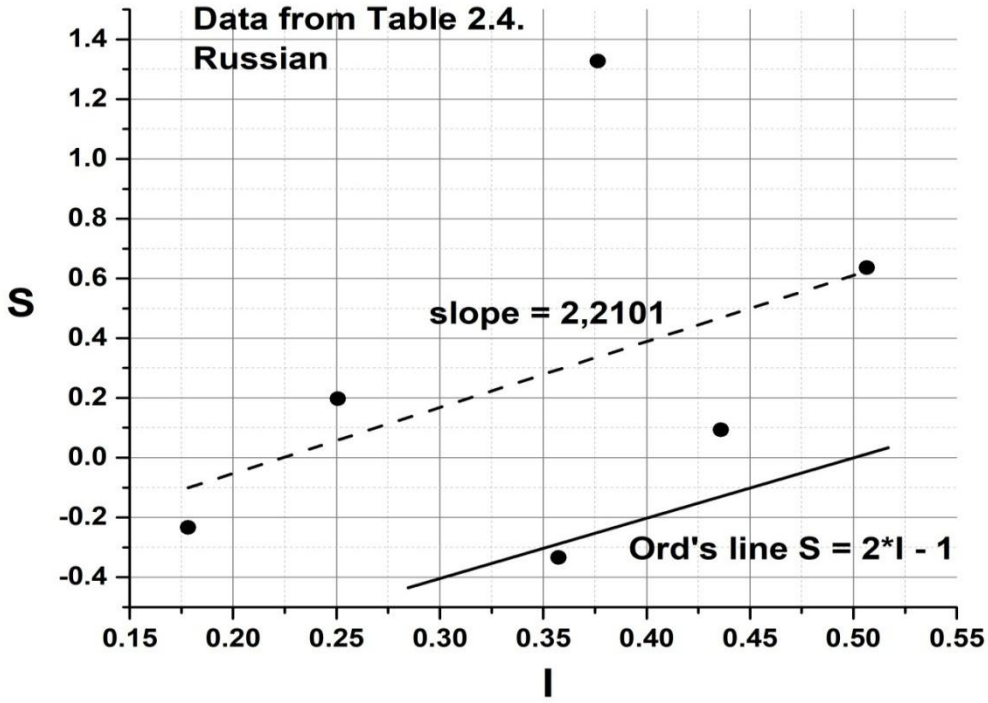

Figure 2.7. Ord's criterion for Russian data

3. Motifs of Length

The sequence of length of rhyme words can be further analyzed in form of motifs. For numbers, a motif is a sequence of non-decreasing numbers as defined by Köhler (2006, 2008, 2015), Köhler, Naumann (2008).

For the poem by J.W.v.Goethe, *Der Erlkönig*, we construct the sequence of motifs as follows: the original data presented above are:

S(*Der Erlkönig*) = [1,1,1,1,2,1,1,3,1,1,1,2,1,2,1,1,1,1,1,1,1,1,2,1,2,2,1,2,2,1,1,1].

from which we obtain:

[1,1,1,1,2], [1,1,3], [1,1,1,2], [1,2], [1,1,1,1,1,1,1,1,2], [1,2,2], [1,2,2], [1,1,1].

Motifs have some properties, e.g. length consisting of the number of elements in the individual motifs. For the above poem we obtain:

Lengths of motifs: [5,3,4,2,9,3,3,3].

Again, the lengths of motifs may be presented in the form of a distribution but short poems will not display a very regular picture.

Another property of motifs is the range of motifs, i.e. the last value minus the first value. For the above poem we obtain:

Ranges: [1,2,1,1,1,1,1,0],

and again, the text must be longer to obtain some regular forms.

A third possibility is the mean of the motif values. Here we obtain for the first motif: (1+1+1+1+2)/5 = 6/5 = 1.2. Computing all means for the given poem we obtain:

Means of motifs: [1.2, 1.67, 1.25, 1.5, 1.11, 1.67, 1.67, 1.0],

representing a rather oscillating course not yielding any hypothesis.

The motifs, their lengths and ranges of some texts are presented in Table 3.1. We have chosen only longer poems and fitted the Hyper-Poisson distribution which can be derived from the unified theory by means of the recurrence formula

$$P_x = \frac{a}{b+x-1} P_{x-1} \quad (3.1)$$

yielding

$$P_x = \frac{a^x}{{}_1F_1(1;b;a)b^{(x)}} P_{x-1} \quad (3.2)$$

where F is the hyper-geometric function and $b^{(x)} = b(b+1)\ldots(b+x-1)$, i.e. the increasing factorial function. Here the parameter a can be interpreted as given by the language and b-1 is the parameter expressing the style of the writer.
There was a very long poem, namely *Marína* by A.Sládkovič for which we were forced to fit the hyper-Pascal distribution defined as

$$(3.3) \quad P_x = \frac{\binom{k+x-1}{x}}{\binom{m+x-1}{x}} \frac{q^x}{{}_2F_1(k,1;m;q)}$$

where F is the hyper-geometric function ${}_2F_1(a,b;c;t)$. The hyper-Poisson distribution is its limiting case, hence we have the same family. The difference equation of the above formula is

$$(3.4) \quad P_x = \frac{k+x-1}{m+x-1} qP_{x-1},$$

that is, a well interpretable formula in terms of the unified theory.

Table 3.1
Length motifs and their properties in longer poems

Text	Categories	Values
A.Sládkovič, *Marína*	Motifs	[[2,3,3,3], [2,2,3,3,3,3], [2,3], [2,3,3,3], [2,3], [2,2,3,3,3,3,3,3,3,3,4], [3], [2,3], [2,3], [2,3], [2,3,4], [3,3,3,3,3], [2,2,2,4], [2,2,4], [3], [2,3,3,3,3], [2,3,3,3], [2,4], [3], [2,2,3,3,4], [3], [2], [1,2], [1,2,2], [1,3,3], [2,3], [2,4], [2,3,3,3,3,3], [2,3], [2,2], [1,2,3,3], [2,3], [2,3], [2,3,4], [2,4], [2,3], [2,2,3,3,3,3], [2,3,3], [2,2,3,3,3,3,3], [2,3,3], [2,3], [2,2,2,2,2,3], [2,4], [3], [2,4], [2,2,2,3,4], [2,2,4], [2,2,4], [2,2,3], [2,2,3], [2,2,2,3,3,3], [2,3], [2,3,3,3,3,3,3], [2,2,2,4], [3,3], [2,3,3,3,5], [3], [2,3,3,3,5], [3], [2], [1,1,1,2,3], [2,2,2,2,2,3], [2,3], [2,2,2,2,2,2,2], [1,2,2,2,2,3,3], [2,2,2,3], [2,2,2,2,3,3,4], [3], [2,3], [2,4], [2,3,3,3], [2,3,3,3], [2,2,2,2,2,2,2,3], [2,2,2,2,2,2,3,3], [2,2,2,3,3,3,3,4], [3,3], [2,3,3], [2,3,3], [2,2, 3], [2,2,3], [2,3,3], [2,3,3], [2,2,2,2,3,3], [2,3,3], [2,2,3,3,3,3,3,3, 3], [2,2,3], [2,2,3,3,3,4], [2,3], [2,3,4], [3,3,3], [1,3], [2,2,2,3,3], [2,4], [3], [2,2,2,2,4], [3], [2,3,3,3], [1,4], [1,2,3,3], [2,2,4], [3], [2,2,4], [2,4], [1,4], [3], [2,2,3], [2,2,2], [1,3], [2, 2], [1,2], [1,4], [1,3], [2], [1,2,2,2], [1,2], [1,2,2,3], [2], [1,4], [1,3,3,3], [2,3,3,3,3], [2,3], [2,3], [2,2,3,3,3], [2,3], [2, 3],

		[2,3], [2, 2,3], [2,3], [2,3,3], [2,3], [2,2,3,3], [2,5], [3], [2,3], [2,3], [2,3], [2,2,3,3,4], [3,3,3,3], [2,2,2,3,3,4], [3,3,3], [2,2,3], [2,3, 3], [2,3,3,3,3,3], [2,2,5], [2,2,2,2,3,3,3,3,3], [2,2,2,3], [2,3,4], [3,3], [2,4], [3,3,3,3,3,3,4,5], [3,3,3], [2,3], [2,2,3,3,3], [2,3,3,3,3,3,3], [2,5,2,2,3,3,3], [2,3], [2,2,2,3,3,3,3,4], [3,3,4], [2,2,3], [2,3,3,3], [2,3,3], [2,2,3], [2,2,3,3,4], [3], [2,2,3,3,4], [2,3], [2,3,3,3], [2,3,3], [2,3,3,3,3,3], [2,2,2,3,3,3,3], [2,3,5], [3,3,3], [2,2,3], [2,3,3], [2,3], [2,2,3], [2,3,3], [2,2,3,3], [2,2,2,2,2,3,3], [2,3,3], [2,3,3,4], [3,3,3,3,3,3,3,3,3], [2,2,2,2,2,4], [2,4,4], [1,2,3], [2,4], [2,3], [2,4], [2,3], [2,2,2,2,2,2,3,4,4], [1,2,2,2,4], [2, 2,3], [2,3], [2,2,2,2,2,2,4], [3,4,4], [2,3], [2,2,3], [1,3], [1,2,2,3,4], [3], [2,4], [2,2,2,2,2,3,3,3], [2,2,2,2,3], [2,3,3], [2,2,3,3], [1,3, 3,3], [2,3,3,3,3], [2,2,2,2,2,2,3,3,3], [2,2,4], [2,3,3,3,3,3], [2,2,3,3,3], [2,2,2,3,3], [2,3], [2], [1,2], [1,3,3,3,3,3,3,3,3], [2,3], [2, 4], [3,3,4], [3], [2,2,2,2,4], [2,2,3,3,3], [2,2,2,4], [3,3,3,3,3,3], [1,3,3,3,3,3], [2,2,2,2,2], [1,2,3,3], [2,2,3], [2,3], [2,2], [1,2], [1,2,2,2,3], [2,3], [2,3], [2,3], [2,2,2], [1,2,2], [1,3,5], [2, 3,3,4], [2,3,3,3,3,3], [2,3,3,3,3,3,3,3], [2,2,3], [2,3], [2,2,3], [2,4], [3,3,3,3], [2,3,3,4,4], [3,3,3,3,3], [2,2,2,3], [2,3,3], [2,3,2,3,3], [2,3,3], [2,3,3,3], [2,3], [2,3], [2,2,3,3], [2,3,3,3], [2,3,3,3,3], [2,2,2,3,3,3], [2,3], [2,2,3], [2,3], [2,3,3,3], [2,3], [2,3], [2,3,3,3,3,3], [2,2,3,3,3,3,3,4], [3], [2,3,3], [2,3], [1,3,3,4], [3], [2,3,3,3], [2,3,3], [2,3], [2,2,4], [2,2,2,2,2,3,3], [2,3,3,3], [2,4], [3], [2,3,3], [2,2,4], [3,3,3,3], [2,2,2,3,3], [2,3,3,3,3,3,3,3,3,3,3,3,3,3,3,3], [2,2,3], [2,4], [2,3,3,3], [2,2,2,3], [2,3], [2,2,3,3,3,3,3,4], [2,3,4,4], [3], [2,2,3,3,3,3], [2,3,3,3], [2,3,3,4], [3], [2,4], [2,4], [2,4], [2,2,2,2,2,2,2,2,2,2,3,3,3,3,3,3,3], [2,2,3, 3,3,4], [2,3,3], [2,3,3,3], [2,2,2,2,3,3,3,3], [2,2,2,3,3,3,3,3], [2,2,2,3,3], [2,3], [2,3,3,3], [2,3,3,3], [2,3,3,3,3,3,3,3, 3,3,3,3,3], [2,4], [3,3,3,3,3,3,3,3], [2,5], [2,3,3,3], [2,3], [2,3,3,3,3,3], [2,2,3], [2,3,3,3,3,3], [2,2,3], [2,3], [2,3], [2,2,3], [2,2,3,3], [2,2,3,3], [2,3,3,3], [2,2,3], [2,2,3], [2,2,3,3], [2,2,2,3,3,3,3,3,3,3, 3,3], [2,2,3,3,3], [2,3,3,3,4], [3,3,3,3,3,3,3,3,3,3,3,3,3], [2,3,3,3,3], [2,2,3], [2,3], [2,3,3,3], [2,3,3], [2,2,3,3,3,3], [2, 3], [2,3,3], [2,3,3], [2,2,3,3,3,3,3,3], [2,3], [2,3], [2,2,3], [2,3,3,3,3,3,3], [2,2,2,2,3], [2,2,3,4], [3,3,3,3],

		[2,3,3,3,3,3], [2,2, 3], [2,3,3], [2,2,2,3], [2,3], [2,3,3], [2,2,3,3,4], [3], [2,3,3,3,3], [2,3,3,4], [3], [2,2,2,2,4], [2,3,3,3,3,3], [2,3], [2,2,3], [2,3], [2,3], [2,2,2,3,3], [2,2,2,2,3], [2,2,3], [2,3], [2,2,2,2,2,3,3], [2,2,3,3,3,3,3,3,4], [3,3,3,3,3], [2,3], [2,3,3,3], [2,2,3], [2,2], [1,2, 4], [2,2,4], [2,2,2,3,3], [2,2,2,3,3], [2,3,4], [3,3], [2,2,2,2,3,3,3], [1,3], [1,2,3], [1,2,3], [2,3], [2,3], [2,2,2,3], [2,2,3], [2,2,3,3, 3], [2], [1,2,2,2,3], [2,3,3], [2,3], [2,3,3], [2,2], [1,2], [1,2,4], [3,3,3,3], [2,3,3,3], [2,3,3,3,3], [2,3], [2,3], [2,3,3,3], [2,3,3], [2,3,3, 3], [2,3,3,3,3,3,3], [2,2,2,3,3], [2,2,3,3,3], [2,3], [2,2,2,3,3,3], [2,3], [1,3], [2,3],[2,3], [2,4], [2,2],[1,2,3,3,4], [2,4],[2,2,2], [1,3], [1,2,3,3,3,3], [2,2,2,3], [2,3], [2,2,2,4], [1,3], [2,3,4,4,4], [2,3,4], [2,3], [2,2,4], [2,4], [2,2,3,3,4], [2,2,3], [2,3], [2,2,2,2, 3,3,3,3], [2,2,3], [2,2,3], [2,3,3,3], [2,2,3], [2,3], [2,2,2,2,4], [2,3,3], [2,3], [2,3,3,4], [3,3,3,3,3,3], [2,3,4,4], [2,2,2,3], [2,3,3,3,3,3], [2,2,3,3,3,3,3,3], [2,2,2,3,3,3], [2,3], [2,3,3], [2,2,2,2,2,2,3,3], [2,3,3], [2,2,3], [2,3,3,3,3], [2,3,3,3,3], [2,2, 3], [2,2,2,3,3], [2,3], [2,2,3], [2,2,3], [2,3,4], [3,1], [3,3], [2,3,3], [2,3,3,3], [2,2,3], [1,3], [2,2,3], [1,3], [2,2,3,3,3], [2,4], [3,3,3], [2,2, 2,3], [2,2,3,3,4,4], [3,3,3,3,3,3,3,3], [2,3,3,3,3,3,4], [2,2,2,3], [2,2,3,3], [2,3,3], [2,2,2,2,2,2,2,2,2,2,2,3], [2,2,2, 2,2,2,3,4], [3], [2,2,2,2,2,3], [2,2,2,2,3], [2,3], [2,2,3,3,3,3,3], [2,2,3,3], [2,2,2,2,3,3], [2,2,3,3,3], [2,2,3,3,3,3], [2,3, 3], [2,2,3,3,3,3,3], [2,2,3], [2,3], 2,3,3,3], [2,2,3,3,3,3,3,3], [2,3,3], [2,3], [2,3,3,3], [2,2,3], [2,3,4], [3,3,5], [4], [2,2,3], [2,3], [2, 3], [2,2,3,3], [2,3,3,3], [2,2,3], [2,3,3], [2], [1,3,3], [2,3,3], [2,2,2,2,2,3], [2,3,3], [2,4],[2,2,2,4], [2,2,3], [2,2,3,3,4], [3], [2,3], [2, 2,4], [2,3,3,4], [2,2,4], [2,3,3], [2,2,3], [2], [1,2,2,2,5], [4], [2,3], [2,2,4], [1,4], [2,2,3,4], [2,2,2,2], [1,2,2,2,3], [2,2,2,3], [2,2,2,2,2,2,2,4], [3], [2,3], [2,2,2,2,2,3], [2,2,3,4], [3,1,3,1,3], [2,2,2,5,2,2,2,3], [2,3,4], [2,2,2,2,3,3], [2,2,3], [2,2,3], [2,2,3], [1,3], [2,2,2,2,2,2,4], [3], [2,5], [2,3,3], [2,2,3], [2,2,3], [2,4], [3], [1,1,2,3], [1,2,3,3,3,4,4], [2,2,2,2,2,2,3], [2,2,4], [1,2,3,3], [2], [1,2], [1,3,3], [1,2,2,2,3,4], [2,3], [2,2,3], [2,2,2,2,3,3], [2,3,4], [2,2,3], [2,3], [2,3], [2,3], [2,4,4], [3,3,3], [2,2,3], [2,3], [2,2,4], [3], [2,2,4], [2,3,3], [1,1,3], [1,3], [2,2,4], [3], [2,2,3,3], [2,3,4], [2,4], [2,2], [1,2,3], [1,3], [1,3],

		[2,2,4], [1,3], [2,2,3], [2,2,2,3], [2], [1,2,3], [2,2], [1,1,1,2,2,3], [2,2,2,2], [1,2,2,2,2,2,2,2,2,2], [1,2], [1,2,3,3], [2,2,4], [2,3,3], [2,2,3,3,3], [2,2,2,2,2], [1,2,3], [1,3], [2,2,3,3,3,3,3,3], [2,2,3], [2], [1,2,3], [2,2,3], [2], [1,2,3], [1,2,2,2,4], [3,4], [2,2,2,2,3], [2,3], [2,3], [2,2,5], [2], [1,3], [1,3], [2,3], [2,2,2,2,3], [2,2,2,2,3], [2,2,3], [2,2,3], [2,3], [2,2,2,2,3], [2,2,2,4], [2,4], [2,2,2,2,3,4], [2,2,2,2,2,2,2,2,3,3,3,3], [2,3], [2,2, 3,3,3,4,4], [2,2,2,4], [2,4], [2,2,2,2,2,3,3], [2,2,3,3,3,4], [2,2,2,2,2,4], [3,4], [3,3,3], [2,2,2,3,3], [2,2,3,3], [2,3,3], [2,2,3,3], [2,2,4], [2,2,2,3,3,3], [2,3,3,3], [2,2,3], [2,2,2,3,3,3,3], [2,3,3], [2,3,4], [3], [2,4], [2,2,2,3,3,3,3,3,4], [3,3], [2,3], [2,2, 2,3], [2,3], [2,3], [2,2,3,4], [3,3,3,3,3,3], [2,2,2,2,3], [2,3], [2,2,3], [2,3,3,3], [2,3,3], [2,3,3,3,4], [2,3,3,3], [2,3,3], [2,2,2,3], [1,3,3], [1,3], [2], [1,2,3,3,3], [2,3,3,3,4], [2,3,3,3,3], [2,3,3], [2,3], [2,3,3], [2,3], [2,3,3,3,3,3], [2,2,2,3,3,3], [1,3,3,1,3],[2,2,3], [2,3], [2,4], [2], [1,3], [2,3], [1,3], [2,2,3], [2,2,3,3,3,3,3,3], [2,2,4], [3], [2,3,3,3], [2,3,3,3], [2,3], [2,3], [2,2,4], [3], [2,2,3,3], [2, 3], [2,2,3,3], [2,2,2,3], [2,3,4], [3], [2,2,3,3,3], [2,3,3,3,3], [2,3,3,3,3,3,3,3,3,3,3,3,3,3,3,3], [2,2,3,3], [2,3], [2,3,3,3,3, 3,3,3,3], [2,4], [3,3,3,3], [2,2,3,3,4], [2,3,3], [2,3,3,4], [3], [2,2,2], [1,2,3], [2,2,3,3,3], [2,3,3], [2,3], [2,3,3,3,3,3,3], [2,3,3], [2,2,3,3,3], [2,2,2,3], [2,2,3,3,3,3,3,3], [2,3], [2,4], [2,4], [3,3,3], [2,3,3,4], [3,3,3], [2,2,2,3,3,3], [2,3,3], [2], [1,3], [1,2,2,2,3, 2], [1,2,2,2,2,2,2,2,3,3,3], [2,2,3,3,3], [2,3,3], [2,2,3], [2,3], [2,4], [2,2,3,3,3,3,3,3,3,3], [2,2,3,5], [3,3,3,3], [2,3,3,3,3,2,3,3], [2,3], [2,3], [2,2,3,3,3,3,3], [1,3], [2,2,3,3,3], [2,2,2], [1,3], [1,2,4], [3,3], [2,3,3], [2,2,2,2,3,3,3,3], [2,3,3,3], [2,2,2, 3,3], [2,2,2,3,3,3,4,5], [2,3,3], [2,3], [2,3], [1,3,3,3,3,3], [2,2,3], [1,3], [2,2,3], [2,3,3], [2,3,3], [2,3], [2,2,2,3], [2], [1,3], [2,3,3,3,2,3], [2,3]]
	Lengths	[4,6,2,4,2,11,1,2,2,2,3,5,4,3,1,5,4,2,1,5,1,1,2,3,3,2,2,6,2,2,4,2,2,3,2,2,6,3,7,3,2,6,2,1,2,5,3,3,3,3,6,2,7,4,2,5,1,5,1,1,5,6,2,7,7,4,7,1,2,2,4,4,8,8,8,2,3,3,3,3,3,3,6,3,9,3,6,2,3,3,2,5,2,1,5,1,4,2,4,3,1,3,2,2,1,3,3,2,2,2,2,2,1,4,2,4,1,2,4,5,2,2,5,2,2,2,3,2,3,2,4,2,1,2,2,2,5,4,6,3,3,3,6,3,9,4,3,2,2,8,3,2,5,7,7,2,8,3,3,4,3,3,5,1,5,2,4,3,6,7,3,3,3,3,2,3,3,4,7,3,4,9,6,3,3,2,2,2,2,9,5,3,2,7,3,2,3,2,4,1,2,8,5,3,4,4,5,9,3,6,5,5,2,1,2,8,2,2,3,1,5,5,4,6,5,5,4,3,2,2,2,5,2,2,2,3,3,3,4,6,7,3,2,3,2,4,5,5,4,3,5,

		3,4,2,2,4,4,5,6,2,3,2,4,2,2,6,7,1,3,2,4,1,4,3,2,3,7,4,2, 1,3,3,4,5,15,3,2,4,4,2,7,4,1,6,4,4,1,2,2,2,17,6,3,4,8, 8,6,2,4,4,12,2,8,2,4,2,6,3,6,3,2,2,3,4,4,2,2,4,1,3,2,3, 5,3,3,4,12,5,5,13,5,3,2,4,3,6,2,3,3,7,2,2,3,7,5,4,4,6, 3,3,4,2,3,5,1,5,4,1,5,6,2,3,2,2,5,5,3,2,7,9,5,2,4,3,2,3, 3,5,5,3,2,7,2,3,3,2,2,4,3,5,1,5,3,2,3,2,2,3,4,4,5,2,2,4, 3,4,7,5,5,2,6,2,2,2,2,2,2,5,2,3,2,6,4,2,4,2,5,3,2,3,2,5, 3,2,8,3,3,4,3,3,2,5,3,2,4,6,4,4,6,7,5,2,3,8,3,3,5,5,3,5, 2,3,2,3,2,2,3,4,3,2,3,2,5,2,3,4,6,8,7,4,4,3,12,8,1,6,5, 2,7,4,6,5,6,3,7,3,2,4,7,3,2,4,3,3,3,1,3,2,2,4,4,3,3,1,3, 3,6,3,2,4,3,5,1,2,3,4,3,3,3,1,5,1,2,3,2,4,4,5,4,7,1,2,6, 4,5,8,3,6,3,3,3,2,7,1,2,3,3,3,2,1,4,7,7,3,4,1,2,3,6,2,3, 6,3,3,2,2,2,3,3,3,2,3,1,3,3,3,2,3,1,4,3,2,2,3,2,2,3,2,3, 4,1,3,2,6,4,10,2,4,3,3,5,5,3,2,7,3,1,3,3,1,3,5,2,5,2,2, 3,1,2,2,2,5,5,3,3,2,5,4,2,6,12,2,7,4,2,7,6,6,2,3,5,4,3, 4,3,6,4,3,7,3,3,1,2,9,2,2,4,2,2,4,6,5,2,3,4,3,5,4,3,4,3, 2,1,5,5,5,3,2,3,2,6,6,5,3,2,2,1,2,2,2,3,8,3,1,4,4,2,2,3, 1,4,2,4,4,3,1,5,5,15,4,2,9,2,4,5,3,4,1,3,3,5,3,2,6,3,5, 4,8,2,2,2,3,4,3,6,3,1,2,6,10,5,3,3,2,2,10,4,4,8,2,2,7, 2,5,3,2,3,2,3,8,4,5,8,3,2,2,6,3,2,3,3,3,2,4,1,2,6,2] (x,f_x): (1,55), (2,217), (3,205), (4,112), (5,85), (6,51), (7,33), (8,20), (9,8), (10,3), (11,1), (12,4), (13,1), (14,0), (15,2), (16,0), (17,1) Hyperpascal: k = 0.8783, m = 0.1229, q = 0.5180, DF = 9, X^2 = 12.96, P = 0.16
	Ranges	(x,f_x): (0,109), (1,468), (2,203), (3,27), (4,2). Hyperpoisson: a = 0.4156, b = 0.0968, DF =1, X^2 = 6.55, P = 0.01
M.Eminescu, *Luceafărul*	Motifs	[[2,4,4], [2,2,2], [1,2], [1,3], [1,3], [1,3], [2,2], [1,2,3], [2,3], [2,3], [2], [1,2,2,3], [1,3], [2,3], [1,2], [1,2,3,3], [2,3], [2,3], [1,2], [1,3], [1,2], [1,2], [1,4,4], [2,4], [2,2,3,4], [2], [1,3], [2,2, 3], [2], [1,2,3], [2], [1,3], [1,3], [1,2], [1,3], [2,2, 2,2], [1,3], [2,2,2,3], [1,3], [2,4], [1,2], [1,3], [1,2], [1,3], [1,3], [1,3], [1,2], [1,4], [2,3], [2,2,2,4], [1,3], [1,2,3], [2,3], [2,3], [2, 3,3], [1,4], [1,3], [1,2,2,2], [1,3], [2,2,2,2], [1,3], [2,4], [2,2], [1,2, 2,2,4,4], [2,3,3,3,3], [2,2,2], [1,4,4], [2,2,2,2,3], [1,3], [1,2,3], [2], [1,2], [1,2,2,2,2,2,3,4], [2,2,2,3], [1,3,3], [2], [1,4], [1,2], [1,3], [1,2, 3,3,3,4], [1,2], [1,2,4], [3,3,3], [1,2,4], [2,2,4], [2,3,3,3,3], [2], [1,2,2,2,3,3,4], [2], [1,2], [1,2,2,3], [1,3], [1,3], [1,3], [1,2], [1,3], [1,2,3], [2,3], [2,2,3], [2,3], [2,2,3], [2,3], [2], [1,2,2,3, 3,3], [1,2, 2,3], [2,2], [1,2,4], [2, 3,3], [1,4], [1,2], [1,2], [1,3], [1,3,3],

		[2,2,3], [2,2,2,2,2,3], [1,2], [1,4], [2,2,2,2], [1,2], [1,2], [1,2,3], [2,2,2, 2,3], [2,5], [1,3], [2,2,2,3], [2,5], [2,3], [1,2], [1,3,4], [3], [1,3], [1,3,3,3,3], [2,2,2], [1,2], [1,2,2,2], [1,3], [1,2,2,2,2,2], [1,2], [1,2,3], [2,2,3], [2,2,4], [3], [1,2], [1,4], [1,2,4], [2,2,3], [1,2], [1,3], [1,2]]
	Lengths	[3,3,2,2,2,2,2,3,2,2,1,4,2,2,2,4,2,2,2,2,2,2,3,2,4,1,2, 3,1,3,1,2,2,2,2,4,2,4,2,2,2,2,2,2,2,2,2,2,2,2,4,2,3,2,2,3, 2,2,4,2,4,2,2,2,6,5,3,3,5,2,3,1,2,8,4,3,1,2,2,2,6,2,3, 3,3,3,5,1,7,1,2,4,2,2,2,2,2,3,2,3,2,3,2,1,6,4,2,3,3,2,2, 2,2,3,3,6,2,2,4,2,2,3,5,2,2,4,2,2,2,3,1,2,5,3,2,4,2,6, 2,3,3,3,1,2,2,3,3,2,2,2] (x,f_x): (1,11),(2,81), (3,31), (4,14), (5,5), (6,5), (7,1), (8,1) Hyperpascal: k = 0.2222, m = 0.0160, q = 0.4020, X^2 = 3.79, DF = 3, P = 0.26
	Ranges	[2,0,1,2,2,2,0,2,1,1,0,2,2,1,1,2,1,1,1,2,1,1,3,2,2,0,2, 1,0,2,0,2,2,1,2,0,2,1,2,2,1,2,1,2,2,2,1,3,1,2,2,2,1,1, 1,3,2,1,2,0,2,2,0,3,1,0,3,1,2,2,0,1,3,1,2,0,3,1,2,3,1, 3,0,3,2,1,0,3,0,1,2,2,2,2,1,2,2,1,1,1,1,1,0,2,2,0,3,1, 3,1,1,2,2,1,1,1,3,0,1,1,2,1,3,2,1,3,1,1,3,0,2,2,0,1,1, 2,1,1,2,1,2,0,1,3,3,1,1,2,1] (x,f_x): (0,21), (1,56), (2,53), (3,19) Hyperpoisson: a = 0.9587, b = 0.3595, DF =1, X^2 = 3.87, P = 0.05
P.O.Hviezdoslav *Krvavé sonety*	Motifs	[[3], [2,2,3,5], [2,3], [1,2,3,4], [3], [2,3], [1,2,4], [1,1,3,3], [1,4], [1,2], [1,2], [1,3], [2,2,3], [1,4], [2], [1,2,3], [2,3], [2,3], [2,4], [2], [1,3], [2,2], [1,4], [3,4], [2,4], [3,3], [2,2,5], [3,3,3,3,4], [3], [2,3], [2,3,3], [2,2,3,3], [2,2,2,4], [2,2,3,3,3], [1,2,2], [1,1,3], [2,2,4], [3,3,3,4], [3,3], [2,2,3,3], [2,2,3], [2], [1,2], [1,2,3], [1,4], [2,3], [1,2,2], [1,3], [1,2], [1,2,5], [3], [2,2,3,3], [2,2,3], [2,3], [2,2,2,3], [1,2,2,3], [1,4], [2], [1,2,3], [2,3,4], [3,3], [2,2,3], [2,4], [2,3], [2], [1,2], [1,3,3,3], [2,4], [2], [1,2,3], [2,2,3,4], [2,4], [3,3], [2,2,3,3,3], [2,3,3,3], [2,3,3,3,3,4,5], [3,3], [2,2,3], [2,3,4], [3,4], [3,3,4], [2,3,3], [2,2,3], [2,3], [2], [1,4], [1,3], [2,2], [1,3], [2,3], [2,2,3,4], [3], [2,3,3], [2,2,3,3], [2,2,3,4], [3,4], [3,4], [3,3,3], [2,3,3], [2,3,3,4], [3], [2,3], [2,2,3], [2,2,2], [1,2,2], [1,1,1,3,3], [2,3], [1,4,4], [3], [1,4], [2], [1,4], [3], [2,3], [2,3,3], [2,2,3,3], [2,2,3], [2], [1,2], [1,2,2,2,2,2,3,3,4], [2,3], [2], [1,2], [1,2,3,3], [2,3,3,3], [2,4], [3], [2], [1,6], [2,2,3,3,4], [2,3,3], [2,2,3], [2], [1,2], [1,2,3], [1,3],

		[2], [1,2,2,2], [1,4], [1,3,3], [2,3,3], [2,4], [2,3], [2,2], [1,2,3,4], [3], [2,3,3], [2,5,], [3], [2,2,3], [2,3,3,3], [2], [1,3], [2,2,3,3], [2,4], [3], [2], [1,2], [1,2], [1,3,3,4], [3,3], [2,2,3], [2,3], [2,3,4], [3,3,4], [2,3,3], [2,3,3], [2,3,4], [3,3,3,3], [2,4], [3,3], [2,4], [3,4], [3], [2,3], [2,3]]
	Lengths	[1,4,2,4,1,2,3,4,2,2,2,2,3,2,1,3,2,2,2,1,2,2,2,2,2,2,3, 5,1,2,3,4,4,5,3,3,3,4,2,4,3,1,2,3,2,2,3,2,2,3,1,4,3,2,4, 4,2,1,3,3,2,3,2,2,1,2,4,2,1,3,4,2,2,5,4,7,2,3,3,2,3,3,3, 2,1,2,2,2,2,2,4,1,3,4,4,2,2,3,3,4,1,2,3,3,3,5,2,3,1,2, 1,2,1,2,3,4,3,1,2,9,2,1,2,4,4,2,1,1,2,5,3,3,1,2,3,2,1,4, 2,3,3,2,2,2,4,1,3,2,1,3,4,1,2,4,2,1,1,2,2,4,2,3,2,3,3,3, 3,3,4,2,2,2,2,1,2,2] (x,f_x): (1,28), (2,70), (3,45),(4,26), (5,5), (6,0), (7,1), (8,0), (9,1); Hyperpoisson: a = 1.0368; b = 0.4147, DF = 2, $X^2 = 1.75$, P = 0.42
	Ranges	[0,3,1,3,0,1,3,2,3,1,1,2,1,3,0,2,1,1,2,0,2,0,3,1,2,0,3, 1,0,1,1,1,2,1,1,2,2,1,0,1,1,0,1,2,3,1,1,2,1,4,0,1,1,1,1, 2,3,0,2,2,0,1,2,1,0,1,2,2,0,2,2,2,0,1,1,3,0,1,2,1,1,1,1, 1,0,3,2,0,2,1,2,0,1,1,2,1,1,0,1,2,0,1,1,0,1,2,1,3,0,3, 0,3,0,1,1,1,1,0,1,3,1,0,1,2,1,2,0,0,5,2,1,1,0,1,2,2,0,1, 3,2,1,2,1,0,3,0,1,3,0,1,1,0,2,1,2,0,0,1,1,3,0,1,1,2,1,1, 1,2,0,2,0,2,1,0,1,1] (x,f_x): (0,37), (1,68), (2,40), (3,15), (4,0), (5,1) Hyperpoisson: a = 0.8110, b = 0.4413, DF =1, $X^2 = 0.07$, P = 0.79
D.Kosztolányi, *Hajnali részegség*	Motifs	[[2,4], [2,2,2,2,2,2,4], [1,4], [2,3], [2,2,2,2,3,4], [2,2,3,3,5], [2,3], [2,3], [1,3,5], [3,3,3,4], [3], [2,2,4], [2,3], [2,2,3], [2,2,3,4], [2,2,2,2,2,3], [2,2,3,3], [2,2,4], [2,3,4], [3,3,3], [2,4], [2,2,2,2,2], [1,1,2,2,3,4,4], [2,3], [2,4,4], [2,3,3], [2,3], [2,2,2,2,2,3], [2,4], [2,2,2,2,2,3], [1,4], [2,6], [1,2,2,4,4,4], [2,3,3], [2,3], [1,1,2,2,4], [2,3], [2], [1,4,4], [2,2,2,3], [1,2,3], [2,3], [2,2]]
	Lengths	[2,7,2,2,6,5,2,2,3,4,1,3,2,3,4,6,4,3,3,3,2,5,7,2,3,3,2, 6,2,6,2,2,6,3,2,5,2,1,3,4,3,2,2] (x,f_x): (1,2),(2,16), (3,11),(4,4),(5,3),(6,5),(7,2) Hyperpoisson: a = 2.4746, b = 1.2404, DF =1, $X^2 = 3.16$, P = 0.08
	Ranges	[2,2,3,1,2,3,1,1,4,1,0,2,1,1,2,1,1,2,2,0,2,0,3,1,2,1,1, 1,2,1,3,4,3,1,1,3,1,0,3,1,2,1,0] (x,f_x): (0,5), (1,18), (2,11), (3,6), (4,2) Hyperpoisson: a = 0.9379, b = 0.2613, DF = 2, $X^2 = 0.39$, P = 0.82

A.Sládkovič, *Kykymora*	Motifs	[[2,2,2,3,3,3,3,4], [2,3,3], [2,3,3,3,3,3], [2,3,3,3,3], [2,3], [2,2,3,4], [2,3], [2,3], [2,3], [2,2,3,3], [2,2, 3,3,5], [2,3], [2,3], [2,3], [2,2,3,3], [2,3,4], [3], [2,2,3], [2,3], [2,3, 3,3], [2,3,3], [2,2,3,3,3], [2,3,3], [2,3], [2,4], [2,3,3,4,4], [3], [2,3,3], [2,2,2,2,3,3,3,3], [2,3], [2,3], [2,3], [2,2,3,3,3,4]]
	Lengths	[8,3,6,5,2,4,2,2,2,4,5,2,2,2,4,3,1,3,2,4,3,5,3,2,2,5,1, 3,8,2,2,2,6] (x,f_x): (1, 2),(2,14),(3,5),(4,4),(5,4),(6,2),(7,0), (8,2) Hyperpascal: k = 0.3779, m = 0.0361, q = 0.5148, DF =3, X^2 = 2.43, P = 0.49
	Ranges	[2,1,1,1,1,2,1,1,1,1,3,1,1,1,1,2,0,1,1,1,1,1,1,1,2,2,0, 1,1,1,1,1,2] (x,f_x): (0,2),(1,24),(2,6),(3,1). Here the Hyperpoisson yields an excellent fitting but no degrees of freedom: a = 0.2608, b = 0.0217, X^2 = 0.0001
M.Eminescu, *Scrisoarea III*	Motifs	[[2,2,2,3,3,3,3], [2,4], [2,2,3], [2,2,3,3], [2,3], [2,2,3,3], [2,3,3,3], [1,3,3,3,3], [2,2,3], [2,2,2,2,2,3,3], [1,3,4], [1,2], [1,3,4], [2,2,3], [2,3], [2,3,4], [3], [1,2,2,3], [2,3], [2,2], [1,2], [1,2,2,3], [1,1,2], [1,2,2], [1,1,2,2], [1,2], [1,1,1,2,3,3], [2,2,2,2,2,3], [2,3,4], [2,2,3], [1,3], [2,2], [1,2,2,2,2,3], [2], [1,2,3], [1,2,3], [2,3], [2,3], [2], [1,2], [1,3], [2,2,2,2], [1,3], [2,2,3,5], [1,1,2], [1,2,4], [2,3,3], [2,2,2,4], [3,3], [2,2,2,5], [3], [2,2,3], [2,4,4], [2,3,3,4,4], [3], [2,2], [1,1,2,3,3], [2,2,3],[2,3], [1,3,4], [1,1,3,3,3,4], [3], [2,3,3], [2,2,3,3,4,4], [3], [2,3], [2,2,3], [1,3,3,4], [2,2,2,3,4], [3,4], [2,2,2,4], [3], [2,2,4], [2,2,2,3,5,5], [3], [2,2,3,3], [2,2,2], [1,4], [3,3,4], [3], [2,2,2,3], [1,3], [2,2,3], [1,1,3,4], [2,3,4], [3], [2,2,3], [2,3], [2,2,3,3], [2,3,5], [2,3], [1,2,2,2]]
	Lengths	[7,2,3,4,2,4,4,5,3,7,3,2,3,3,2,3,1,4,2,2,2,4,3,3,4,2,6, 6,3,2,2,6,1,3,3,2,2,1,2,2,4,2,4,3,3,3,4,2,4,1,3,3,5,1,2, 5,3,2,3,6,1,3,6,1,2,3,4,5,2,4,1,3,6,1,4,3,2,3,1,4,2,3, 4,3,1,3,2,4,3,2,4] (x,f_x) : (1,11),(2,24),(327),(4,17),(5,4),(6,6),(7,2) Hyperpoisson: a = 2.1285, b = 1.0210, DF = 4, X^2 = 4.35, P = 0.36
	Ranges	[1,2,1,1,1,1,1,2,1,1,3,1,3,1,1,2,0,2,1,0,1,2,1,1,1,1,2, 1,2,2,0,2,0,2,2,1,1,0,1,2,0,2,3,1,3,1,2,0,3,0,1,2,2,0,0, 2,1,1,3,3,0,1,2,0,1,1,3,2,1,2,0,2,3,0,1,0,3,1,0,1,2,1, 3,2,0,1,1,1,3,1,1] (x,f_x): (0,17),(1,39),(2,23),(3,12)

		Hyperpoisson: a = 0.8625, b = 0.3760, DF = 1, X^2 = 0.08, P = 0.77.
M.Eminescu, *Ondina*	Motifs	[[3], [2,2,3], [1,2,2,3], [1,2], [1,3], [2,3], [2,3], [2,3], [1,4], [1,3], [2,3], [1,4], [1,3], [2,2], [3,4], [1,4], [2,2,2], [1,3,3], [1,4], [2,2], [1,3,3,3], [2,2,2,3], [2,3], [2,3,4], [3,4], [2,3], [1,2,3, 3], [1,4], [2,3], [1,3], [2,3], [2,3], [2,3], [1,3], [1,3,3,4], [1,3], [1,3], [1,3], [2,3], [1,2,2,5], [3], [2,3,3,4,4], [3,3,3,5], [3,3,3], [2,3], [1,1,3,3], [2,2,4], [2,2,2,3,3], [2,4], [2,2, 2,2,3,3,4,4,4], [2,2,3], [2,2,2], [1,2,3,4], [3], [2,2, 3], [2,2,3,3], [1,2,2,2,3], [2,4,4], [1,4], [1,2], [1,2], [1, 2,3], [2,4], [2,2,2,3], [2,2,2,2], [1,3], [2,3], [1,2,2,2,2,2,4], [2,2,2], [1,3], [2,2,4], [3], [1,2], [1,2,2,2,2,3]]
	Lengths	[1,3,4,2,2,2,2,2,2,2,2,2,2,2,2,3,3,2,2,4,4,2,3,2,2,4, 2,2,2,2,2,2,2,4,2,2,2,2,4,1,5,4,3,2,4,3,5,2,9,3,3,4,1,3, 4,5,3,2,2,2,3,2,4,4,2,2,7,3,2,3,1,2,6] (x,f_x): (1,4),(2,79),(3,13),(4,12),(5,3),(6,1),(7,1), (8,0), (9,1) Hyperpascal: k = 0.3187, m = 0.0193, q = 0.4175, DF= 3, X^2 = 4.46, P = 0.22
	Ranges	[0,1,2,1,2,1,1,1,3,2,1,3,2,0,1,3,0,2,3,0,2,1,1,2,2,1,2, 3,1, 2,1,1,1,2,3,2,2,2,1,4,0,2,2,0,1,2,2,1,2,2,1,0,3,0, 1,1,2,2, 3,1,1,2,2,1,0,2,1,3,0,2,2,0,1,2] (x,f_x): (0,11), (1,25), (2,28), (3,9), (4,1) Hyperpoisson: a = 1.0852, b = 0.4775, DF = 2, X^2 = 5.04, P = 0.08
M.Eminescu, *Călin (File de poveste)*	Motifs	[[3,4], [2,2,4], [2], [1,1,3,4], [2,2,2,4], [2,2,2,2,3], [2,2,3,3], [2,4,4], [3,4], [1,1,1,1,2,3], [2,2,3,3,3,3], [1,2,2,2,2,2,2,2], [3,5], [2,3], [2,2,3,3], [1,2,3,3,3], [2,2,2,2,2,2], [1,1,1,1,3], [2,2], [1,3], [2,2], [1,2,3,3], [1,2,2], [1,2,3], [2,2,2,2,2,2,2,2,2,3], [2,2,3,3,3], [2,3,3], [1,1,2], [1,3,3,4], [3,4], [3,3,3], [2], [1,1,2], [1,2], [1,1,3], [2,4], [3], [1,2,2,2,2,3], [1,1,2,2,2], [1,2,2,2,4], [3], [2,2,2,2,2,3,3], [2,2,2], [1,2,2,2,2], [1,1,2,3,3], [2,2,3,3], [1,4,4], [2,2,2,2,4], [3,3,3,4,4], [2,3,3,3], [2,3], [2,3,3], [2,2,2,2,3], [2,2,2,3], [2,2,2,3,3,4], [3], [2,3], [2,3,5], [2,4,5], [3,3,3], [2,4], [1,2,2,3], [2,2,2,2,2,2,2,2,2,2,3], [2], [1,2], [1,2,2,2,3], [2,2,2,2,2], [1,2,4], [2,2,2,3,3]]
	Lengths	[2,3,1,4,4,5,4,3,2,6,6,8,2,2,4,5,6,5,2,2,2,4,3,3,10,5, 3,3,4,2,3,1,3,2,3,2,1,6,5,5,1,7,3,5,5,4,3,5,5,4,2,3,5, 4,6,1,2,3,3,3,2,4,11,1,2,5,5,3,5] (x,f_x): (1,6),(2,14),(3,16),(4,10),(5,14),(6,5),(7,1),

		(8,1),(9,0),(10,1),(11,1) Hyperpoisson: a = 4.0325, b = 2.5123, DF = 5, X^2 = 5.28, P = 0.38
	Ranges	[1,2,0,3,2,1,1,2,1,2,1,1,2,1,1,2,0,2,0,2,0,2,1,2,1,1,1, 1,3,1,0,0,1,1,2,2,0,2,1,3,0,1,0,1,2,1,3,2,1,1,1,1,1,1, 2,0,1,3,3,0,2,2,1,0,1,2,0,3,1] (x,f_x): (0,13), (1,30), (2,19),(3,7) Hyperpoisson: a = 0.7769, b = 0.3367, DF = 1, X^2 = 0.14, P = 0.70
M.Eminescu, *Ecò*	Motifs	[[3,3], [2,2], [1,2,3], [2,2,4], [3,3], [1,2,2,2], [1,2], [1,3], [2,3], [2,3], [2,3], [1,4], [1,3], [2,3], [1,4], [1,3], [1,2,3,4], [1,4], [2,3], [2], [1,3,3], [1,3], [2,2,2,2,3,3], [2,3], [2,2,2,2,2,3], [2,3], [2,2,2,3], [2,2,2,2,3,4], [2,2,4,5], [2,2,3,3], [2,3,5], [4], [2,2,4], [2,2,2,3], [1,3], [1,3], [1,3], [2,2], [1,3], [2,2,2,3], [1,2,2,2], [1,2], [1,2], [1,2], [1,3], [1,3], [1,2], [1,2], [1,2,2,3], [1,3], [1,2,3], [2,4], [1,2,2,2,2,2,2,2], [1,1,2,3]]
	Lengths	[2,2,3,3,2,4,2,2,2,2,2,2,2,2,2,2,4,2,2,1,3,2,6,2,6,2,4, 6,4,4,3,1,3,4,2,2,2,2,4,4,2,2,2,2,2,2,2,4,2,3,2,8,4] (x,f_x): (1,2),(2,31),(3,6),(4,10),(5,0),(6,3),(7,0),(8,1) No good fit
	Ranges	[0,0,2,2,0,1,1,2,1,1,1,3,2,1,3,2,3,3,1,0,2,2,1,1,1,1,1, 2,3,1,3,0,2,1,2,2,2,0,2,1,1,1,1,2,2,1,1,2,2,2,2,1,2] (x,f_x): (0,6), (1,22), (2,20), (3,6) Hyperpoisson: a = 08311, b = 0.2267, DF = 1, X^2 = 1.58 , P = 0.21
M.Eminescu, *Împărat şi proletar*	Motifs	[[4], [3,5], [4,4], [3], [1,2,2,2,4], [2,3,4], [2,2,2,3], [2,2,2], [1,5], [3], [1,3], [1,3,3], [2,4], [1,3], [2], [1,3,3,3,3], [2,3], [2,2,2], [1,3], [2,2,2,2,3,3,3,3], [2,2], [1,4], [3], [2,3], [2,2,3], [2,3], [1,3,4], [2,3], [2,3], [2], [1,3], [2,4], [2,2,3], [2,2,2], [1,3], [2,2,3,3,4], [1,3], [2,2,4], [1,3,4], [2,3], [2,4], [3], [1,2,3], [2,2,2,4], [2,2,3], [2,2,3], [2,3,3,3,3], [2,3], [2,4], [1,1,4], [2,3], [1,7], [4], [2,4], [3,4,5], [2,2], [1,2,2,2,4], [2,4,4], [3,5], [1,3,3,3,3], [2,3,3], [2,2,2,3,3,3,4], [1,3,3], [1,2,2,2,3,3,4], [2,6], [3], [1,2,2,3,3], [2,4], [1,4], [2,2,3,3,4], [2], [1,3,4], [2,2], [1,2], [1,2,3], [2,3], [1,4,5], [3]]
	Lengths	[1,2,2,1,5,3,4,3,2,1,2,3,2,2,1,5,2,3,2,8,2,2,1,2,3,2,3, 2,2,1,2,2,3,3,2,5,2,2,3,2,2,1,3,4,3,3,5,2,2,3,2,2,1,2, 3,2,5,3,2,5,3,7,3,7, 2,1,5,2,2,5,1,3,2,2,3,2,3,1] (x,f_x): (1,11),(2,34),(3,20),(4,2),(5, 6),(6,0),(7,2), (8,1) No good fit

	Ranges	[0,2,0,0,3,2,1,0,4,0,2,2,2,2,0,2,1,0,2,1,0,3,0,1,1,1,3, 1,1,0,2,2,1,0,2,2,2,2,3,1,2,0,2,2,1,1,1,1,2,3,1,6,0,2, 2,0,3,2,2,2,1,2,2,3, 4,0,2,2,3,2,0,3,0,1,2,1,4,0] (x,f_x): (0,18),(1,18),(2,29),(3,9),(4,3),(5,0),(6,1), (7,0). With added value x = 7, y = 0. Hyperpoisson: a = 1.3079, b = 0.6902, DF = 3, X^2 = 7.34, P = 0.06
M.Eminescu, *În căutarea Şeherezadei*	Motifs	[[2,2,3,3], [2,3,3], [2,2,2,3], [2,2,2,2,3,3,4], [3], [2,3,3,4], [2,5], [2,2,4], [3,3], [2,2,2,3,3,3], [2,7], [3,3], [2,4], [3,3], [2,2,2,3], [2,2,2,2,3], [2,2,2,5], [3], [2,2,2,3], [2,3,3,5], [2,2,2,4], [3,3,3,4], [3,3,3], [2,2,3], [2,2,3], [2,3], [2,4], [3], [2,4], [2,3], [2,3,3,3,3], [2,3,5], [3], [2,5], [3], [2,3,3,3,3], [2,3,3,3,3], [2,2,3], [2,2,6], [2,3,3], [2,3,3], [2,2,2,2,2,2,3,3], [2,3], [2,3,3,3,3], [2,3], [2,2,2,2,4], [2,4], [3], [2,4], [2,3], [2]]
	Lengths	[4,3,4,7,1,4,2,3,2,6,2,2,2,2,4,5,4,1,4,4,4,4,3,3,3,2,2, 1,2,2,5,3,1,2, 1,5,5,3,3,3,3,8,2,5,2,5,2,1,2,2,1] (x,f_x): (1,7),(2,16),(3,10),(4,9),(5,6),(6,1),(7,1),(8,1) Hyperpoisson: a = 2.3141, b = 1.4232, DF = 3, X^2 = 1.78, P = 0.62
	Ranges	[1,1,1,2,0,2,3,2,0,1,5,0,2,0,1,1,3,0,1,3,2,1,0,1,1,1,2, 0,2,1,1,3,0,3, 0,1,1,1,4,1,1,1,1,1,1,2,2,0,2,1,0] (x,f_x): (0,11),(1,23),(2,10),(3,5),(4,1),(5,1) Hyperpoisson: a = 0.8607, b = 0.4116, DF = 2, X^2 = 1.12, P = 0.57
M.Eminescu, *Mureşanu*	Motifs	[[3], [2], [1,1,2,3], [2,2,2,2,4], [2,3], [2,3,3], [2,2,2,3], [2,2,2,3], [2,3,3,3], [2,4], [3], [2,2], [1,2,2,2,2,2,2,2,2], [1,3], [1,2,2,3,3], [2], [1,2,3], [2], [1,1,2,2,2,2], [1,3], [2,2], [1,2], [1,2], [1,1,3], [2], [1,1,1,1,2], [1,2], [1,2,4], [1,1,1,1,1], [2,6], [2,4], [2,3], [1,2,4], [2], [1,3], [2,3], [2,2,2,3], [1,4], [1,3], [1,3], [1,5], [1,4], [2,2,2], [1,1,3], [2,5], [3], [2,2,4], [3], [2], [1,2,2], [1,1,2,2], [1,1,2,3], [2,3,3], [2], [1,4], [1,3], [2,3], [1,3,3,3], [1,1,2,2,2], [1,4], [2], [1,3], [2,2,2,3], [2], [1,2,4], [2], [1,2,3,3], [2,3], [2], [1,2,2], [1,2,2,2,3,5], [2,2], [1,2], [1,2,2,2,2,2,2,2], [1,2,2,3,4], [2,3,3], [1,1,2,3], [2], [1,3], [1,3], [1,2,2,2], [1]]
	Lengths	[1,1,4,5,2,3,4,4,4,2,1,2,9,2,5,1,3,1,6,2,2,2,2,2,3,1,5, 2,3,5,2,2,2,3,1,2,2,4,2,2,2,2,2,3,3,3,2,1,3,1,1,3,4,4,3, 1,2,2,2,4,5,2,1,2,4,2,3,1,4,2,1,3,6,2,2,8,5,3,4,1,2,2, 4,1]

		(x,f_x): (1,16),(2,32),(3,13),(4,12),(5,6),(6,2),(7,0), (8,1),(9,1) Hyperpoisson: a = 2.7663, b = 2.4754, DF =4, X^2 = 6, P = 0.16
	Ranges	[0,0,2,2,1,1,1,1,1,2,0,0,1,2,2,0,2,0,1,2,0,1,1,1,2,0,1, 1,3,0,4,2,1,3,0,2,1,1,3,2,2,4,3,0,2,3,0,2,0,0,1,1,2,1, 0,3,2,1,2,1,3,0,2,1,0,3,0,2,1,0,1,4,0,1,1,3,1,2,0,2,2, 1,0] (x,f_x): (0,22), (1,27), (2,22), (3,9), (4,3) Hyperpoisson: a = 1.2518 , b = 0.6987 , DF = 2, X^2 = 0.70 , P = 0.71
M.Eminescu, *Scrisoarea I*	Motifs	[[4], [3,3,3], [2,2,2,3,3,3,3,5], [2,2,2,2], [1,2,2,2], [1,2], [1,3], [1,2,3,3], [2,3], [1,2,2], [1,3,3], [2,2,2,2,4], [3], [2,3], [2,3], [2,2,3], [2,2,2,2,2,2,2,3,5], [3,4], [1,2,3,3], [2,2,4], [3], [2,4], [3], [2,4], [3], [2,4], [1,4], [1,2,3], [2,4], [3], [2,2,3], [2,2,4], [2,2,3,4], [2,3,4], [2,4], [2,2,3], [2,2,3], [2,3,3], [1,1,1,1], [2,3], [2,3], [2,3], [2,2,5,5], [3], [1,3], [2,3,3], [2,4], [1,3,3,3], [2,4], [2,3,3], [2], [1,2,3], [2,2,3], [2,2,4,4], [3,3,3,4], [2,2]]
	Lengths	[1,3,8,4,4,2,2,4,2,3,3,5,1,2,2,3,9,2,4,3,1,2,1,2,1,2,2, 3,2,1,3,3,4,3,2,3,3,3,4,2,2,2,4,1,2,3,2,4,2,3,1,3,3,3, 4,2] (x,f_x): (1,8),(2,19),(3,17),(4,9),(5,1),(6,0),(7,0), (8,1),(9,1) Hyperpoisson: a = 1.2499 , b = 0.5263, DF = 2, X^2 = 0.39 , P = 0.82
	Ranges	[0,0,3,0,1,1,2,2,1,1,2,2,0,1,1,1,3,1,2,2,0,2,0,2,0,2,3, 2,2,0,1,2,2,2,2,1,1,1,0,1,1,1,3,0,2,1,2,2,2,1,0,2,1,2, 1,0] (x,f_x): (0,12),(1,19),(2,21),(3,4) Binomial: n = 3, p = 0.4338, DF = 1, X^2 = 1.75, P = 0.19
M.Eminescu, *Icoană şi privaz*	Motifs	[[1,2,2], [1,3], [2,2,4], [2,3], [2], [1,3,5], [2,3], [1,2], [1,1,4], [2,2], [1,2,2], [1,1,2], [1,2,3], [1,2], [1,1,2,2], [1,1,2,3], [2,3,4], [2,2], [1,3,3,3], [2], [1,2,2,3], [2,2,4], [3], [1,3], [2,3], [2,2], [1,2,2,2,2,3], [1,2,3], [2,3], [2,2,2], [1,2,2], [1,2], [1,2,2,3], [2,2,3], [1,1,2], [1,3], [1,3], [2,2,3], [2,2], [1,3], [2,2], [1,2], [1,2], [1,2,3], [2,2,2,3], [2,2,3], [2,2,2,2,2,2], [1,2,2,3,3], [2,3,3,3], [2,2,4], [2,4], [3], [2,4], [2,2,2,3], [2,2], [1,1,4], [3], [2,2,3], [1,1,2], [1,3], [2,3,3], [2,2,2,4], [1,1,2,2,2,2,2,2,2], [1,3], [2,2,3], [1,1,2,2]]

	Lengths	[3,2,3,2,1,3,2,2,3,2,3,3,3,2,4,4,3,2,4,1,4,3,1,2,2,2,6, 3,2,3,3,2,4,3,3,2,2,3,2,2,2,2,2,3,4,3,6,5,4,3,2,1,2,4, 2,3,1,3,3,2,3,4,9,2,3,4] (x,f_x): (1,5),(2,24),(3,23),(4,10),(5,1),(6,2),(7,0), (8,0),(9,1) Hyperpoisson: a = 1.0425, b = 0.2172, DF = 2, X^2 = 0.18, P = 0.91
	Ranges	[1,2,2,1,0,4,1,1,3,0,1,1,2,1,1,2,2,0,2,0,2,2,0,2,1,0,2, 2,1,0,1,1,2,1,1,2,2,1,0,2,0,1,1,2,1,1,0,2,1,2,2,0,2,1, 0,3,0,1,1,2,1,2,1,2,1,1] (x,f_x): (0,13),(1,27),(2,23),(3,2),(4,1) Hyperpoisson: a = 0.7828 , b = 0.3769, DF = 2, X^2 = 5.15, P = 0.08
M.Lermontov, *Mtsyri*	Motifs	[[2,2,2,2,2,2,3], [2,2], [1,1,1,1,1,2,4], [2], [1,1,3], [1,2], [1,2,2,2,2,2,2,2,3,3], [1,3], [2,2], [1,2,2], [1,1,1,3,3,3,3], [2,2], [1,2,2], [1,3], [2,2,2,2,2,2,3], [1,2,2], [1,2], [1,1,2,2,3], [1,1,3,3,3], [1,2,2,2,2], [1,3], [2,4], [3], [1,1,2,2,3], [2,2,2], [1,1,1,2,2,2,2,2], [1,2,2,2,2,2,2,3], [2], [1,1,3], [2,2,2,2], [1,2,2,2,2,2,2,3], [2], [1,3,4], [1,2,2], [1,3], [2,3], [2], [1,3], [1,1,2,2,2,2,2,3], [2,2,2,3], [2], [1,1,2,2,2], [1,1,2,2,2,2,3], [1,3,3,3], [2,2], [1,1,2,3], [2,2,2,3,3,3], [2], [1,3], [1,1,2,2,2,3,3,3], [1,2,2], [1,2,2], [1,3], [1,3,3], [2,2,2], [1,3], [1,2,3], [1,2], [1,2,2,2,2,2,2,3,3], [2,3], [2,2,2], [1,3,3], [1,1,2], [1,2], [1,2,2,2], [1,2,2,2,2], [1,1,1,3], [2], [1,1,2,2], [1,2,2,2,2,2,2], [1,2,2], [1,2,2,2], [1,1,1,3], [2,2], [1,2,2,2,2,2,2,2,2], [1,1,2,2,2,3], [1,3], [2,2,3,3], [2,3], [2,2], [1,2,2,2,2], [1,1,2,2,2], [1,2], [1,1,1,3], [2], [1,2], [1,3], [2,2,2,3,3], [1,1,2,2,3], [2], [1,2], [1,2,3], [2,2], [1,3], [1,3], [2], [1,1,3], [2,2,2,2,3], [2,2,2], [1,1,2,2,2,2], [1,1,2,3], [2], [1,2,2,3], [2,3,3] [2,3], [2,2,2,2,2,2,2,2,2,3], [1,1,2,2,2], [1,2,2,3], [1,1,3], [2,2,2], [1,2,2,2,2,3], [2], [1,2,2,2], [1,2,2,3], [1,1,1,3], [2], [1,2,2,2], [1,2,2,3,3,3,3], [1,2,3], [1,1,2,2,2,2,3], [1,2,2,2,2,3], [1,2,2,2,2], [1,1,3], [2,3,3], [2], [1,2,2,2,3], [2,2,2,2], [1,2,2,2,2,3,3], [2], [1,2,2,2,2], [1,1,2,2,2], [1,2], [1,1,2,3], [2], [1,1,3], [1,1,2,2,2], [1,2,3], [2], [1,1,1,2,2,2,2,2,4], [1,2,2,3], [1,1,2], [1,1,2,2,3], [2], [1,1,2], [1,2], [1,1,1,2,2,2,2,2,2], [1,2,2,2,4], [2], [1,1,2], [1,1,2,2,2,2,2,2,3], [2,3,3,3], [1,2,2,2], [1,1,3], [2], [1,2], [1,3], [1,3], [2,2,2,2,2,2], [1,2,2], [1,1,2,2,2,2,2,2,3], [1,1,1,3], [1,2], [1,2,2,2,2], [1,3], [1,3,3], [1,2,2,2,3], [1,2,3,4], [1,1,2,2,2,2,2,3], [2,3],

		[2], [1,2,2,4], [2,3], [2,2,2,2], [1,2,2,2,2,2,2], [1,3], [1,1,2], [1,3], [1,2,2,2,3], [2,2,2,2,2], [1,1,2,4], [2,2,3], [2,2,2,2,2,3,3], [2,2,3], [1,3,3], [2], [1,2], [1,1,2], [1,2,2], [1,2], [1,3,3], [2,2,2,2,3], [1,2,3,3], [2], [1,1,1,2], [1,1,3], [2,3], [2,2], [1,2,2], [1,3], [1,2,2,2], [1,3], [2,2,2], [1,2], [1,3], [1,1,3], [1,1,2,2,2,2,2,2,2,2,2], [1,2], [1,2,2,2,2,2,3], [2,2,2,2,2], [1,2,2,3,3], [1,2,2,2,2,2,3,3], [1,2], [1,1,2,2,2,3], [2], [1,1,1,2], [1,2,2,2,2,3]]
	Lengths	[7,2,7,1,3,2,10,2,2,3,7,2,3,2,7,3,2,5,5,5,2,2,1,5,3,8, 8,1,3,4,8,1,3,3,2,2,1,2,8,4,1,5,7,4,2,4,6,1,2,8,3,3,2, 3,3,2,3,2,9,2,3,3,3,2,4,5,4,1,4,6,3,4,4,2,8,6,3,4,2,2, 5,5,2,4,1,2,2,5,5,1,2,3,2,2,2,1,3,5,3,6,4,1,4,3,2,10,5, 4,3,3,6,1,4,4,4,1,4,7,3,7,6,5,3,3,1,5,4,7,1,5,5,2,4,1, 3,5,3,1,9,4,3,5,1,3,2,8,5,1,3,8,4,4,3,1,2,2,2,6,3,9,4, 2,5,2,3,5,4,8,2,1,4,2,4,7,2,3,2,5,5,4,3,7,3,3,1,2,3,3, 2,3,5,4,1,4,3,2,2,3,2,4,2,3,2,2,3,11,2,7,5,5,8,2,6,1, 4,6] (x,f_x): (1,25),(2,51),(3,46),(4,32),(5,26),(6,9), (7,11), (8,10),(9,3),(10,2),(11,1) Hyperpascal: k = 1.4378, m = 0.3960, q = 0.5275, DF = 5, X^2 = 5.46, P = 0.36
	Ranges	[1,0,3,0,2,1,2,2,0,1,2,0,1,2,1,1,1,2,2,1,2,2,0,2,0,1,2, 0,2,0,2,0,3,1,2,1,0,2,2,1,0,1,2,2,0,2,1,0,2,2,1,1,2,2, 0,2,2,1,2,1,0,2,1,1,1,1,2,0,1,1,1,1,2,0,1,2,2,1,1,0,1, 1,1,2,0,1,2,1,2,0,1,2,0,2,2,0,2,1.0,1,2,0,2,1,1,1,1,2, 2,0,2,0,1,2,2,0,1,2,2,2,2,1,2,1,0,2,0,2,0,1,1,1,2,0,2, 1,2,0,3,2,1,2,0,1,1,1,3,0,1,2,1,1,2,0,1,2,2,0,1,2,2,1, 1,2,2,2,3,2,1,0,3,1,0,1,2,1,2,2,0,3,1,1,1,2,0,1,1,1,1, 2,1,2,0,1,2,1,0,1,2,1,2,0,1,2,2,1,1,2,0,2,2,1,2,0,1,2] (x,f_x): (0,44),(1,81),(2,83),(3,7) Lorentzian: a = 108.1390, b = 1.4452, c = 0.8598, R^2 = 0.8326
M.Tsvetaeva, *Babushke*	Motifs	[[2,3,3],[2,2,3],[2,3],[1,3],[2,2,3],[2,2,2],[1,3],[2,3]]
	Lengths	[3,3,2,2,3,3,2,2]
	Ranges	[1,1,1,2,1,0,2,1]
A.Dementjev, *A mne pri-snilsja son…*	Motifs	[[1,2,4], [1,2], [1,4], [2,5], [2,4], [1,1,2,2,2,3], [2,3], [2,4], [1,4], [2,3,4], [3], [2], [1,2,4], [1,2,3], [1,2,2,2,2], [1,2,3], [1,2]]
	Lengths	[3,2,2,2,2,2,6,2,2,2,3,1,1,3,3,5,3,2] (x,f_x): (1,2),(2,9),(3,5),(4,0), (5,1),(6,1) Binomial: n = 5, p = 0.2909, DF = 1, X^2 = 1.01, P = 0.32
	Ranges	[3,1,3,3,2,2,1,2,3,2,0,0,3,2,1,2,1] (x,f_x) = (0,2),(1,4),(2,6),(3,5) Lorentzian ft: a = 5.2527, b = 2.2491, c = 1.3152,

		$R^2 = 0.9797$.
F.Tjutčev, *Est' v oseni pervo-načal'noj…*	Motifs	[[5],[2,3,3], [2,2,2,3], [2],[1,2,2]]
	Lengths	[1,3,4,1,3]
	Ranges	[0,1,1,0,1]
S.Esenin, *Pismo k materi*	Motifs	[[3], [2,3], [1,3], [1,3,3], [2], [1,2], [1,4], [1,3,3], [2], [1,3], [1,2], [1,3], [2,4], [2,3,3], [2], [1,3], [1,3], [1,3,3]]
	Lengths	[1,2,2,3,1,2,2,3,1,2,2,2,2,3,1,2,2,3]
	Ranges	[0,1,2,2,0,1,3,2,0,2,1,2,2,1,0,2,2,2]
M.Boroditskaja, *Koldunja*	Motifs	[[3],[1,3],[1,2,2,2,2,3],[2,4,4,4],[3],[1,3,4],[3,4]]
	Lengths	[1,2,6,4,1,3,2]
	Ranges	[0,2,2,2,0,3,1]

The Russian texts are mostly too short. For Dementjev's ranges we used a simple Lorentzian function $y = 1+a/(1+((x-b)/c)^2)$.

4. An Aspect of Inertia

Inertia is usually studied in the semantic domain. Well known indicators are the Belza-chains containing all subsequent sentences in which a concept (word) or a reference to it occurs. One can consider also synonyms, pronouns, verbal affixes referring to the concept, etc. The number of subsequent sentences joined in this way is considered a Belza-chain. Inertia is a special case of Skinner's hypothesis which says that any textual stimulus evokes a firing of neurons and the given entity has the tendency to be repeated in its near environment. Then a stimulus dies out slowly and the distances between identical or referring entities become longer. Belza-chains are composed only of immediately following units. Belza-chains of adnominals are studied for Russian texts in Andreev, Lupea, Altmann 2017.

This claim can be seen from various points of view, not only from the semantic point of view but also formally. In our case we have lengths of rhyme words. It can be conjectured that a certain length gives a stimulus and the following rhyme words get the same length. In strophes rhymed in the form AABB… it could be expected, i.e. one could expect chains of length 2 but in strophes of type ABAB not. Here one must take reinforcement into account. As a matter of fact, in the domain of rhyme-word lengths these sequences represent runs. Hence, we have two images of inertia in the length domain: first the number of runs of lengths, second, the distribution of lengths of individual runs.

Consider the rhyme-word length in Dante's *Commedia divina, Inferno, Canto I*, yielding rhyme-word lengths:

[2,3,3,2,2,2,2,2,2,2,2,4,2,2,3,2,3,2,2,3,2,4,2,2,3,2,2,2,3,2,2,2,3,2,3,2,3,2,3,2,3,2,3,
2, 3,3,2,3,2,3,2,3,2,3,3,2,3,2,2,2,2,3,2,3,1,2,1,3,3,2,3,3,2,2,3,2,2,2,2,2,2,2,3,3,3,2,
3,2, 2,2,2,3,2,2,3,2,2,2,3,2,2,2,3,2,3,3,3,2,3,4,3,2,3,2,3,2,3,3,2,3,2,3,2,2,2,2,2,3,3,
4,2,3,2,2,2].

Two equal numbers forming a sequence yield a chain of length 2, three equal numbers form a chain of length 3, etc. Thus, from the above data we obtain the values

[1,2,8,1,2,1,1,1,2,1,1,1,2,1,3,1,3,1,1,1,1,1,1,1,1,1,1,1,1,2,1,1,1,1,1,1,1,2,1,1,4,1,1,
1,1,1,1,2,1,2,2,1,7,3,1,1,4,1,2,1,3,1,3,1,1,3,1,1,1,1,1,1,1,1,1,2,1,1,1,1,5,2,1,1,1,3]

In the above sequence we obtain the frequency of chain-lengths as given in Table 4.1. Since this is presumably a subconscious tendency we try to find a corresponding simple function as a first step on the way to a law and theory. We begin with the exponential function whose differential equation is very simple and obtain

$$(4.1) \quad y = 1 + a*\exp(-bx)$$

whose fitting can be found in the third column of Table 4.1.

Table 4.1
Chains of rhyme-word length in Dante's *Inferno Canto I*

Chain length	Frequency	Exponential (+ 1)
1	62	61.85
2	12	13.47
3	7	3.55
4	2	1.52
5	1	1.11
7	1	1.00
8	1	1.00
a = 296.9510, b = 1.5852, R^2 = 0.9952		

The rhyme-word-length-chains for some other texts are presented in Table 4.2. Very short texts do not yield a sufficient number of rhymes, and so we shall consider only some longer poems.

Table 4.2
Chains of rhyme-word length in some texts

	A.Dante, *Inferno Canto II*		A.Dante, *Inferno Canto III*		M.Eminescu, *Icoană şi privaz*		M.Eminescu, *Scrisoarea I*	
Chain	Freq	Exp	Freq	Exp	Freq	Exp	Freq	Exp
1	67	66.95	35	36.42	87	87.66	78	77.99
2	11	11.46	23	17.32	33	29.27	20	19.00
3	3	2.66	4	8.52	6	10.22	5	5.69
4	6	1.26	2	4.47	1	4.01	4	2.16
5	1	1.04	-	-	-	-	-	-
6	1	1.01	2	1.74	1	1.32	-	-
7	-	-	-	-	1	1.10	1	1.01
8	1	1.00	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-
11	-	-	1	1.02	-	-	-	-
12	-	-	1	1.01	-	-	-	-
	a = 415.6684 b = 1.8409 R^2 = 0.9935		a = 76.8675 b = 0.7747 R^2 = 0.9456		a = 265.6979 b = 1.1203 R^2 = 0.9930		a = 311.9893 b = 1.3993 R^2 = 0.9991	
	M.Eminescu, *Mureşanu*		P.O.Hviezdoslav, *Krvavé sonety*		M.Eminescu, *Luceafărul*		M.Eminescu, *Scrisoarea III*	
Chain	Freq	Exp	Freq	Exp	Freq	Exp	Freq	Exp
1	117	116.81	253	253.41	251	250.86	125	125.62
2	22	23.89	69	66.02	26	28.45	47	43.69
3	10	5.53	13	17.75	14	4.01	12	15.63
4	3	1.89	3	5.31	8	1.33	4	6.01

5	1	1.18	1	2.11	3	1.04	2	2.72
6	-	-						
7	1	1.01						
8	1	1.00						
	a = 585.8391 b = 1.6211 R^2 = 0.9977		a = 979.8932 b = 1.3564 R^2 = 0.9992		a = 2274.7145 b = 2.2087 R^2 =0.9966		a = 363.7504 b = 1.0712 R^2 = 0.9973	
	A.Sládkovič, *Marína*		M.Eminescu, *În căutarea Şeherezadei*		M.Eminescu, *Împărat şi proletar*		S.Chalupka, *Turčín Poničan*	
Chain	Freq	Exp	Freq	Exp	Freq	Exp	Freq	Exp
1	978	971.60	61	60.53	118	117.78	33	32.82
2	330	359.30	17	19.59	21	23.17	5	6.90
3	156	133.26	9	6.80	10	5.21	7	2.09
4	65	49.83	7	2.81	5	1.80	2	1.20
5	43	19.02	-	-			-	-
6	22	7.65	1	1.18			1	1.01
7	5	3.46					1	1.00
8	6	1.91					-	-
9	3	1.33					-	-
10	1	1.12					-	-
11	2	1.05					1	1.00
12	-	-						
13	1	1.01						
14	2	1.00						
	a = 2696.2915 b = 0.9966 R^2 = 0.9973		a = 190.6713 b = 1.1640 R^2 = 0.9875		a = 615.3008 b = 1.6618 R^2 = 0.9956		a = 171.5720 b = 1.6849 R^2 = 0.9651	
	S.Chalupka, *Mor ho*		M.Eminescu, *Ondina*		M.Eminescu, *Ecó*		M.Eminescu, *Călin (File de poveste)*	
Chain	Freq	Exp	Freq	Exp	Freq	Exp	Freq	Exp
1	54	54.04	113	112.72	89	88.95	82	81.61
2	19	18.62	21	23.72	13	13.67	30	31.80
3	6	6.85	12	5.62	5	2.83	14	12.77
4	2	2.94	3	1.94	2	1.26	8	5.50
5	5	1.65	1	1.19	1	1.04	2	2.72
6	1	1.21			-	-	1	1.66
7	2	1.07			1	1.00	1	1.25
8	-	-					-	-
9	1	1.01					1	1.04
10							1	1.01
	a = 159.6430 b = 1.1019 R^2 = 0.9940		a = 549.3512 b = 1.5927 R^2 = 0.9944		a = 610.4255 b = 1.9374 R^2 = 0.9991		a = 211.0011 b = 0.9622 R^2 = 0.9979	

	D.Kosztolányi, *Hajnali Részegség*		J.Attila, *Eszmélet*		A.Sládkovič, *Ohlasy*		F.Schiller, *An die Freude*	
Chain	Freq	Exp	Freq	Exp	Freq	Exp	Freq	Exp
1	61	61.20	59	58.96	33	32.97	75	74.99
2	20	18.61	10	10.46	11	11.23	8	8.28
3	4	6.15	4	2.54	5	4.27	3	1.72
4	1	2.51	1	1.25	1	2.05	2	1.07
5	4	1.44			2	1.33		
6	1	1.13			1	1.11		
	a = 205.8511 b = 1.2294 R^2 = 0.9944		a = 255.3248 b = 1.8132 R^2 = 0.9989		a = 99.9694 b = 1.1399 R^2 = 0.9972		a = 751.9488 b = 2.3188 R^2 = 0.9993	

	A.Sládkovič, *Kykymora*		V.Turčány, *Mám svoje mesto rád*		R.M.Rilke, *Die Waise*		J.Arany, *Szondi két apródja*	
Chain	Freq	Exp	Freq	Exp	Freq	Exp	Freq	Exp
1	45	45.09	33	33.00	28	28.01	43	43.00
2	16	15.33	5	5.04	7	6.91	10	9.98
3	4	5.66	-	-	2	2.29	3	2.92
4	4	2.51	2	1.06	-	-	1	1.41
5	1	1.49	-	-	2	1.06		
6			1	1.00	-	-		
7			1	1.00	-	-		
8					-	-		
9					1	1.00		
	a = 135.6745 b = 1.1240 R^2 = 0.9958		a = 253.1020 b = 2.0682 R^2 = 0.9989		a = 123.4029 b = 1.5193 R^2 = 0.9981		a = 196.5129 b = 1.5430 R^2 = 0.9998	

	V.Turčány, *List Vitezslavovi Nezvalovi*		A.Sládkovič, *Ctibor*		J.Arany, *Év kezdetén*		M.Lermontov, *Mtsyri*	
Chain	Freq	Exp	Freq	Exp	Freq	Exp	Freq	Exp
1	19	20.27	42	42.17	26	25.97	257	255.23
2	15	9.93	17	16.35	4	4.42	91	98.53
3	1	5.14	7	6.72	3	1.47	43	38.42
4	1	2.92	1	3.13	-	-	20	15.35
5			2	1.80	1	1.01	13	6.51
6			-	-			8	3.11
7			1	1.11			1	1.81
8			-	-			-	-
9			-	-			2	1.12
10			1	1.01				
	a = 41.5848 b = 0.7692 R^2 = 0.8177		a = 110.4181 b = 0.9865 R^2 = 0.9963		a = 183.3604 b = 1.9882 R^2 = 0.9939		a = 662.6689 b = 0.9580 R^2 = 0.9968	

We can merely conjecture that the inertia is the stronger the smaller is the parameter *b* and the longer is the field of data. Thus an indicator of inertia can be set up in the form

$$(4.2) \quad Inertia = x_{max}/b$$

but it cannot attain extreme values – and the interval is not defined. Thus it is simpler to apply Gini's coefficient taking into account the space between the straight line (0,1) and the reversed accumulated relative frequencies. Fortunately, it can be approximated by the expression

$$(4.3) \quad G = \frac{1}{V}\left(V + 1 - \frac{2}{N}\sum_{x=1}^{V} xf(x)\right)$$

in which one sees the value of the longest chain (*V*), the number of chains (*N*), the chain lengths (*x*) and their frequencies *f*(*x*). As can be seen, the last expression contains the value of 2*average. It is easier to compute and to compare it because its variance is given as

$$(4.4) \quad Var(G) = \frac{4\sigma^2}{V^2 N}$$

where σ^2 is the usual variance of the variable *x*. The results for the texts in the above tables are presented in Table 4.3.

Table 4.3
Gini's coefficient for runs of rhyme-word-length in some texts

Text	***V***	***N***	***G***	$\boldsymbol{\sigma^2}$
A.Dante, *Inferno Canto I*	8	86	0.7326	0.00028
A.Dante, *Inferno Canto II*	8	90	0.7333	0.00027
A.Dante, *Inferno Canto III*	12	68	0.7500	0.00012
M.Eminescu, *Icoană şi privaz*	7	29	0.7265	0.00004
M.Eminescu, *Scrisoarea I*	7	108	0.7302	0.00016
M.Eminescu, *Mureşanu*	8	155	0.7653	0.00010
M.Eminescu, *Luceafărul*	5	302	0.6808	0.00008
M.Eminescu, *Scrisoarea III*	5	190	0.6084	0.00013
M.Eminescu, *În căutarea Şeherezadei*	6	95	0.6193	0.00031
M.Eminescu, *Împărat şi proletar*	4	154	0.5681	0.00023
M.Eminescu, *Ondina*	5	150	0.6453	0.00016
M.Eminescu, *Ecó*	7	111	0.7568	0.00015
M.Eminescu, *Călin (File de poveste)*	10	149	0.7314	0.00015
P.O.Hviezdoslav, *Krvavé sonety*	5	339	0.6726	0.00005
A.Sládkovič, *Marína*	14	1614	0.8151	0.000006

S.Chalupka, *Turčín Poničan*	11	50	0.7418	0.00055
V.Turčány, *List Vitězslavovi Nezvalovi*	4	36	0.4722	0.00081
A.Sládkovič, *Ohlasy*	6	53	0.6006	0.00070
A.Sládkovič, *Ctibor*	10	71	0.7394	0.00031
A.Sládkovič, *Kykymora*	5	70	0.5714	0.00050
V.Turčány, *Mám svoje mesto rád*	7	42	0.7075	0.00084
S.Chalupka, *Mor ho*	9	90	0.6864	0.00035
R.M.Rilke, *Die Waise*	9	40	0.7389	0.00072
F.Schiller, *An die Freude*	4	88	0.6364	0.00027
J.Arany, *Év kezdetén*	5	34	0.6353	0.00091
J.Arany, *Szondi két apródja*	4	57	0.5833	0.00047
J.Attila, *Eszmélet*	4	74	0.6081	0.00033
D.Kosztolányi, *Hajnali részegség*	6	91	0.6429	0.00035
M.Lermontov, *Mtsyri*	9	435	0.7096	0.00033

Though Gini's coefficients seem to be very similar, it can easily be shown that there are significant differences between them. One can perform the asymptotic normal test defined as

$$(4.5) \quad u = \frac{G_1 - G_2}{\sqrt{Var(G_1) + Var(G_2)}}$$

For example the difference between the two works by J.Arany, namely *Szondi két apródja* and *Év kezdetén* yields $u = 0.70$ which is not significant but the difference between Sládkovič's *Kykymora* and *Ctibor* yields $u = 4.05$, a very highly significant value. Hence it would be more appropriate to order the texts according to G than according to language. The automatic question "what causes G to attain the given value?" remains open and may be studied by literary scientists. Though our data show merely a possibility, a continuation must be made according to years, text types, thematically isolated or common texts, etc. This study can be made not only concerning the lengths of rhyme-words but any type of runs.

5. Open and Closed Rhyme Word

There are languages, e.g. Italian, Polynesian, which generally use only words with a vowel in the final position. Here, the problem of open or closed rhyme is irrelevant, even if there are some consonantal endings (e.g. in Italian). But in other languages, this dichotomy plays a certain role. The development may lead even to the rhyming of "open" words with "closed" ones because rhymes tend to be abused and lose their expressivity. A further problem is the phonological interpretation of written letters, especially concerning diphthongs or nasal vowels, but here one could adhere to the official grammars.

If in a language there are both types of words, then one may consider alternatively open or closed ones and express their number in the form of a proportion. The comparison of two proportions is simple but if one wants to express the extent of, say, "openness" one must compare the probability of the given number of open rhymes with the proportion of all "open" words in the non-rhyme positions.

Consider, for example the German poem *Der Erlkönig* by J.W.v.Goethe. Here one finds in the rhyme position, 2 open words out of 32, i.e. p(open, rhyme) = 2/32 = 0.0625. In the non-rhyme position we find 191 words out of which 27 are open, hence p(open, non-rhyme) = 0.1414. We may test the difference 0.0625 – 0.1414 (= $p - \theta$) using the normal distribution according to the formula

$$u = \frac{p - \theta}{\sqrt{\theta(1-\theta)/n}} = \frac{0.0625 - 0.1414}{\sqrt{0.1414(1-0.1414)/191}} = -3.13. \qquad (5.1)$$

The result is highly significant, that means, the author uses significantly many more closed rhyme-words. The differences can be seen also directly. In German (Goethe), one sees mostly closed rhymes, in Slovak mostly open ones:

J.W.v.Goethe: *DerErlkönig*:

[c,c,c,c, c,c,c,c, c,c,c,c, c,c,c,c, c,c,c,c, c,c,O,O, c,c,c,c, c,c,c,c]

S.Chalupka: *Turčín Poničan*:

[o,o,o,o,o,o,o,o,C,C,o,o,o,o,o,o,o,o,o,o,o,o,o,o,o,o,C,C,o,o,o,o,
o,o,o,o,o,o,o,o,o,o,o,o,o,o,o,o,o,o,o,o,o,o,o,o,o,o,o,o,o,o,o,o,o,
o,o,C,C,o,o,o,o,o,o,o,o,o,o,o,o,C,C,o,o,o,o,o,o,o,0,o,o,o,o,o,o,o]

Of course, the numbers depend on the way of counting. If one considers the two last words as belonging to the rhyme, one dare not count the last but one as belonging to non-rhyme words. The situation may be complex sometimes.

The testing for difference of two proportions, i.e. in two texts, can be performed also by applying the asymptotic normal test according to the formula

$$(5.2) \quad u = \frac{p_1 - p_2}{\sqrt{p(1-p)(1/n_1 + 1/n_2)}}$$

where $p = (x_1 + x_2)/(n_1 + n_2)$. Comparing the text of *Erlkönig* by J.W.v.Goethe with $x_1 = 30$, $n_1 = 32$ and *Turčín Poničan* by S. Chalupka with $x_2 = 8$, $n_2 = 96$ we obtain $p = (30 + 8)/(32 + 96) = 0.2969$. Inserting these values in (5.2), we obtain

$$u = (30/32 - 8/96)/[(0.2969(1\text{-}0.2969)*(1/32 + 1/96)]^{1/2} =$$
$$(0.9375 - 0.0833)/0.0933 = 9.155$$

which is very highly significant. This is, of course, no corroboration of a possible difference between German and Slovak; we may consider it preliminarily as divergent poetic tendencies.

In order to speak about difference between languages, one must know both the present state as well as the development of rhyme in both languages. For comparisons, one should consider rather poems created in the same century, or compare one whole century with another one.

One can set up the hypothesis that there is an identical number of open and closed rhymes, i.e. the expected proportion is $p = 0.5$. In this way every poem can be tested using the binomial distribution and adding the probabilities of more extreme occurrences. If in *Der Erlkönig* there are $n = 32$ lines out of which 30 are consonantal (and 2 vocalic ones), we simply compute

$$P(X \geq 30) = P(X \leq 2) = \sum_{i=0}^{2} \binom{32}{i} 0.5^{32} = 0.1231674105*10^{-6}$$

yielding a probability smaller than 0.05, hence one may consider the rhyming in the given poem as significantly consonantal. For the sake of security, one may multiply the resulting probability by 2 because one performs a two-sided test.

In *Turčín Poničan* by S. Chalupka there are $n = 96$ and 8 consonantal endings, hence computing $P(X \leq 8) = 0.1836617764*10^{-17}$ we obtain a result telling us that this poem is significantly vocalically rhyming. One would be forced to scrutinize a number of poems in order to be able to make a decision concerning a whole language.

Italian is evidently "vocalic". German is evidently consonantal as can be seen in the majority of cases. The Slovak poetry began with open rhyme but in the course of years the proportion decreased (cf. Štukovský, Altmann, 1965, 1966). There are cases where a word ending with a vowel rhymes with another ending with consonant, e.g. in the Slovak poem by J. Stacho *Za život na smrť* one finds *jazera – pozerať, boja – vojak, potopy – uchopiť.*

Table 5.1 shows some cases from other languages. In Dante's *Inferno* all rhymes are open.

Table 5.1
Vocalic-consonantal (Open-closed) rhyme: exact probability

Text	C	O	*n*	*P*
Hungarian				
J.Arany, *Válasz Petöfinek*	20	12	32	0.1077
J.Arany, *Czakó sírján*	26	2	28	$0.1516*10^{-5}$
J.Arany, *Ha álom az élet*	10	4	14	0.0898
J.Arany, *Emléklapra*	30	4	34	$0.3082*10^{-5}$
J.Arany, *Év kezdetén*	44	4	48	$0.7569*10^{-9}$
J.Arany, *Alkalmi vers*	34	10	44	0.00019
S.Petöfi, *Szeptember végén*	19	5	24	0.0033
J.Arany, *Szondi két apródja*	50	26	76	0.0040
D.Kosztolányi, *Hajnali részegség*	121	21	142	$0.1409*10^{-17}$
Slovak				
A.Sládkovič, *Kykymora*	6	49	55	$0.9114*10^{-9}$
S.Chalupka, *Turčín Poničan*	8	88	96	$0.1837*10^{-17}$
J.Stacho, *Za život na smrť*	10	10	20	0.5
A.Sládkovič, *Roky a veky*	8	113	121	$0.3637*10^{-24}$
A.Sládkovič, *Ctibor*	12	118	130	$0.2252*10^{-22}$
A.Sládkovič, *Marína*	503	2393	2896	$0.1910*10^{-292}$
A.Sládkovič, *Ohlasy*	28	62	90	0.0002
S.Chalupka, *Mor ho!*	22	150	172	$0.6690*10^{-24}$
V.Turčány, *Súmrak*	4	16	20	0.00003
V.Turčány, *Zem*	6	32	38	0.00001
V.Turčány, *Mám svoje mesto rád*	21	43	64	0.0041
V.Turčány, *List Vítězslavovi Nezvalovi*	28	28	56	0.5531
P.O.Hviezdoslav, *Krvavé sonety*	160	288	448	$0.7685*10^{-9}$
M.Rázus, *Matka*	4	44	48	$0.7659*10^{-9}$
German				
J.W.v.Goethe, *Der Erlkönig*	30	2	32	$0.1232*10^{-6}$
F.v.Schiller, *Der Taucher*	61	20	81	$0.2828*10^{-5}$
F.v.Schiller, *An die Freude*	109	8	117	$0.4423*10^{-23}$
R.M.Rilke, *Die Waise*	55	11	66	$0.1801*10^{-7}$
H.Heine, *Affrontenburg*	18	16	34	0.4321
French				
Ch.Baudelaire, *Benediction*	50	26	76	0.0040
Ch.Baudelaire, *Confession*	22	18	40	0.3179
Ch.Baudelaire, *Une Martyre*	32	28	60	0.3494
P.Verlaine, *Adieu*	20	16	36	0.3089
P.Verlaine, *Ecoutez le chanson bien douce*	22	6	28	0.0019

Romanian (M.Eminescu)				
Adânca mare…	0	14	14	0.00006
Adio	8	32	40	0.00009
Ah, mierea buzei tale	3	33	36	0.000001
Amicului F.I.	14	34	48	0.002760
Andrei Mureşanu	2	84	86	$0.4836*10^{-22}$
Atât de fragedă…	7	29	36	0.000156
Aveam o muză	25	47	72	0.00639
Basmul ce i l-aş spune ei	28	62	90	0.000219
Călin (File de poveste)	93	165	258	$0.4344*10^{-5}$
Când	6	18	24	0.11328
Când amintirile...	6	18	24	0.11328
Când crivăţul cu iarna...	29	65	94	0.000131
Când marea...	8	12	20	0.2517
Când priveşti oglinda mării	10	22	32	0.0251
Care-i amorul meu în astă lume	3	34	37	$0.6166*10^{-7}$
Ce e amorul?	6	22	28	0.0019
Ce te legeni...	10	14	24	0.2706
Ce-ţi doresc eu ţie, dulce România	19	13	32	0.8923
Cine-i?	11	19	30	0.1002
Copii eram noi amandoi	23	28	51	0.2879
Crăiasa din poveşti	0	14	14	0.00006
Criticilor mei	4	10	14	0.0898
Cugetările sărmanului Dionis	20	44	64	0.0018
Cu mâne zilele-ţi adaogi...	8	8	16	0.5982
Cum negustorii din Constantinopol	9	7	16	0.4018
Cum oceanu-ntărâtat...	0	14	14	0.9102
De-aş avea	6	18	24	0.0113
De-aş muri ori de-ai muri	10	26	36	0.0057
De câte ori, iubito...	3	11	14	0.0287
De ce nu-mi vii	8	16	24	0.0758
De ce să mori tu?	14	14	28	0.5747
De-oi adormi (variantă)	16	20	36	0.3089
De-or trece anii...	4	12	16	0.0384
Departe sunt de tine	8	10	18	0.4973
Despărţire	16	22	38	0.2088
Din Berlin la Potsdam	2	12	14	0.0065
Din lyra spartă...	6	6	12	0.2272
Din noaptea	10	6	16	0.2272

Din străinătate	10	26	36	0.0057
Din valurile vremii...	12	8	20	0.2517
Dintre sute de catarge	4	12	16	0.0384
Doi aştri	6	6	12	0.6128
Doina	12	49	61	$0.9849*10^{-6}$
Dorinţa	5	7	12	0.3872
Dumnezeu şi om	9	47	56	$0.1285*10^{-6}$
Ecò	49	101	150	0.00001
Egipetul	29	61	90	0.0004
Epigonii	23	91	114	$0.4815*10^{-34}$
Făt-Frumos din tei	19	27	46	0.1510
Feciorul de împărat fără de stea	312	532	844	$0.2331*10^{-254}$
Floare-albastră	8	48	56	$0.2344*10^{-16}$
Foaia veştedă (după Lenau)	4	10	14	0.0898
Freamăt de codru	5	43	48	$0.6840*10^{-8}$
Frumoasă şi junĕ	2	14	16	0.0021
Ghazel	1	39	40	$0.3729*10^{-10}$
Glossa	3	77	80	$0.7064*10^{-19}$
Horia	7	15	22	0.0669
Iar când voi fi pământ (variantă)	16	24	40	0.1341
Icoană şi privaz	73	115	188	0.0013
Împărat şi proletar	60	150	210	$0.2223*10^{-9}$
În căutarea Şeherezadei	18	138	156	$0.1095*10^{-46}$
Înger şi demon	25	83	108	$0.9415*10^{-8}$
Întunericul şi poetul	7	27	34	0.0004
Iubind în taină...	0	14	14	0.00006
Înger de pază	4	10	13	0.1334
Îngere palid...	2	10	12	0.0193
Iubită dulce, o, mă lasă	15	41	56	0.0003
Iubitei	19	45	64	0.0008
Junii corupţi	19	59	78	$0.3208*10^{-5}$
Kamadeva	7	3	10	0.1719
La Bucovina	4	32	36	$0.9709*10^{-6}$
Lacul	4	6	10	0.3770
La mijloc de codru...	4	9	13	0.1334
La moartea lui Heliade	22	26	48	0.3327
La moartea lui Neamţu	12	17	29	0.2291
La moartea principelui Ştirbey	5	11	16	0.1051

La mormântul lui Aron Pumnul	5	20	25	0.0020
La o artistă (Ca a nopţii poezie)	17	23	40	0.2148
La o artistă (Credeam ieri)	21	7	28	0.0063
La Quadrat	8	8	16	0.5982
Lasă-ţi lumea...	5	47	52	$0.6424*10^{-9}$
Lebăda	4	8	12	0.1938
La steaua	8	8	16	0.5982
Lida	7	9	16	0.4018
Locul aripelor	9	19	28	0.0436
Luceafărul	134	258	392	$0.1877*10^{-0}$
Mai am un singur dor	18	18	36	0.5660
Maria Tudor	0	14	14	0.00006
Melancolie	18	20	38	0.4357
Memento mori	305	907	1212	$0.4948*10^{-69}$
Misterele nopţii	12	20	32	0.1077
Mortua est!	19	51	70	0.00008
Mureşanu	84	139	223	0.0001
Noaptea...	6	14	20	0.0577
Nu e steluţă	4	8	12	0.1938
Nu mă-nţelegi	7	17	24	0.0320
Nu voi mormânt bogat (variantă)	14	22	36	0.1215
O, adevăr sublime...	21	23	44	0.4402
O arfă pe-un mormânt	8	11	19	0.3238
O călărire în zori	36	50	86	0.0803
O, mamă…	4	14	18	0.0154
Ondina (Fantazie)	67	139	206	$0.2928*10^{-6}$
Oricâte stele...	0	14	14	0.00006
O stea prin ceruri	8	8	16	0.5982
Pajul Cupidon...	8	10	18	0.4073
Pe aceeaşi ulicioară...	7	11	18	0.2403
Pe lângă plopii fără soţ…	25	19	44	0.2257
Povestea codrului	6	20	26	0.0047
Povestea teiului	17	71	88	$0.2577*10^{-8}$
Prin nopţi tăcute	4	12	16	0.0384
Privesc oraşul furnicar	24	14	38	0.0717
Pustnicul	21	43	64	0.0041
Replici	6	18	24	0.0113
Revedere	14	22	36	0.1215

Rugăciunea unui dac	14	32	46	0.0057
S-a dus amorul	16	32	38	0.2088
Sara pe deal	2	22	24	0.00002
Scrisoarea I	40	116	156	$0.4451*10^{-9}$
Scrisoarea II	22	60	82	0.00002
Scrisoarea III	75	210	285	$0.2879*10^{-15}$
Scrisoarea IV	31	117	148	$0.2962*10^{-12}$
Scrisoarea V	24	96	120	$0.1081*10^{-10}$
Se bate miezul nopţii...	0	6	6	0.0145
Şi dacă...	8	4	12	0.11938
Singurătate	10	10	20	0.5881
Somnoroase păsărele...	0	16	16	0.00002
Sonete	2	40	42	$0.2055*10^{-9}$
Speranţa	25	20	45	0.2757
Steaua vieţii	2	10	12	0.0193
Stelele-n cer	20	16	36	0.3089
Sus în curtea cea domnească	9	21	30	0.0214
Te duci...	10	34	44	0.0002
Trecut-au anii	2	12	14	0.0065
Unda spumă	0	16	16	0.00002
Venere şi Madonă	19	29	48	0.0967
Veneţia (de Gaetano Cerri)	0	14	14	0.00006
Viaţa	10	68	78	$0.4854*10^{-11}$
Viaţa mea fu ziuă	14	2	16	0.0021
Vis	10	17	27	0.1239
Russian				
M.Lermontov, *Mtsyri*	554	195	749	$0.5788*10^{-40}$
M.Tsvetaeva, *Babushke*	7	13	20	0.1314
A.Dementjev, *A mne prisnilsja son…*	26	18	44	0.1456
F.Tjutčev, *Est' v oseni pervonačal'noj*	6	6	12	0.6128
S.Esenin, *Pis'mo k materi*	19	17	36	0.4340

The computing of the binomial distribution can be made only using a suitable program, especially, if the numbers are very large. One can also use the simple chi-square test which takes into account the mean of *O* and *C*. One obtains

$$(5.2) \quad X^2 = \frac{(O-C)^2}{O+C}$$

which is distributed with 1 DF. The normal test would be

$$(5.3) \quad u = \frac{O - N/2}{\sqrt{N}/2}$$

and $u^2 = X^2$. Here one can use C instead of O.

For example, for the longest poem, *Marína* by A. Sládkovič, we obtain

$$X^2 = (503 - 2393)^2/2896 = 1233.46$$

and applying (5.3) we get

$$u = (503 - 2896/2)/(2896^{1/2}/2) = -35.1206,$$

whose second power yields exactly the above chi-square result but shows that there are significantly fewer open rhyme than expected. .

These numbers are easier to be mentally reconstructed, hence we show them in Table 5.2. The critical value is 3.84. That is, if $C > O$ and $X^2 > 3.84$, there is a trend to use closed rhymes; if $C < O$ and $X^2 > 3.84$, there is a trend to use open rhymes.

Table 5.2

Chi-square values for the asymmetry of open and closed rhymes

Text	*C*	*O*	*N*	X^2
Hungarian				
J.Arany, *Válasz Petöfinek*	20	12	32	2.00
J.Arany, *Czakó sírján*	26	2	28	20.57
J.Arany, *Ha álom az élet*	10	4	14	2.57
J.Arany, *Emléklapra*	30	4	34	19.88
J.Arany, *Év kezdetén*	44	4	48	33.33
J.Arany, *Alkalmi vers*	34	10	44	13.09
S.Petöfi, *Szeptember végén*	19	5	24	8.17
J.Arany, *Szondi két apródja*	50	26	76	7.58
D.Kosztolányi, *Hajnali részegség*	121	21	142	70.42
Slovak				
A.Sládkovič, *Kykymora*	6	49	55	33.61
S.Chalupka, *Turčín Poničan*	8	88	96	66.67
J.Stacho, *Za život na smrť*	10	10	20	0.00
A.Sládkovič, *Roky a veky*	8	113	121	91.11
A.Sládkovič, *Ctibor*	12	118	130	86.43
A.Sládkovič, *Marína*	503	2393	2896	1233.46
A.Sládkovič, *Ohlasy*	28	62	90	12.84
S.Chalupka, *Mor ho!*	22	150	172	92.26

V.Turčány, *Súmrak*	4	16	20	7.20
V.Turčány, *Zem*	6	32	38	17.79
V.Turčány, *Mám svoje mesto rád*	21	43	64	7.56
V.Turčány, *List Vítězslavovi Nezvalovi*	28	28	56	0.00
P.O.Hviezdoslav, *Krvavé sonety*	160	288	448	36.57
M.Rázus, *Matka*	4	44	48	33.33
German				
J.W.v.Goethe, *Der Erlkönig*	30	2	32	24.50
F.v.Schiller, *Der Taucher*	61	20	81	20.75
F.v.Schiller, *An die Freude*	109	8	117	87.19
R.M.Rilke, *Die Waise*	55	11	66	29.33
H.Heine, *Affrontenburg*	18	16	34	0.12
French				
Ch. Baudelaire, *Benediction*	50	26	76	7.58
Ch.Baudelaire, *Confession*	22	18	40	0.40
Ch.Baudelaire, *Une Martyre*	32	28	60	0.27
P.Verlaine, *Adieu*	20	16	36	0.44
P.Verlaine, *Ecoutez le chanson bien douce*	22	6	28	9.14
Romanian (M.Eminescu)				
Adânca mare…	0	14	14	14.00
Adio	8	32	40	14.40
Ah, mierea buzei tale	3	33	36	25.00
Amicului F.I.	14	34	48	8.33
Andrei Mureşanu	2	84	86	78.19
Atât de fragedă…	7	29	36	13.44
Aveam o muză	25	47	72	6.72
Basmul ce i l-aş spune ei	28	62	90	12.84
Călin (file de poveste)	93	165	258	20.09
Când	6	18	24	6.00
Când amintirile...	6	18	24	6.00
Când crivăţul cu iarna...	29	65	94	13.79
Când marea...	8	12	20	0.80
Când priveşti oglinda mării	10	22	22	4.50
Care-i amorul meu în astă lume	3	34	38	25.97
Ce e amorul?	6	22	28	9.14
Ce te legeni...	10	14	24	0.67
Ce-ţi doresc eu ţie, dulce Românie	19	13	32	1.12
Cine-i?	11	19	30	2.13
Copii eram noi amandoi	23	28	51	0.49

Crăiasa din poveşti	0	14	14	14.00
Criticilor mei	4	10	14	2.57
Cugetările sărmanului Dionis	20	44	64	9.00
Cu mâne zilele-ţi adaogi...	8	8	16	0.00
Cum negustorii din Constantinopol	9	7	16	0.25
Cum oceanu-ntărâtat...	0	14	14	14.00
De-aş avea	6	18	24	6.00
De-aş muri ori de-ai muri	10	26	36	7.11
De câte ori, iubito...	3	11	14	4.57
De ce nu-mi vii	8	16	24	2.67
De ce să mori tu?	14	14	28	0.00
De-oi adormi (variantă)	16	20	36	0.44
De-or trece anii...	4	12	16	4.00
Departe sunt de tine	8	10	18	0.22
Despărţire	16	22	38	0.95
Din Berlin la Potsdam	2	12	14	7.14
Din lyra spartă...	6	6	12	0.00
Din noaptea	10	6	16	1.00
Din străinătate	10	26	36	7.11
Din valurile vremii...	12	8	20	0.80
Dintre sute de catarge	4	12	16	4.00
Doi aştri	6	6	12	0.00
Doina	12	49	61	22.44
Dorinţa	5	7	12	0.33
Dumnezeu şi om	9	47	56	25.79
Ecò	49	101	150	18.03
Egipetul	29	61	90	11.38
Epigonii	23	91	114	40.56
Făt-Frumos din tei	19	27	46	1.39
Feciorul de împărat fără de stea	312	532	844	57.35
Floare-albastră	8	48	56	28.57
Foaia veştedă (după Lenau)	4	10	14	2.57
Freamăt de codru	5	43	48	30.08
Frumoasă şi june	2	14	16	9.00
Ghazel	1	39	40	36.1
Glossa	3	77	80	68.45
Horia	7	15	22	2.91
Iar când voi fi pământ (variantă)	16	24	40	1.60

Icoană şi privaz	73	115	188	9.38
Împărat şi proletar	60	150	210	38.57
În căutarea Şeherezadei	18	138	156	92.31
Înger şi demon	25	83	108	31.15
Întunericul şi poetul	7	27	34	11.76
Iubind în taină...	0	14	14	14.00
Înger de pază	4	10	13	2.57
Îngere palid...	2	10	12	5.33
Iubită dulce, o, mă lasă	15	41	56	12.07
Iubitei	19	45	64	10.56
Junii corupţi	19	59	78	20.51
Kamadeva	7	3	10	1.60
La Bucovina	4	32	36	21.78
Lacul	4	6	10	0.40
La mijloc de codru...	4	9	13	1.92
La moartea lui Heliade	22	26	48	0.33
La moartea lui Neamţu	12	17	29	0.86
La moartea principelui Ştirbey	5	11	16	2.25
La mormântul lui Aron Pumnul	5	20	25	9.00
La o artistă (Ca a nopţii poezie)	17	23	40	0.90
La o artistă (Credeam ieri)	21	7	28	7.00
La Quadrat	8	8	16	0.00
Lasă-ţi lumea...	5	47	52	33.92
Lebăda	4	8	12	1.33
La steaua	8	8	16	0.00
Lida	7	9	16	0.25
Locul aripelor	9	19	28	3.57
Luceafărul	134	258	392	39.22
Mai am un singur dor	18	18	36	0.00
Maria Tudor	0	14	14	14.00
Melancolie	18	20	38	0.11
Memento mori	305	907	1212	299.01
Misterele nopţii	12	20	32	2.00
Mortua est!	19	51	70	14.63
Mureşanu	84	139	223	13.56
Noaptea...	6	14	20	3.20
Nu e steluţă	4	8	12	1.33
Nu mă-nţelegi	7	17	24	4.17

Nu voi mormânt bogat (variantă)	14	22	36	1.78
O, adevăr sublime...	21	23	44	0.09
O arfă pe-un mormânt	8	11	19	0.47
O călărire în zori	36	50	86	2.28
O, mamă…	4	14	18	5.56
Ondina (Fantazie)	67	139	206	25.17
Oricâte stele...	0	14	14	14.00
O stea prin ceruri	8	8	16	0.00
Pajul Cupidon...	8	10	18	0.22
Pe aceeaşi ulicioară...	7	11	18	0.89
Pe lângă plopii fără soţ…	25	19	44	0.82
Povestea codrului	6	20	26	7.54
Povestea teiului	17	71	88	33.14
Prin nopţi tăcute	4	12	16	4.00
Privesc oraşul furnicar	24	14	38	2.63
Pustnicul	21	43	64	7.56
Replici	6	18	24	6.00
Revedere	14	22	36	1.78
Rugăciunea unui dac	14	32	46	7.04
S-a dus amorul	16	32	38	5.33
Sara pe deal	2	22	24	16.67
Scrisoarea I	40	116	156	37.03
Scrisoarea II	22	60	82	17.61
Scrisoarea III	75	210	285	63.95
Scrisoarea IV	31	117	148	49.97
Scrisoarea V	24	96	120	43.20
Se bate miezul nopţii...	0	6	6	6.00
Şi dacă...	8	4	12	1.33
Singurătate	10	10	20	0.00
Somnoroase păsărele...	0	16	16	16.00
Sonete	2	40	42	34.38
Speranţa	25	20	45	0.56
Steaua vieţii	2	10	12	5.33
Stelele-n cer	20	16	36	0.44
Sus în curtea cea domnească	9	21	30	4.80
Te duci...	10	34	44	13.09
Trecut-au anii	2	12	14	7.14
Unda spumă	0	16	16	16.00

Venere şi Madonă	19	29	48	2.08
Veneţia (de Gaetano Cerri)	0	14	14	14.00
Viaţa	10	68	78	43.13
Viaţa mea fu ziuă	14	2	16	9.00
Vis	10	17	27	1.81
Russian				
M.Lermontov, *Mtsyri*	554	195	749	172.07
M.Tsvetaeva, *Babushke*	7	13	20	1.80
A.Dementjev, *A mne prisnilsja son…*	26	18	44	1.45
F.Tjutčev, *Est' v oseni pervonačal'noj*	6	6	12	0.00
S.Esenin, *Pis'mo k materi*	19	17	36	0.11
M.Boroditskaya, *Koldunja*	9	15	34	1.06

As can be seen, in Hungarian and German the closed rhyme is preferred; in Slovak, there is a development as has been shown in Štukovský, Altmann (1966). In German, we have 4 poems that prefer closed rhyme and one neutral. In French, there are 2 preferring closed rhyme, the rest is neutral. Of course, for every language one needs a much greater number of poems, and, if possible, containing more strophes, though even in short poems the tendency may be evident, cf. *Súmrak* by V.Turčány, in Slovak. In Russian the proportion of open and closed rhyme are "equal" but in the longer text by Lermontov, one finds a significant difference.

In Romanian, the majority of rhymes are open but not in all cases is there a significant difference. With M.Eminescu (Romanian), we counted only the rhymed lines. However, an historical ordering of Eminescu's works does not yield a clear open/closed line, there is a strong oscillation (cf. Popescu, Lupea, Tătar, Altman, 2015: 85-86).

6. POS of the Rhyme Word

Since words have an infinite number of properties, we must restrict ourselves to some classifications. Here, we shall order the rhyme words according to their appartenance to a part-of-speech. One can use different classifications, adhering to a linguistic school, or one can adhere to the classical Latin classification. Again, one can see that languages may have their preferences, and the authors may adhere to special creative patterns which optimally express their aims. Since the choice of rhyme words is frequently dominated by the given possibilities (e.g. grammar), we must take into account that there will be a set of possible models whose number can be – later on – reduced by some unification.

As to parts of speech (POS), we may study the rank-frequency distribution but also the sequence of POS in the rhyme can be an object of investigation. Here we shall study merely the rank-frequencies.

Consider the POS of the rhyme words in *Erklkönig* by Goethe, given as

POS-*Erlkönig* = [N,N,N,Av, N,Part,N,N, Pn,Pn,N,N, Part,V,N,N,
V,Av,N,Av, Av,N,Av,Aj, N,N,Av,V, Av,N,N,Aj]

We use the following abbreviations for the parts-of-speech: N=noun, V=verb, Aj=adjective, Av=adverb, Art=article, Pn=pronoun, Part=particle, Nu=numeral, Int=interjection, Conj=conjunction, Postpos = postposition.

As usual, one fits at first the right truncated Zipf distribution. The results are presented in Table 6.1.

Table 6.1
Fitting the Zipf distribution to ranked POS occurrence in *Erlkönig*

POS	**Rank**	**Frequency**	**RT Zeta distribution**
N	1	16	15.86
Av	2	7	6.39
V	3	3	3.75
Aj	4	2	2.57
Part	5	2	1.92
Pn	6	2	1.51
a = 1.3119, R = 6, DF = 3, X^2 = 0.50, P = 0.92			

However, the usual Zipf distribution is not always adequate. For the Slovak poem *Turčín Poničan* we use the above-mentioned Poisson yielding the results presented in Table 6.2

Table 6.2
Fitting the Poisson distribution to ranked POS occurrences in *Turčín Poničan*

POS	Rank	Frequency	Poisson
N	1	43	39.47
V	2	36	35.08
Aj	3	8	15.59
Pn	4	7	4.62
Av	5	2	1.24
a = 0.8888, DF = 3, X^2 = 5.73, P = 0.13			

S.Chalupka: *Turčín Poničan*

[Aj,N,N,N,V,V,V,V,N,N,N,Aj,N,N,N,Pn,V,N,V,V,V,V,V,V,N,V,V,
Av,Aj,N,N,N,V,N,Pn,V,N,N,N,N,Pn,N,V,V,V,V,V,Aj,Aj,N,N,N,
N,V,V,N,Pn,N,V,V,V,Av,V,N,N,N,N,Aj,N,V,N,V,V,N,N,N,N,N,N,
V,V,N,N,Pn,Pn,V,V,N,N,Aj,V,Pn,N,Aj,V]

Table 6.3
Fitting the Zipf distribution to the Hungarian poem
Szeptember végén by S. Petöfi (parts of speech)

POS	Rank	Frequency	RT-Zeta
N	1	15	14.01
V	2	3	4.50
Av	3	2	2.31
Pn	4	2	1.44
Postpos	5	1	1.00
Art	6	1	0.74
a = 1.6399, R = 6, DF = 2, X^2 = 0.86, P = 0.65			

There are many texts in which the POS in the rhyme position is very restricted. One finds only nouns, verbs and adjectives, hence only distributions with one parameter are adequate. Nevertheless, one can use instead continuous functions. Mathematical modeling is merely a trial at capturing the reality in such a way that one can operate with it; it is no finding of truth.

For the works of the Romanian poet M. Eminescu 141 poems have been analyzed (cf. Popescu, Lupea, Tătar, Altmann, 2015: 88-92). The rank-frequencies of POS and the fitted distributions are presented in Table 6.4. Here the ranks do not represent always the same POS; the zero frequencies are omitted. Here, Po = Poisson, PosPo = positive Poisson, RtZ = right truncated Zeta, Z = Zeta and HiPo = Hirata-Poisson distributions.

Table 6.4
Rank-frequency of POS

Text	Ranking of POS	Model	a	R	DF	X^2	P
Romanian (M.Eminescu)							
Adânca mare	7,5,2	Po	0.6806		1	0.01	0.92
Adio	15,13,4,4,3,1	RtZ	1.0839	6	3	4.37	0.22
Ah, mierea buzei tale	16,9,7,3,1	RtZ	1.0998	5	2	2.33	0.31
Amicului F.I.	29,7,6,4,2	RtZ	1.5444	6	2	1.09	0.58
Amorul unei marmure	30,7,5,2	RtZ	1.0371	4	1	.54	0.46
Andrei Mureşanu	34,24,21,4,3	Po	1.0702		3	4,55	0.20
Atât de fragedă…	23,5,4,3,1	RtZ	1.6719	5	2	1.13	0.57
Aveam o muză	27,25,15,3,2	Po	1.0224		3	1.04	0.79
Basmul ce i l-aş spune ei	37,23,19,6,4,1	PosPo	1.7521		3	2.77	0.43
Când	8,8,8	Po	1.1553		1	0.10	0.75
Când amintirile…	10,7,4,2,1	RtZ	1.0549	5	2	1.37	0.50
Când crivăţul cu iarna	30,29,28,6,1	Po	1.1799		3	5.70	0.13
Când marea	7,7,5,1	Po	1.0415		2	0.71	0.70
Când priveşti oglinda mării	15,7,4,3,3	RtZ	1.0927	5	2	0.15	0.93
Care-i amorul meu în astă lume	22,9,5,1	RtZ	1.5242	4	1	1.43	0.23
Ce e amorul?	14,7,3,2,2	RtZ	1.2812	5	2	0.38	0.83
Ce te legeni	10,9,4,1,1	RtZ	1.0868	5	2	4.08	0.13
Ce-ţi doresc eu ţie, dulce România	17,11,4	Po	0.6221		1	0.02	0.90
Cine-i?	16,11,3	Po	0.5909		1	0.26	0.61
Copii eram noi amandoi	28,15,6,1,1	Po	0.6588		2	0.61	0.74
Crăiasa din poveşti	6,6,2	Po	0.7591		1	0.35	0.56
Criticilor mei	6,6,2	Po	0.7591		1	0.35	0.56
Cugetările sărmanului Dionis	47,10,4,2,1	RtZ	2.2745		5	0.05	0.98
Cu mâne	7,5,3,1	RtZ	0.9466	4	1	0.81	0.34

zilele-ţi adaogi							
Cum oceanu-ntărâtat	7,4,3	Po	0.7779		1	0.32	0.57
De care ori, iubito…	4,4,3,3	RtZ	0.2316	4	1	0.08	0.78
De-aş avea	14,6,3,1	RtZ	1,4974	4	1	0.55	0.46
De-aş muri ori de-ai muri	17,10,8,1	Po	0.8441		2	2.45	0.29
De ce nu-mi vii	10,5,4,4,1	RtZ	0.8812	5	2	1.27	0.53
De ce să mori tu?	12,11,3,2	Po	0.0557		2	0.61	0.74
De-oi adormi (63 variant)	18,7,6,4,1	RtZ	1.2008	5	2	1.48	0.47
De-or trece anii	6,4,4,2	RtZ	0.5850	4	1	0.39	0.53
Departe sunt de tine	8,7,2,1	RtZ	1.0595	4	1	2.59	0.11
Despărţire	17,9,4,4,4	RtZ	1.0150	5	2	0.63	0.73
Din Berlin la Potsdam	8,4,2	Po	0.6076		1	0.14	0.71
Din lyra spartă	5,5,1,1	Po	0.7979		1	0.18	0.68
Din noaptea	6,5,2,2,1	RtZ	0.9140	5	2	0.95	0.62
Din străinătate	22,7,6,1	RtZ	1.4869	4	1	1.95	0.16
Din valurile vremii	10,4,4,1,1	RtZ	1.2145	5	2	1.26	0.53
Dintre sute de catarge	12,2,1,1	Zeta	2.5527		1	0.02	0.88
Doi aştri	9,2,1	Zeta	2.6107		1	0.22	0.64
Doina	39,14,6,1,1	RtZ	1.9707	5	2	2.84	0.24
Dumnezeu şi om	27,25,3,1	Po	0.6375		2	3.90	0.14
Dorinţa	7,3,1,1	Po	0.6334		1	0.4298	0.51
Ecò	73,44,30,3	Po	0.7909		2	7.95	0.02
Egipetul	44,28,18	Po	0.7706		1	0.84	0.36
Epigonii	49,49,14,2	Po	0.7484		2	3.84	0.15
Făt-Frumos din tei	23,14,6,2,1	Po	0.7897		2	1.08	0.61
Floare-albastră	37,10,6,2,1	RtZ	1.8999	5	2	0.91	0.63
Foaia veştedă (după Lenau)	8,4,2	Po	0.6096		1	0.14	0.71
Freamăt de codru	18,14,11,3,2	Po	1.1236		3	1.69	0.64
Frumoasă şi junĕ	8,4,2,1,1	RtZ	1.3188	5	1	0.19	0.66
Ghazel	22,10,7,1	Po	0.6996		2	2.36	0.31

Glossa	36,25,10,7,2	Po	0.9602		3	4.50	0.21
Horia	10,4,4,4	RtZ	0.7436	4	1	0.64	0.46
Iar când voi fi pământ	24,7,5,2,2	RtZ	1.5943	5	2	0.44	0.80
Icoană şi privaz	96,52,32,4,4	PosPo	1.3097		3	5.50	0.14
Împărat şi proletar	81,66,55,5,2,1						
În căutarea Şeherezadei	91,31,23,11	RtZ	1.4079	4	1	1.28	0.26
Înger de pază	7,3,2,2	RtZ	0.9779	4	1	1.14	0.71
Îngere palid	7,4,1	Po	0.5196		1	0.53	0.47
Înger şi demon	44,34,26,4	Po	0.9502		2	5.43	0.07
Întunericul şi poetul	23,6,4,1	RtZ	1.8256	4	1	0.68	0.41
Iubind în taină	11,2,1	Zeta	2.7822		1	0.12	0.74
Iubită dulce, o, mă lasă	19,17,14,4,2	Po	0.1723		3	1.19	0.75
Iubitei	20,20,13,7, 2,2	Po	1.3219		3	1.48	0.69
Junii corupţi	36,22,18,2	Po	0.8661		2	5.77	0.06
Kamadeva	4,4,2	Po	0.8652		1	0.76	0.38
La Bucovina	19,6,6,3,2	RtZ	1.2784	5	2	0.89	0.64
La mijloc de codru	7,3,2,1	RtZ	1.2530	4	1	0.08	0.78
La moartea lui Heliade	23,13,12	Po	0.8558		1	1.81	0.18
La moartea lui Neamţu	15.8.5.1	Po	0.6326		1	0.21	0.65
La moartea Principelui Ştirbey	8,5,2,1	RtZ	1.2036	4	1	0.75	0.39
La mormântul lui Aron Pumnul	13,8,3,1	Po	0.6806		1	0.07	0.79
La o artistă (Ca a nopţii poezie)	17,12,8,2,1	Po	0.9477		2	0.80	0.67
La o artistă (Credeam ieri)	14,11,3	Po	0.6389		1	0.46	0.50
La Quadrat	8,4,4	Po	0.8346		1	0.89	0.35
Lasă- ţi lumea	18,17,13,3	Po	1.0606		2	1.72	0.42
La steaua	7,4,2,2,1	RtZ	1.0194	5	2	0.73	0.70
Lebăda	6,4,2	Po	0.7072		1	0.01	0.90
Lida	6,6,4	Po	0.9684		1	0.004	0.95

Locul aripelor	12,6,5,4,1	RtZ	0.9562	5	2	1.34	0.51
Luceafărul	186,100,55, 36.15,	HiPo	0.7796	b = 0.2723	2	5.41	0.07
Mai am un singur dor	21,7,4,3,1	RtZ	1.5503	5	2	0.45	0.80
Maria Tudor	7,5,2	Po	0.6551		1	0.07	0.80
Melancolie	20,10,6,1,1	Po	0.4504		1	0.15	0.70
Memento mori	645,303,181, 54,25,3,1	HiPo	0.6263	b = 0.2575	4	3.41	0.49
Misterele nopţii	11,10,9,2	Po	1.1151		2	1.71	0.42
Mortua est!	33,23,13,1	Po	0.7812		1	2.71	0.26
Noaptea	8,8,4	Po	0.8652		1	1.11	0.74
Nu e steluţă	6,3,2,1	RtZ	1.1250	4	1	0.11	0.74
Nu mă-nţelegi	8,6,4,3,3	RtZ	0.6537	5	2	0.15	0.93
Nu voi mormânt bogat (varianta)	20,6,6,3,1	RtZ	1.3841	5	2	1.60	0.45
O, adevăr sublime	33,6,4,1	RtZ	2.1904	3	1	0.78	0.38
O arfă pre-un mormânt	7,6,3,2,1	Po	1.1750		2	0.91	0.63
O călărire în zori	60,14,11,1	HiPo	0.3181	b = 0.3636	1	1.15	0.28
O, mamă	7,5,3,3	RtZ	0.6553	4	1	0.12	0.73
Ondina (Fantazie)	101,55,33,13, 4	PosPo	1.4072		3	2.92	0.40
O stea prin ceruri	9,4,3	Po	0.6818		1	0.67	0.41
Pajul Cupidon	7,6,3,2	Po	1.0175		2	0.30	0.86
Pe aceeaşi ulicioară	9,4,3,2	RtZ	1.0676	4	1	0.04	0.85
Pe lângă plopii fără soţ	14,12,11,5,2	Po	1.3023		3	1.33	0.72
Peste vârfuri	4,3,3,2	RtZ	0.4047	4	1	1.1	0.74
Povestea codrlui	19,4,2,1	Zeta	2.5008		2	1.02	0.60
Povestea teiului	36,28,12,10,2	Po	1.0584		3	5.68	0.13
Prin nopţi tăcute	10,4,2	Po	0.5323		1	0.34	0.56
Privesc oraşul furnicar	16,9,6,5,2	RtZ	1.1050	5	2	0.67	0.71
Pustnicul	33,17,8,3,3	RtZ	1.3995	5	2	2.15	0.34
Replici	16,4,3,1	RtZ	1.7524	4	1	0.43	0.51
Revedere	14,13,6,2,1	Po	0.9703		2	0.08	0.96
Rugăciunea unui dac	22,17,3,3,1	Po	0.8341		2	3.50	0.17
S-a dus amorul	19,10,7,6,6	RtZ	0.7990	5	2	.27	0.87

Sara pe deal	10,8,4,2	RtZ	0.8853	4	1	1.28	0.26
Scrisoarea I	84,35,29,5,2,1	HiPo	0.5988	b = 0.321	3	2.54	0.47
Scrisoarea II	58,15,6,3	RtZ	2.0517	4	1	0.11	0.74
Scrisoarea III	185,53,27,14, 6	RtZ	1.8681	5	2	1.54	0.46
Scrisoarea IV	77,37,26,7,1	PosPo	1.2999		3	4.66	0.20
Scrisoarea V	72,20,17,6,5	RtZ	1.5708	5	2	2.77	0.25
Şi dacă…	6,5,1	Po	0.6163		1	0.47	0.49
Simgurătate	12,4,2,2	RtZ	1.4463	4	1	0.20	0.65
Somnoroase păsărele	8,4,3,1	RtZ	1.1125	4	1	0.48	0.49
Sonete	21,16,3,2	Po	0.6960		2	1.23	0.54
Speranţa	22,11,8,4	Po	0.4866		1	0.19	0.66
Steaua vieţii	7,2,2,1	Zeta	2.0954		1	1.16	0.28
Stele-n cer	23,7,6	Zeta	2.1774		1	0.66	0.42
Sus în curtea cea domnească	19,8,3	Po	0.4866		1	0.19	0.66
Te duci…	16,14,9,4,1	Po	1.1053		3	0.59	0.90
Trecut-au anii	7,6,1	Po	0.6067		1	2.27	0.13
Unda spumă	5,5,5,1	Po	1.1930		2	1.23	0.54
Venere şi Madonă	34,9,4,1	RtZ	2.0193	4	1	0.63	0.43
Viaţa	33,24,17,3,1	Po	0.9252		3	2.26	0.52
Viaţa mea fu ziuă	7,6,1,1,1	Po	0.8087		1	0.02	0.90
Vis	16,4,4,2,1	RtZ	1.5125	5	2	0.88	0.64

Table 6.5
Other models

Text	**Data**	**Function/distribution**	**R^2**
Împărat şi proletar	81,66,55,5,2,1	y = -29.9059 + 149.0204* *exp(-0.2512x)	R^2 = 0.90
Scrisoarea I	84,35,29,5,2,1	y = 176.1929*exp(-0.7390x)	R^2 = 0.97
Călin (File de poveste)	136,65,49,7,1	y = 271.9171*exp(-06907x)	R^2 = 0.97
Mureşanu	102,57,55,7,2	y = 178.8093*exp(-0.5467x)	R^2 = 0.90
Se bate miezul nopţii	4,2	Too short	
Veneţia (de Gaetano Cerri)	12,1,1, (0)	y = 122.6049*exp(-2.3248x)	R^2 = 0.99
Oricâte stele…	12,1,1, (0)	y = 122.6049*exp(-2.3248x)	
Lacul	5,5	Too short	

Faciorul de împărat fără de stea	338,234,211, 38,22	$y = 900.4464*x^{1.0913}*$ $*\exp(-0.9953x)$	$R^2 = 0.91$
Cum negustorii din Constantinopol	14,1,1	$y = 170.5064*\exp(-2.5002x)$	$R^2 = 0.99$

For some other languages, the results are presented in Table 6.6

Table 6.6
Rank-frequency of POS in some languages

Text	**Ranking of POS**	**Model**	**a**	**R**	**DF**	**X^2**	**P**
Slovak							
A.Sládkovič, *Otrok*	77,68,16, 4,2,1	Po	0.7730		3	5.94	0.11
A.Sládkovič, *Kykymora*	41,38,19,2	Po	0.8553		2	3.18	0.20
A.Sládkovič, *Ohlasy*	48,32,8,2	Po	0.6046		2	0.32	0.86
A.Sládkovič, *Ctibor*	66,35,26,1,1	PosPo	1.3085		1	1.27	0.26
A.Sládkovič, *Marína*	1233,1217,329, 75,31,9,1,1	Mod. RtZA	a = 0.7092, b = 1.4988, n =8, α = 0.4258		3	5.36	0.15
S.Chalupka, *Turčin Poničan*	43,35,9,7,2	Po	0.8937		2	4.79	0.19
V.Turčány, *Súmrak*	7,6,3,2,1	Po	1.1750		2	0.91	0.63
V.Turčány, *Zem*	16,12,4,2	Po	0.7838		2	0.28	0.87
V.Turčány, *Mám svoje mesto rád*	14,12,7,3,1	Po	1.0563		2	0.41	0.81
V.Turčány, *List Vítězslavovi Nezvalovi*	39,10,4,2,1	RtZ	2.1046	5	2	0.17	0.92
J.Smrek, *Zápalky*	10,9,3	Po	0.7219		1	0.36	0.55
J.Stacho, *Za život na smrť*	4,8,7	Po	3.6926		1	0.92	0.34
P.O.Hviezdoslav *Krvavé sonety*	274,77,59,20, 14,2,2	Pos. Si-Po	2.0479	α = 0.5599	4	4.33	0.36
M. Rázus, *Matka*	18,16,7,4,3	PosPo	1.8113		3	1.01	0.80

French							
Ch.Baudelaire, *Un martyre*	33,21,6	Po	0.5731		1	2.99	0.08
Ch.Baudelaire, *Benediction*	43,23,8	Po	0.5494		1	1.42	0.23
Ch.Baudelaire, *Confession*	17,13,6,4	Po	0.9261		2	1.60	0.45
P.Verlaine, *Adieu*	17,8,7,2,2	Po	0.9814		2	3.57	0.17
P.Verlaine, *Ecoutez la chanson bien douce*	12,9,7	Po	0.9089		1	0.24	0.62
Hungarian							
S.Petöfi, *Szeptember végén*	15,3,2,2,1,1	Zeta	2.0063		3	2.62	0.45
J.Arany, *Szondi két apródja*	41,16,9,4,3,1,1	RtZ	1.6291	R = 7	4	2.06	0.73
J.Arany, *Válasz Petöfinek*	15,10,3,3,1	Po	0.9261		2	1.60	0.45
J.Arany, *Czakó sírján*	28,12,4,2,2	RtZ	1.6464	R =5	2	1.27	0.53
J.Arany, *Ha álomaz élet*	7,3,2,1,1	RtZ	1.2530	R = 5	1	0.04	0.84
J.Arany, *Emléklapra*	27,13,7,5,1	RtZ	1.3312	R = 5	2	2.07	0.36
J.Arany, *Év kezdetén* 1851	31,11,3,1,1,1	RtZ	1.9806	R = 6	2	1.74	0.42
J.Arany, *Alkalmi vers* 1853	30,9,4,1	RtZ	1.9324	R = 4	1	0.74	0.39
D.Kosztolányi, *Hajnali részegség*	56,44,22,7,6, 4,2	Geo	p = 0.4525		5	5.99	0.31
German							
J.W.v.Goethe, *Der Erlkönig*	16,7,3,2,2,2	RtZ	1.3908		2	0.28	0.87
R.M. Rilke, *Die Waise*	32,23,6,5	Po	0.8050		2	2.61	0.27
F.v.Schiller, *Der Taucher*	76,44,33,4,3,2	PosPo	1.4789		2	7.41	0.06
F.v.Schiller, *An die Freude*	64,35,6,2,1	Po	0.5394		2	1.74	0.41
Italian							
A.Dante, *Inferno*	63,34,29,9,1	PosPo	1.5044		3	6.45	0.09

Canto I							
A.Dante, *Inferno Canto II*	48,45,33,8,5,2	PosPo	1.8432		4	2.83	0.59
A.Dante, *Inferno Canto III*	54,37,31,5,5,1	PosPo	1.7008		4	6.34	0.18
Russian							
A.Dementjev, *A mne prisnilsja son…*	26, 9, 4, 3, 2	PZ	1.5975	5	2	0.08	0.95
S.Esenin, *Pis'mo k materi*	21, 5, 3, 2, 2, 2, 1,	RtZ	1.5334	7	3	1.05	0,79
Boroditskaya, *Koldunya*	15,7,1,1	PosPo	0.8434	-	1	0.08	0.77
F.Tjutčev, *Est' v oseni pervonačal'noj*	8,2,2	PosPo	0.9795		1	0.92	0.33

Table 6.7
Other models

M.Lermontov, *Mtsyri*	418,134,85,79, 45,9,6,4,2,1	y = 933.5833*exp(-0.8356x)+1	R^2 = 0.9664
M.Tsvetaeva, *Babushke*	10,5,3,2,1	y = 19.7862*exp(-0.7889x)+1	R^2 = 0.9664

Since the frequencies are ranked, we selected distributions yielding decreasing probabilities. This was the case, e.g. with Dante's *Inferno Canto II* where we have chosen Positive Poisson. In most cases we have chosen the "best" fit restricting ourselves to Poisson and Zeta distributions. Needless to say, many other distributions could be fitted – with "better" results – but we strive for finding a general model.

Even though one finds exceptions here, the situation is very simple. The parts of speech follow either the usual Zipf (Zeta) distribution – or its adapted variant – or the Poisson distribution or its variants. Both are the results of stochastic processes but we cannot say definitively which poem has been modified after its creation. The writing of poems is partly a spontaneous deed and partly a processing of the text in order to make it "better". Dead poets cannot be asked but even living poets could not answer the question in detail. The only examination we can do is the stating of facts and a striving for unification. Nobody can predict whether or not at some time we will obtain a law with all of its possible boundary conditions.

In one case we were forced to modify the Poisson distribution, namely in the Slovak set of poems *Krvavé sonety* by P.O.Hviezdoslav. Since the collection consists of 64 sonnets, it can be considered a mixture of texts, and hence some modification is necessary. We used the positive Singh-Poisson distribution according to the formula:

$$P(X) = \begin{cases} 1-\alpha+\dfrac{\alpha a e^{-a}}{1-e^{-a}}, & x=1 \\ \dfrac{\alpha a^{x} e^{-a}}{x!(1-e^{-a})}, & x=2,3,4,... \end{cases} \tag{6.1}$$

which contains only a simple modification of the first value of the Poisson distribution. It is almost sure that modifications of this type will occur especially in longer poems. Such a case can be found in the Slovak poem *Marína* by A. Sládkovič which consists of 291 strophes for which we were forced to use the right truncated modified Zipf-Alekseev distribution according to the formula

$$P(X) = \begin{cases} \alpha, & x=1 \\ \dfrac{(1-\alpha)x^{-(a+b\ln x)}}{T}, & x=2,3,4,... \end{cases} \tag{6.2}$$

where T is the respective sum. It is to be noted that one can model the above sequences in form of a function and obtain very good results. For example, applying the simple Zipf-Alekseev function $y = cx^{a+b\ln x}$ to *Marína* by A. Sládkovič one would obtain

a = 1.9878; b = -2.8965; c = 1233.1485; R^2 = 0.9999.

7. Pairs of Rhyme Words

If one analyzes the classification of rhyme words into parts-of-speech, one may ask whether the rhyme pairs always belong to the same part of speech or whether one may combine them. Evidently, one can set up a contingency table and test it for significance, one can test the diagonal, one can test the symmetry of the table, etc. If there are triadic rhymes, one must count two cases (the given and the follower). One can make the conjecture that the pairing prefers identical parts of speech and since rhyming develops, how does it change in the historical development.

In many cases, one will be forced to make decisions which represent the conditions of counting. For example, two words belonging to the rhyme-word are rhymed with one word, e.g. in Slovak "chcú ho" with "tuho"; in the first case we have a verb and a pronoun, in the second we have an adverb but if one marks the POS of the rhyme word, one can do it only with the last word.

There are no "objective" criteria; here one sees the relativity of any definitions, nevertheless, they are a necessary constituent of any theory. If the poem is short, one must perform exact tests, i.e. one must first find the distribution of the phenomenon, and using it compute the probability of the given result. The probability can be interpreted linguistically.

Let us illustrate the measurement using the Slovak poem *Mor ho!* by S. Chalupka (cf. Table 7.1).

Table 7.1
Rhyming of parts-of-speech in a Slovak poem *Mor ho!* (86 pairs)

	Noun	**Verb**	**Adj.**	**Pron.**	**Adv.**	**SUMS**
Noun	24	15	3	2	-	44
Verb	8	17	1	-	-	26
Adj.	5	1	1	1	-	8
Pron.	1	1	-	1	-	3
Adv.	3	2	-	-	-	5
SUMS	41	36	5	4	-	86

Now, in spite of the text length (there are172 verses), an overall chi-square would not bring a persuasive result because there are many cells with zero or very small frequencies. Nevertheless, one can test some individual hypotheses and express the status quo. Here we must restrict ourselves to nouns and verbs and to the sums of rows and columns.

Hypotheses:

(1) The frequencies of N- and V-, ranked appropriately, yield one of the known rank-frequency distribution/function.

(2) There is a tendency to make the rhyme pairs using the same part-of-speech, here N-N and V-V that is, there is the tendency to prefer the diagonal of the contingency table.

(3) There is no symmetry of opposite cells, i.e. N-V differs from V-N; N-Aj differs from Aj-N, etc.

(4) For the overall frequencies (sums) one can find either a usual distribution or a rank-frequency distribution. It need not be the same for row sums and column sums.

(5) The contingency table as a whole yields numbers which may be ranked, hence there is a rank-frequency distribution of all POS pairs.

(6) Hypothesis (3) can be tested for the contingency table as a whole comparing all symmetrical cells and testing the homogeneity of symmetrical cells.

Hypothesis 1

For the nouns in the first and the second positions we obtain the results displayed in Table 7.2. The function fitted is simply an exponential function – which is slightly better than the usual power function. The first position is represented by the first row in Table 7.1, that of second position by the second column in Table 7.1.

Table 7.2

Exponential distribution of nouns in both positions (Slovak poem *Mor ho!*)

Nouns in the first rhyme position				**Nouns in the second rhyme position**		
Rank	Frequency	y = a*exp(-b*x)		Rank	Frequency	y = a*exp(-b*x)
1	24	24.79		1	24	23.61
2	15	11.89		2	8	9.65
3	3	5.71		3	5	3.95
4	2	2.74		4	3	1.61
				5	1	0.66
a = 51.6570, b = 0.7343, R^2 = 0.94				a = 57.7393, b = 0.8945, R^2 = 0.98		

For the verbs, we obtain the results in Table 7.3. Here only the second position is well testable, because of the small number of verbs in the first position.

However, here we must use the Zipf-Alekseev function in order to obtain good results. As can be seen, the investigation merely begins; it will be very difficult to obtain general results because every poet has his own ways of rhyming.

Table 7.3
Zipf-Alekseev function for verbs in the second position (S.Chalupka, *Mor ho!*)

Verbs in the second position		
Rank	Frequency	$y = 1 + c*x^{(a+b*\ln(x))}$
1	17	17.00
2	15	14.99
3	2	2.11
4	2	1.06
5	1	1.00
a = 3.6256, b = -5.5095, c = 16.0009 R^2 = 0.9964		

For the poem *Otrok* by A. Sládkovič we obtain the results given in Table 7.4

Table 7.4
A.Sládkovič, *Otrok*

Nouns in the first position				**Nouns in the second position**		
Rank	Frequency	y = a*exp(-b*x)		Rank	Frequency	y = a*exp(-b*x)
1	23	22.91		1	23	22.84
2	4	4.72		2	7	7.90
3	2	0.97		3	4	2.73
4	2	0.20		4	1	0.94
5	2	0.04				
a = 111.2191, b = 1.5797, R^2= 0.9745				a = 66.0727 , b = 1.0621, R^2 = 0.9915		

Table 7.5 contains the results for the poem *Der Taucher* by F.v.Schiller.

Table 7.5
F.v.Schiller, *Der Taucher*

Nouns in the first position				**Nouns in the second position**		
Rank	Frequency	y = a*exp(-b*x)		Rank	Frequency	y = a*exp(-b*x)
1	19	18.67		1	19	19.34
2	7	8.38		2	11	11.24
3	5	3.77		3	10	6.53
4	2	1.69		4	1	3.80
5	1	0.76		5	1	2.21
a = 41.5593, b = 0.8004, R^2 = 0.9823				a = 33.2763, b = 0.5426, R^2 = 0.9071		

Unfortunately, not all POS are represented frequently enough but the hypothesis may be used at least for some cases.

Table 7.6
Nouns in the first and second position
(If there are only two parameters, we use the exponential function)

Text	A	b	R^2
S.Chalupka, *Mor ho*	51.6570	0.7343	0.94
	57.7393	0.8945	0.98
A.Sládkovič, *Otrok*	111.2181	1.5797	0.97
	66.0727	1.0621	0.99
A.Sládkovič, *Marína*	1442.2174	1.1945	0.99
	1913.8851	1.4774	1.00
J.Arany, *Szondi két apródja*	26.3244	0.8156	0.95
	28.0995	0.8543	1.00
F.v.Schiller, *Der Taucher*	41.5593	0.8004	0.98
	33.2763	0.5426	0.91
F.v.Schiller, *An die Freude*	79.1347	1.1891	0.99
	-	-	-
P.O.Hviezdoslav, *Krvave sonety*	120.7851	0.7249	0.98
	111.8641	0.6364	0.96
M.Eminescu, *Luceafărul*	116.3547	0.8837	0.98
	112.7197	0.8587	0.96
M.Eminescu, *Ondina*	74.1712	0.9556	0.97
	67.8833	0.8757	0.96
M.Eminescu, *Scrisoarea III*	733.7282	2.4091	0.98
	235.3063	1.2705	1.00
M.Eminescu, *Memento mori*	449.2677	0.9242	0.99
	480.9849	0.9860	0.99
M.Eminescu, *Epigonii*	34.1527	0.8045	0.98
	-	-	-
M.Lermontov, *Mtsyri*	290.4555	0.9981	0.94
	232.1339	0.7810	0.96

Hypothesis 2

In order to test this hypothesis, one usually performs a test for the preference of the diagonal. If the numbers are large enough, one can use one of the alternatives (cf. Altmann 1987; Schulz, Altmann 1988):

$$(7.1) \quad X^2 = \frac{n(n\sum n_{ii} - \sum n_{i.}n_{.i})^2}{\sum n_{i.}n_{.i}(n^2 - \sum n_{i.}n_{.i})}$$

where n is the total sum of cases, n_{ii} is the frequency in the diagonal cell i, $n_{i.}$ is the sum of the row i, $n_{.j}$ is the sum of column j. The resulting chi-square has 1 degree of freedom. The equivalent normal test is given by

$$(7.2) \quad u = \frac{\sum_i n_{ii} - \sum_i \frac{n_{i.} n_{.i}}{n}}{\left[\frac{1}{n^2(n-1)} \left(\sum_i n_{i.} n_{.i} (n - n_{i.})(n - n_{.i}) + 2 \sum_{i<i'} n_{i.} n_{.i} n_{i'.} n_{.i'} \right) \right]}$$

and $u = [X^2]^{1/2}$. We shall use here the variant (7.1). In order to test the diagonal in Table 7.1, we compute the necessary sums for the poem *Mor ho!*, namely

$n = 86$,
$\Sigma n_{ii} = 24 + 17 + 1 + 1 = 43$,
$\Sigma n_{i.} n_{.i} = 44(41) + 26(36) + 8(5) + 3(4) + 5(0) = 2792$.

Inserting these values in formula (7.1) we obtain

$$X^2 = \frac{86[86(43) - 2792]^2}{2792(86^2 - 2792)} = 5.49$$

The result with 1 DF is significant, hence we can accept the hypothesis that there is a preference for the diagonal: the given poet prefers placing equal parts-of-speech in the rhyme words.

For the poem *Otrok* by A. Sládkovič (Slovak) we obtain $n = 84$, $\Sigma n_{ii} = 60$, $\Sigma n_{i.} n_{.i} = 2698$, hence $X^2 = 84[84(60) - 2698]^2/[2692(84^2\text{-}2692)] = 39.22$ yielding a very strong diagonal, i.e. a rhyme composed of the same parts of speech. The results in decreasing chi-square are presented in Table 7.7.

Table 7.7
Preference for the diagonal
(= rhyming using the same POS)

Text	n	Σn_{ii}	$\Sigma n_{i.} n_{.i}$	X^2
Marína, A.Sládkovič (Slovak)	1460	992	790823	595.26
Memento mori, M.Eminescu (Romanian)	590	290	122143	51.24
Otrok, A.Sládkovič (Slovak)	84	60	2698	39.22
Kykymora, A.Sládkovič (Slovak)	55	41	1957	37.95
Ctibor, A.Sládkovič (Slovak)	65	41	1585	18.12
Luceafărul, M.Eminescu (Romanian)	196	80	10840	15.36
Mtsyri, M.Lermontov (Russian)	394	168	52184	14.38
Scrisoarea III, M.Eminescu (Romanian)	140	82	8567	12.57
An die Freude, F.v.Schiller (German)	54	34	1836	6.24
Ohlasy, A.Sládkovič (Slovak)	45	27	846	6.14
Die Waise, R.M.Rilke (German)	38	18	538	1.66

Der Taucher, F.v.Schiller (German)	81	32	2159	1.60
Krvavé sonety, P.O.Hviezdoslav (Slovak)	256	116	27692	0.98
Szondi két apródja, J.Arany (Hungarian)	38	15	518	0.21
Matka, M.Rázus (Slovak)	24	7	154	0.07

The enormous value for *Marína* by Sládkovič is caused by the size of the sample. It is well known that the chi-square increases with sample size.

Hypothesis 3

Since individual parts-of-speech do not display the same tendency, one may ask whether the ranking of the sums does. Considering the sums of rows and the sums of columns separately, we obtain the Tables 7.8 and 7.9.

Table 7.8 (*Mor ho!*)
Frequencies of the first position

Rank	Frequency	Power function
1	44	45.40
2	26	18.73
3	8	11.16
4	5	7.73
5	3	5.81
a = 45.3960, b = -1.2770, $R^2 = 0.93$		

Table 7.9 (*Mor ho!*)
Frequencies of the second position

Rank	Frequency	Zipf-Alekseev
1	41	41.02
2	36	35.90
3	5	5.90
4	4	0.75
a = 2.4978, b = -3.8807, c = 41.0156, $R^2 = 0.99$		

The first position can be captured by the usual power function, the second position needs a more complex formula. However, both can be well captured by the Zipf-Alekseev function.

For the poem *Otrok* by A. Sládkovič we obtain the result presented in Table 7.10.

Table 7.10

Otrok
Frequencies of the first position

Rank	Frequency	Zipf-Alekseev
1	41	41.00
2	33	33.02
3	8	7.84
4	1	1.57
5	1	0.32
a = 1.7273, b = -2.9425, c = 40.9975, $R^2 = 0.999$		

Otrok
Frequencies of the second position

Rank	Frequency	Zipf-Alekseev
1	36	36.03
2	35	34.86
3	8	8.76
4	3	1.79
5	2	0.37
a = 2.0718, b = -3.0574, c = 36.0260, $R^2 = 0.996$		

For F.v.Schiller, *An die Freude* and *Der Taucher* we obtain the results in Table 7.11, and Table 7.12, respectively.

Table 7.11

An die Freude **Frequencies of the first position**				*An die Freude* **Frequencies of the second position**		
Rank	Frequency	Power function		Rank	Frequency	Zipf-Alekseev
1	35	35.44		1	30	30.00
2	16	12.62		2	19	18.99
3	3	6.90		3	1	1.21
				4	2	0.06
				5	2	0.003
a = 35.4440, b = -1.4896, R^2 = 0.948				a = 3.2077, b = -5.5795, c = 30.0011, R^2 = 0.989		

Table 7.12

Der Taucher **Frequencies of the first position**				*Der Taucher* **Frequencies of the second position**		
Rank	Frequency	Zipf-Alekseev		Rank	Frequency	Zipf-Alekseev
1	34	33.59		1	42	41.96
2	22	24.90		2	23	23.37
3	21	13.42		3	11	9.53
4	2	7.09		4	2	3.93
5	2	3.86		5	2	1.72
				6	1	0.80
a = 0.2586, b = -0.9957, c = 33.5867 R^2 = 0.8770				a = 0.0190, b = -1.2359, c = 41.9636, R^2 = 0.9954		

Here we obtain mostly Zipf or its variant, the Zipf-Alekseev function. The results can be seen in Table 7.13. The first line contains the parameters in the first position, the second line those in the second one.

If there are three parameters, it is the Zipf-Alekseev function; if there are only two parameters, it is the Zipf function. In some cases, the simple linear function y = a + bx was the only one that was adequate. This is caused by the few types of POS that occur in the poem and, perhaps, also by its shortness. As can be seen, in the Zipf function, the parameter “a” has the function of parameter “c” of the Zipf-Alekseev function.

Table 7.13
The 1st and 2nd positions (Zipf 2 parameters and Zipf-Alekseev 3 parameters)

Text	a	b	c	R^2
A.Sládkovič, *Otrok*	1.7273	-2.9425	40.9975	0.999
	2.0718	-3.0574	36.0260	0.996
F.v.Schiller, *An die Freude*	35.4440	-1.4896	-	0.948
	3.2077	-5.5705	30.0011	0.989
F.v.Schiller, *Der Taucher*	0.2586	-0.9957	33.5867	0.877
	0.0190	-1.2359	41.9636	0.995
A.Sládkovič, *Ohlasy*	1.7829	-2.9034	21.0124	0.995
Linear	38.0000	11.5000	-	0.994
S.Chalupka, *Mor ho*	45.3960	-1.2770	-	0.930
	2.4987	-3.8807	41.0156	0.990
A.Sládkovič, *Kykymora*	2.0108	-2.6046	20.9635	0.993
	1.5931	-2.0296	19.8718	0.956
P.O.Hviezdoslav, *Krvave sonety*	-1.5130	-9,1371	153.5588	0.978
	-1.7799	-0.0232	158.7488	0.995
J.Arany, *Szondi két apródja*	-1.3192	-0.2615	22.9136	0.995
	-1.4161	-0.0068	20.9352	0.982
A.Sládkovič, *Ctibor*	36.5876	-1.4035	-	0.9507
	30.9192	-0.6762	-	0.9985
M.Rázus, *Matka*	0.3504	-1.0757	10.0502	0.9456
	0.4583	-1.0062	8.0799	0.8808
A.Sládkovič, *Marína*	1.6949	-2.6316	642.0.010	1.0000
	1.8459	-2.8392	647.0809	1.0000
M.Eminescu, *Luceafărul*	88.5596	-1.0979	-	0.9290
	90.5770	-1.1510	-	0.9578
M.Eminescu, *Ondina*	49.3573	-1.1401	-	0.9857
	51.4061	-1.2094	-	0.9821
M.Eminescu, *Scrisoarea III*	84.6212	-1.6290	-	0.9709
	93.2767	-2.0844	-	0.9798
M.Eminescu, *Epigonii*	2.1224	-3.2345	26.0101	0.9975
	27.2871	-1.0963	-	0.8945
M.Eminescu, *Memento mori*	307.5548	-1.3058	-	0.9381
	302.3714	-1.3208	-	0.9429
M.Lermontov, *Mtsyri*	214.1233	-1.5642	-	0.9899
	204.0365	-1.4757	-	0.9835

Hypothesis 4

If we consider the numbers in Table 7.1 we see that they are not equal. Here, we obtain 24,15,3,2,8,17,1,5,1,1,1,1,1,1,3,2. Ranking them, we obtain the distribution presented in Table 7.14. If for fitting, we use here a simple function, the result may yield senseless parameters. Hence, we fit to the data the Zipf-Mandelbrot distribution defined as

$$(7.3) \qquad P_x = \frac{(b+x)^{-a}}{F(n)}, \quad x = 1,2,3,...,n$$

where $F(n) = \sum_{i=1}^{n} (b+i)^{-a}$, i.e. the sum.

This model may hold for a given language, for a given writer, for the given period, etc. If the fitting is not sufficient, we shall try to search for a better one and try to find a common background theory.

Sometimes, the fitting of the distribution does not bring satisfactory results. Hence, one may use the analogical continuous function, e.g. instead of the Zipf-Mandelbrot distribution one may use the simple or truncated Mandelbrot function, but even the right truncated Zeta distribution is useful in some cases (cf. e.g. A.Sládkovič, *Ohlasy* in which the parameters of the Zipf-Mandelbrot function are absurd). If the poem is too short, one should not try to find a model.

Table 7.14
Rank-frequency of POS of rhyme-pairs (Zipf-Mandelbrot distribution)

Text	**Ranks**	***a***	***b***	***n***	DF	X^2	**P**
S.Chalupka, *Mor ho*	24,17,15,8,5,3,3, 2,2,1,1,1,1,1,1,1	3.4422	6.4111	16	10	2.96	0.98
A.Sládkovič, *Otrok*	32,23,7,4,4,4,2, 2,2,2,1,1	1.8578	0.9452	12	8	5.18	0.74
A.Sládkovič, *Kykymora*	17,14,9,6,5,2,1,1	12.000	29.9878	8	4	1.48	0.83
A.Sládkovič, *Marina* **S. Table 7.15**	466,438,126,90, 83,44,43,38,25, 22,21,19,9,8,8,8, 7,7,6,6,4,4,3,3,3, 2,2,2,2,1,1,1						
A.Sládkovič, *Ohlasy (RtZeta)*	15,10,8,5,2,2,1, 1,1	1.0968	-	R=9	6	4.14	0.66
V.Turčány, *List Vítězslavovi Nezvalovi*	14,5,4,2,1,1,1,1	2.5078	4.05558	8	3	1.19	0.76
V.Turčány, *Mám svoje mesto rád*	15,4,2,2,2,2,1,1, 1,1	1.6002	0.6950	10	4	2.47	0.65
S.Chalupka, *Turčín Poničan*	15,13,3,3,2,2,2, 2,1,1,1,1,1,1,	1.4591	0.6844	14	6	4.51	0.81
P.O.Hviezdoslav *Krvavé sonety*	97,27,24,24,17, 12,9,5,5,5,4,4,4, 2,2,2,2,2,1,1,1,1, 1,1	1.8562	1.3308	24	20	13.11	0.87

F.v.Schiller, *An die Freude*	25,10,8,3,2,2,1, 1,1,1	3.2742	3.3332	10	4	1.55	0.82
F.v.Schiller, *Der Taucher*	19,11,10,9,7,7,5, 4,2,1,1,1,1,1,1,1	7.9540	28.5463	16	10	3.18	0.98
R.M.Rilke, *Die Waise*	11,6,6,4,3,2,2,1, 1,1,1	2.2768	5.4256	11	6	0.62	0.99
J.Arany, *Szondi két apródja*	12,5,5,3,2,2,2,2, 1,1,1,1,1	1.8775	2.9850	13	7	1.43	0.98
A.Sládkovič, *Ctibor*	24,11,7,6,5,4,3, 2,1,1,1	2.0198	1.8908	11	1	0.83	0.36
M.Rázus, *Matka*	4,4,3,3,2,2,2,1,1, 1,1	6.7613	36.0653	11	6	0.39	0.99
M.Eminescu, *Luceafărul*	49,20,16,15,13, 11,11,9,8,6,5,4, 4,4,4,4,3,2,2,2,1, 1,1,1	1.4406	1.8307	24	20	8.51	0.99
M.Eminescu, *Ondina*	29,9,9,9,8,6,5,5, 4,4,3,2,2,2,2,1,1, 1,1	1.5259	1.9111	22	17	6.37	0.99
M.Eminescu, *Scrisoarea III*	66,19,10,5,5,5,5, 4,4,3,2,2,2,1,1,1, 1,1,1,1,1	1.8187	0.8830	21	14	10.30	0.74
M.Eminescu, *Epigonii*	15,15,8,4,3,3,2, 2,2,1,1,1	2.6186	4.0516	12	8	2.64	0.92
M.Eminescu, *Memento mori*	181,74,59,59,36, 34,31,20,16,12, 1,2,11,8,8,6,6,5, 2,2,2,2,1,1,1,1	3.2595	6.8564	26	21	24.72	0.26
M.Lermonotov, *Mtsyri*	110,39,37,26,23, 23,22,21,15,14, 11,7,5,4,3,3,3,3, 2,2,2,2,2,2,2,1,1, 1,1,1,1,1,1,1,1,1	2.5051	5.2453	36	30	29.88	0.47

In very long poems, like e.g. *Marina* by A.Sladkovic, we have the problem of increasing chi-square. Since we do not insist on applying distributions, we show the results using some functions, as shown in Table 7.15

Table 7.15

Fitting some functions to ranking the rhyme pairs in *Marína* by A.Sládkovič

Function	**a**	**b**	**c**	**R^2**
Exponential y = c + a*exp(-b*x)	801.3194	0.4726	5.4846	0.94

Lorentzian y = a/(1+((x-b)/c)^2)	556.9750	1.4426	1.0214	0.98
Zipf-Alekseev y =c*x^(a+b*ln(x))	0.8830	-1.5585	471.1952	0.97

Needless to say, many other functions are sufficient but we have chosen those which do not yield "astronomic" parameters and are used frequently in linguistics.

Hypothesis 5

In poetry, there are certain preferences for placing a POS in the rhyme position. Hence, one may conjecture that there will be no symmetry, i.e. the frequencies of e.g. NV versus VN will be different. The hypothesis can be tested simply by means of a comparison of symmetric cells which are situated directly above and below the diagonal cells. For example, in the Slovak poem *Mor ho!* by A.Sládkovič we find:

NV – VN	15	8
NAj – AjN	3	5
NPn – PnN	2	1
NAv – AvN	0	3

The numbers are very small for testing the similarity of the two columns using the chi-square criterion but it is sometimes possible with longer poems. For short texts or small numbers, one may perform the tests individually, i.e. for each pair separately. Starting from the symmetry of the cells, one considers the expected relative frequency p = 0.5, and computes the probabilities of more extreme values than one of the above frequencies. For example, to state whether NV and VN are symmetric, one sets up:

$$P(X \geq 15) = \sum_{x=15}^{23} \binom{23}{x} 0.5^{23} = 0.1050$$

which is not significant. The test may be performed in each case but a table could be computed in which one could find the given *n* and one of the values yielding significant results. The above computation is the result of a one-sided hypothesis. Since there are always only two cases, the text for $P(X \leq 8)$ yields the same result; hence we have a two-sided hypothesis with the resulting P = 2(0.1050) = 0.21.

Hypothesis 6

The overall test for the symmetry of the contingency table can be performed in two ways: (1) Either one compares the symmetric marginal sums or (2) one compares the symmetric cells. However, in both cases, there are many very small numbers, and one would be forced to pool them so that the results could not always be correctly interpreted. For longer poems, the test is possible and one can use a number of different tests which can be found in any textbook on statistics.

8. Runs in Rhyme

Whatever property of rhyme-words is scrutinized, one always obtains a sequence of numerical values or a sequence of qualitative entities (e.g. POS). The sequence as such may be random or it may display some regularities, tendencies, etc. One of the simple methods of examining such sequences is the study of runs, i.e. sequences of equal entities. In some cases, the number of different entities is merely 2 (e.g. masculine and feminine rhyme, open and closed rhyme), but in our case we usually obtain a larger set, e.g. consisting of different POS or lengths. Here, we shall be engaged only in analyzing POS and lengths. There is a possibility of finding poems in which there is a specialized monotonicity - which may be prescribed or created intentionally – or poems in which the sequence is random. In order to test the existence of a tendency, we may apply the normal test. Let us define the following entities:

The usual criterion is: if z < -1.96, there is significant stereotypy/homogeneity; if z > 1.96, there is significant inhomogeneity; if -1.96 < z < 1.96, there is a random length sequence.

The results for various texts are displayed in Table 8.1(Runs of lengths) and Table 8.2 (Runs of POS).

Example. If we look at the Slovak poem *Marína* (Appendix) containing the sequence of lengths of rhyme words, we can state that there is no regularity. In spite of this, one can search for other tendencies: one can conjecture that the number of runs in the whole poem is greater/smaller than expected. This can be performed by a simple test for runs. Using the Appendix, we obtain the frequencies of lengths. There are R =1614 runs given by 102 ones, 1225 twos, 1381 threes, 172 fours and 16 fives. Computing the expectation

$$E(R) = n - \frac{\sum n_i^2}{n} \tag{8.1}$$

yielding 1705.3819, and the variance defined as

$$\mathrm{var}(R) = \frac{\sum n_i^2 \left[\sum n_i^2 + n^2\right] - 2n\sum n_i^3}{n^3} \tag{8.2}$$

yielding 612.1947, one can test whether the number of runs is significantly smaller or greater than $E(R)$ inserting the given values into

$$z = \frac{R - E(R)}{\sqrt{\mathrm{var}(R)}} \tag{8.3}$$

yielding z = -3.6933. Since the expectation is significantly greater than the observed number of runs, we may state that in the text there is certain monotonicity of rhyme lengths caused most probably by the character of Slovak.

Table 8.1
Runs of length

Text	***n***	***R***	***E*(*R*)**	***var*(*R*)**	***z***
A.Sládkovič, *Ohlasy*	[2,3,4,2,2,5,4,3,2,2,3,4,5,4,2,2,1,3,4,2,2,3,3,2,2,2,4,5,3,3,5,3, 2,4,4,2,2,2,2,2,3,3,2,2,3,3,2,2,2,3,2,2,1,3,4,3,3,3,2,3,5,2,3,3, 3,2,2,2,2,2,3,2,2,2,3,2,2,2,2,2,2,3,3,3,3,2,1,2,3,1]				
	90	53	58.7556	16.2113	-1.43
S.Chalupka, *Turčin Ponič*an	[3,3,3,3,4,3,4,4,2,3,2,4,2,2,2,1,2,3,2,2,3,4,2,2,2,3,3,2,3,2,2,2, 2,2,2,2,2,2,2,2,2,4,4,3,4,3,3,3,4,3,3,3,2,4,4,4,3,2,2,2,4,2,2,2,3, 2,2,2,2,2,2,3,2,4,2,2,2,2,3,2,2,4,3,2,3,2,2,2,2,2,2,3,2,3,2,3]				
	96	50	56.7917	17.9093	-1.60
F.v.Schiller, *An die Freude*	[4,4,4,3,2,2,4,1,4,1,3,2,3,1,3,1,2,3,2,1,3,3,1,2,2,2,2,3,2,1,3,1, 4,1,3,2,2,2,2,3,2,3,2,1,2,1,1,2,4,1,2,1,4,1,2,1,4,1,3,3,3,1,2,2, 3,2,2,1,3,1,3,3,3,1,4,3,2,1,2,1,2,1,1,2,2,1,2,1,4,1,2,3,2,1,1,4, 5,3,4,3,2,1,3,1,4,3,1,2]				
	108	88	79.1296	20.2021	1.97*
F.v.Schiller, *Der Taucher*	[1,1,2,1,2,2,1,1,1,2,2,2,1,1,1,1,2,2,2,1,1,1,2,2,1,2,4,3,3,2,1,1, 1,1,2,3,2,1,1,3,2,3,3,2,2,4,2,2,3,1,1,1,2,2,2,1,1,1,3,2,2,2,1,2, 2,1,1,1,1,3,2,1,3,1,1,2,2,1,1,1,1,4,2,1,1,1,1,2,2,1,1,3,1,2,2,3, 1,1,1,2,4,1,1,3,1,3,3,3,1,1,4,2,4,2,2,3,3,2,3,2,1,1,3,2,2,2,2,1, 1,2,2,1,1,1,4,2,2,2,1,1,2,2,3,1,2,1,1,3,3,4,1,2,1,3,2,2,1,1,1,2, 2]				
	161	90	104.9689	32.1132	2.84*
A.Sládkovič, *Kykymora*	[2,2,2,3,3,3,3,4,2,3,3,2,3,3,3,3,3,2,3,3,3,3,2,3,2,2,3,4,2,3,2,3, 2,3,2,2,3,3,2,2,3,3,5,2,3,2,3,2,3,2,2,3,3,2,3,4,3,2,2,3,2,3,2,3, 3,3,2,3,3,2,2,3,3,3,2,3,3,2,3,2,4,2,3,3,4,4,3,2,3,3,2,2,2,2,3,3, 3, 3,2,3,2,3,2,3,2,2,3,3,3,4]				
	110	70	61.0909	23.5100	1.84
J.W.v.Goethe, *Der Erlkönig*	[1,1,1,1,2,1,1,3,1,1,1,2,1,2,1,1,1,1,1,1,1,1,2,1,2,2,1,2,2,1,1,1]				
	32	15	13.4375	4.5646	0.73
V.Turčány, *Mám svoje mesto rád*	[3,4,1,2,1,4,1,2,3,4,1,2,3,2,2,2,2,2,2,4,2,2,2,2,2,2,2,3,3,2,4,2, 3,4,2,4,2,4,2,4,2,4,4,2,2,4,2,2,4,2,3,4,2,2,4,2,2,2,2,4,2,2,2,2]				
	64	42	37.5938	10.3700	1.37
R.M.Rilke, *Die Waise*	[3,1,1,3,1,1,3,2,1,2,2,2,2,2,1,3,2,2,3,1,1,1,1,1,3,1,1,2,4,2,3,1, 2,1,4,1,1,2,2,1,1,1,2,2,1,4,1,3,1,2,2,2,1,2,1,2,1,2,1,1,1,1,1,1, 1,1,1]				
	67	40	41.0448	12.5416	-0.30
J.Arany, *Szondi két apródja*	[1,2,3,2,1 3 2 2,1 2 2 2,1,2,1,2,1,2,2,4, 2,2,3,2, 3,2,3,4,2,4,2, 1,1,2,1,2, 2,2,1,2,2,3,2,2,3,3,2,3, 2,3,1,3,1,2,1,2, 3,2,2,2,1,2, 2,2,2,4,2,2,1,2,1,2,2,4,2,2]				
	76	57	46.0789	12.1109	3.14*
S.Chalupka, *Mor ho!*	[3,2,2,2,2,2,3,3,2,3,2,2,3,2,2,2,2,2,3,2,2,3,4,2,3,2,2,3,2,2,2,2, 2,2,2,2,2,3,3,2,3,2,2,2,2,2,3,2,2,2,2,2,2,2,3,2,3,3,2,3,2,2,2,3,				

	2,2,2,2,2,2,3,2,2,3,4,3,3,2,2,2,3,3,3,3,2,3,3,2,3,2,2,3,3,3,3,3, 2,3,2,2,2,3,2,2,3,2,2,2,2,2,3,3,2,3,2,3,2,3,3,3,3,4,2,3,2,3,2,3, 3,2,2,3,2,3,2,2,3,4,2,3,2,2,3,4,2,3,2,3,4,2,2,3,3,2,2,2,3,3,2,2, 2,2,2,2,2,2,3,2,2,2,3,3,3]				
	172	90	87.4884	6.0216	0.42
V. Turčány, *List Vitězslavovi Nezvalovi*	[3,3,2,2,1,3,2,1,2,1,2,4,3,4,3,4,1,3,2,2,3,3,2,2,3,3,2,2,1,2,2, 2,3,3,2,2,3,3,2,2,3,3,2,4,1,1,2,4,1,1,3,3,3,3,2,2]				
	56	36	38.3214	10.8220	-0.71
A.Dante, *Inferno, Canto I*	[2,3,3,2,2,2,2,2,2,2,2,2,4,2,2,3,2,3,2,2,3,2,4,2,2,3,2,2,2,3,2, 2,2,3,2,3,2,3,2,3,2,3,2,3,2,3,3,2,3,2,3,2,3,2,3,3,2,3,2,2,2, 2,3,2,3,1,2,1,3,3,2,3,3,2,2,3,2,2,2,2,2,2,2,3,3,3,2,3,2,2,2, 2,3,2,2,3,2,2,2,3,2,2,2,3,2,3,3,3,2,3,4,3,2,3,2,3,2,3,3,2,3, 2,3,2,2,2,2,2,3,3,4,2,3,2,2,2]				
	172	90	87.4884	36.5575	0.42
A.Dante, *Inferno, Canto II*	[2,2,2,2,3,2,4,2,5,2,3,2,3,4,5,2,3,2,4,3,3,2,2,2,2,3,3,4,2,4,3,2, 3,4,2,3,2,3,2,2,3,2,3,2,3,3,3,2,2,2,2,3,2,3,2,2,3,4,2,3,3,4,3,3, 3,3,3,3,4,3,3,3,2,1,1,2,3,2,5,2,3,2,2,2,2,3,2,2,2,3,2,2,3,3,2,2, 3,3,4,3,2,3,2,2,2,2,3,2,2,2,2,2,3,2,2,2,2,2,2,2,2,3,1,4,2,3,2,3, 2,2,2,2,3,2,2,3,2,3,4,3,2]				
	141	90	84.3262	27.5647	1.08
A.Dante, *Inferno,Canto III*	[3,3,2,3,4,3,3,2,3,3,2,2,3,3,2,2,4,4,3,3,2,2,3,3,3,2,2,3,2,2,2, 2,2,2,3,2,2,3,2,2,3,2,2,2,2,2,2,2,2,2,2,2,2,2,2,3,2,3,3,5,3,3,2,3,2, 2,2,2,2,2,3,2,2,3,3,2,2,2,2,4,2,2,2,2,2,2,2,2,2,2,3,2,3,2,3,2, 4,2,3,2,2,2,2,3,2,4,3,3,2,2,3,3,2,2,2,3,2,3,2,3,3,3,2,3,2,2,3,2, 2,2,3,3,2,2,4,4,3]				
	136	68	71.7206	26.6145	-0.72
P.O.Hviezdoslav, *Krvavé sonety*	[3,2,2,3,5,2,3,1,2,3,4,3,2,3,1,2,4,1,1,3,3,1,4,1,2,1,2,1,3,2,2,3, 1,4,2,1,2,3,2,3,2,3,2,4,2,1,3,2,2,1,4,3,4,2,4,3,3,2,2,5,3,3,3,3, 4,3,2,3,2,3,3,2,2,3,3,2,2,2,4,2,2,3,3,3,1,2,2,1,1,3,2,2,4,3,3,3, 4,3,3,2,2,3,3,2,2,3,2,1,2,1,2,3,1,4,2,3,1,2,2,1,3,1,2,1,2,5,3,2, 2,3,3,2,2,3,2,3,2,2,2,3,1,2,2,3,,1,4,2,1,2,3,2,3,4,3,3,2,2,3,2, 4,2,3,2,1,2,1,3,3,3,2,4,2,1,2,3,2,2,3,4,2,4,3,3,2,2,3,3,3,2,3,3, 3,2,3,3,3,3,4,5,3,3,2,2,3,2,3,4,3,4,3,3,4,2,3,3,2,2,3,2,3,2,1,4, 1,3,2,2,1,3,2,3,2,2,3,4,3,2,3,3,2,2,3,3,2,2,3,4,3,4,3,4,3,3,3,2, 3,3,2,3,3,4,3,2,3,2,2,3,2,2,2,1,2,2,1,1,1,3,3,2,3,1,4,4,3,1,4,2, 1,4,3,2,3,2,3,3,2,2,3,3,2,2,3,2,1,2,1,2,2,2,2,2,3,3,4,2,3,2,1,2, 1,2,3,3,2,3,3,3,2,4,3,2,1,6,2,2,3,3,4,2,3,3,2,2,3,2,1,2,1,2,3,1, 3,2,1,2,2,2,1,4,1,3,3,2,3,3,2,4,2,3,2,2,1,2,3,4,3,2,3,3,2,2,5,3, 2,2,3,2,3,3,3,2,1,3,2,2,3,3,2,4,3,2,1,2,1,2,1,3,3,4,3,3,2,2,3,2, 3,2,3,4,3,3,4,2,3,3,2,3,3,2,3,4,3,3,3,3,2,4,3,3,2,4,3,4,3,2,3,2, 3]				
	448	339	306.6696	84.4041	3.52*
A.Sládkovič, *Ctibor*	[3,2,4,4,2,2,3,3,2,2,2,3,2,3,3,2,4,3,3,3,3,3,2,3.5,3,3,2,2,3,3,2, 2,3,3,2,2,3,3,2,3,3,3,3,3,3,3,2,2,2,2,2,3,2,3,4,3,4,2,2,2,4,3,2, 3,4,3,2,2,2,4,2,2,2,4,3,3,4,2,2,3,3,3,3,2,2,3,3,4,2,2,2,4,2,2,2,2 2,2,2,2,2,2,3,2,3,4,2,2,2,3,2,3,3,2,1,1,2,2,2,3,2,4,2,3,2,3,2,3]				

	128	71	77.6484	26.3683	-1.29
M.Rázus, *Matka*	[2,2,2,2,2,2,2,2,2,2,2,2,2,2,3,5,2,2,2,2,2,2,2,4,2,2,2,2,2,2,2,4,2,5, 2, 2,2,2,2,2,2,4,2,2,2,2,2,2]				
	48	12	10.9583	1.2830	0.92
J.Arany, *Év kezdetén*	[3,4,3,2,4,2,2,3,2,3,4,3,2,4,3,2,3,4,3,3,2,3,2,2,2,4,2,2,4,1,4,3, 2,3,3,3,2,2,2,2,2,2,1,2,2,4,2,2,2]				
	48	34	31.1250	9.2243	0.95
J.Arany, *Alkalmi vers*	[5,3,3,4,2,3,2,4,2,2,3,4,2,6,4,4,2,4,3,4,2,2,4,4,3,2,4,4,2,3,4,4, 3,2,2,4,2,6,6,4,3,3,4,4]				
	44	33	31.0909	8.2894	0.66
J.Arany, *Czakó sírján*	[1,2,3,3,2,2,2,3,5,4,3,3,1,2,3,3,3,4,3,3,1,1,3,3,3,1,3,3,2,2,2,3]				
	32	19	21.0625	5.4142	-0.89
J.Arany, *Emléklapra*	[3,3,1,2,2,4,1,3,2,3,3,4,1,1,4,2,4,3,3,2,3,2,4,3,3,2,3,3,4,3,1,4, 2,3,4,2,2,2,3,3,4,3,1,3,2,3,4,1,4,2,3,2,4]				
	53	43	38.1132	9.9440	1.55
D.Kosztolány, *Hajnali részegség*	[2,4,2,2,2,2,2,2,4,1,4,2,3,2,2,2,2,3,4,2,2,3,3,5,2,3,2,3,1,3,5,3, 3,3,4,3,2,2,4,2,3,2,2,3,2,2,3,4,2,2,2,2,2,3,2,2,3,3,2,2,4,2,3,4, 3,3,3,2,4,2,2,2,2,2,1,1,2,2,3,4,4,2,3,2,4,4,2,3,3,2,3,2,2,2,2,2, 3,2,4,2,2,2,2,2,3,1,4,2,6,1,2,2,4,4,4,2,3,3,2,3,1,1,2,2,4,2,3,2, 1,4,4,2,2,2,3,1,2,3,2,3,2,2]				
	142	91	92.7183	23.9550	-0.35
M.Eminescu, *Luceafărul*	[2,4,4,2,2,2,1,2,1,3,1,3,1,3,2,2,1,2,3,2,3,2,3,2,1,2,2,3,1,3,2, 3,1,2,1,2,3,3,2,3,2,3,1,2,1,3,1,2,1,2,1,4,4,2,4,2,2,3,4,2,1,3,2, 2,3,2,1,2,3,2,1,3,1,3,1,2,1,3,2,2,2,2,1,3,2,2,2,3,1,3,2,4,1,2,1, 3, 1,2,1,3,1,3,1,3,1,2,1,4,2,3,2,2,2,4,1,3,1,2,3,2,3,2,3,2,3,3,1, 4,1,3,1,2,2,2,1,3, 2,2,2,2,1,3,2,4,2,2,1,2, 2,2,4,4,2,3,3,3,3,2, 2, 2,1,4,4,2,2,2,2,3,1,3,1,2,3,2,1,2,1,2,2,2,2,2,3,4,2,2,2,3,1,3, 3,2,1,4,1,2,1,3,1,2, 3,3,3,4,1,2,1,2,4,3,3,3,1,2,4,2,2,4,2,3,3,3, 3,2,1,2,2,2,3,3,4,2,1,2,1,2,2,3,1,3,1,3,1,3,1,2,1,3,1,2,3,2,3,2, 2,3,2,3, 2,2,3,2,3,2,1,2,2,3,3,3,1,2,2,3,2,2,1,2,4,2,3,3,1,4,1,2, 1,2,1,3,1,3,3,2,2,3, 2,2,2,2,2,3,1,2,1,4,2,2,2,2,1,2, 1,2,1,2,3, 2,2,2, 2,3,2,5,1,3,2,2,2,3,2,5,2,3,1,2,1,3,4,3,1,3,1,3,3,3,3,2,2, 2,1,2,1,2,2,2,1,3,1,2,2,2,2,2,1,2,1,2,3,2,2,3,2,2,4,3,1,2,1,4,1, 2,4,2,2,3,1,2,1,3,1,2]				
	392	302	269.7806	73.8847	3.7483*
M.Eminescu, *Scrisoarea III*	[2,2,2,3,3,3,3,2,4,2,2,3,2,2,3,3,2,3,2,2,3,3,2,3,3,3,1,3,3,3,3,2, 2,3,2,2,2,2,2,3,3,1,3,4,1,2,1,3,4,2,2,3,2,3,2,3,4,3,1,2,2,3,2,3, 2,2,1,2,1,2,2,3,1,1,2,1,2,2,1,1,2,2,1,2,1,1,1,2,3,3,2,2,2,2,2,3, 2,3,4,2,2,3,1,3,2,2,1,2,2,2,2,3,2,1,2,3,1,2,3,2,3,2,3,2,1,2,1,3, 2,2,2,2,1,3, 2,2,3,5,1,1,2,1,2,4,2,3,3,2,2,2,4,3,3,2,2,2,5,3,2,2, 3,2,4,4,2,3,3,4,4, 3,2,2,1,1,2,3,3,2,2,3,2,3,1,3,4,1,1,3,3,3,4,3, 2,3,3,2,2,3,3,4,4,3,2,3,2,2,3,1,3,3,4,2,2,2,3,4,3,4,2,2,2,4,3,2, 2,4,2,2,2,3,5,5,3, 2,2,3,3,2,2,2,1,4,3,3,4,3,2,2,2,3,1,3,2,2,3,1, 1,3,4,2,3,4,3,2,2,3,2,3,2,2,3,3,2,3,5,2,3,1,2,2,2]				
	281	190	190.0285	51.9294	-0.0039

M.Eminescu, *Ondina*	[3,2,2,3,1,2,2,3,1,2,1,3,2,3,2,3,2,3,1,4,1,3,2,3,1,4,1,3,2,2,3,4, 1,4,2,2,2,1,3,3,1,4,2,2,1,3,3,3,2,2,2,3,2,3,2,3,4,3,4,2,3,1,2,3, 3,1,4,2,3,1,3,2,3,2,3,2,3,1,3,1,3,3,4,1,3,1,3,1,3,2,3,1,2,2,5,3, 2,3,3,4,4,3,3,3,5,3,3,3,2,3,1,1,3,3,2,2,4,2,2,2,3,3,2,4,2,2,2,2, 3,3,4,4,4,2,2,3,2,2,2,1,2,3,4,,2,2, 3,2,2,3, 3,1,2,2,2,3,2,4,4,1, 4,1,2,1,2,1,2,3,2,4,2,2,2,3,2,2,2,2,1,3,2,3,1,2,2,2,2,2,4,2,2,2, 1,3,2,2,4,3,1,2,1,2,2,2,2,3]				
	206	150	144.1748	38.2217	0.9422
M.Eminescu, *Călin (File de poveste)*	[3,4,2,2,4,2,1,1,3,4,2,2,2,4,2,2,2,2,3,2,2,3,3,2,4,4,3,4,1,1,1,1, 2,3,2,2,3,3,3,3,1,2,2,2,2,2,2,2,3,5,2,3,2,2,3,3,1,2,3,3,3,2,2,2, 2,2,2,1,1,1,1,3,2,2,1,3,2,2,1,2,3,3,1,2,2,1,2,3,2,2,2,2,2,2,2,2, 2,3,2,2,3,3,3,2,3,3,1,1,2,1,3,3,4,3,4,3,3,3,2,1,1,2,1,2,1,1,3,2, 4,3,1,2,2,2,2,3,1,1,2,2,2,1,2,2,2,4,3,2,2,2,2,2,3,3,2,2,2,1,2,2, 2,2,1,1,2,3,3,2,2,3,3,1,4,4,2,2,2,2,4,3,3,3,4,4,2,3,3,3,2,3,2,3, 3,2,2,2,2,3,2,2,2,3,2,2,2,3,3,4,3,2,3,2,3,5,2,4,5,3,3,3,2,4,1,2, 2,3,2,2,2,2,2,2,2,2,2,2,3,2,1,2,1,2,2,2,3,2,2,2,2,2,1,2,4,2,2,2, 3,3]				
	258	140	167.4341	44.8321	-4.0973*
M.Eminescu, *Ecó*	[3,3,2,2,1,2,3,2,2,4,3,3,1,2,2,2,1,2,1,3,2,3,2,3,2,3,1,4,1,3,2,3, 1,4,1,3,1,2,3,4,1,4,2,3,2,1,3,3,1,3,2,2,2,2,3,3,2,3,2,2,2,2,2,3, 2,3,2,2,2,3,2,2,2,2,3,4,2,2,4,5,2,2,3,3,2,3,5,4,2,2,4,2,2,2,3,1, 3,1,3,1,3,2,2,1,3,2,2,2,3,1,2,2,2,1,2,1,2,1,2,1,3,1,3,1,2,1,2,1, 2,2,3,1,3,1,2,3,2,4,1,2,2,2,2,2,2,2,1,1,2,3]				
	150	111	101.4262	27.3393	1.8309
M.Eminescu, *Împărat si proletar*	[4,3,5,4,4,3,1,2,2,2,4,2,3,4,2,2,2,3,2,2,2,1,5,3,1,3,1,3,3,2,4,1, 3,2,1,3,3,3,3,2,3,2,2,2,1,3,2,2,2,2,3,3,3,3,2,2,1,4,3,2,3,2,2,3, 2,3,1,3,4,2,3,2,3,2,1,3,2,4,2,2,3,2,2,2,1,3,2,2,3,3,4,1,3,2,2,4, 1,3,4,2,3,2,4,3,1,2,3,2,2,2,4,2,2,3,2,2,3,2,3,3,3,3,2,3,2,4,1,1, 4,2,3,1,7,4,2,4,3,4,5,2,2,1,2,2,2,4,2,4,4,3,5,1,3,3,3,3,2,3,3,2, 2,2,3,3,3,4,1,3,3,1,2,2,2,3,3,4,2,6,3,1,2,2,3,3,2,4,1,4,2,2,3,3, 4,2,1,3,4,2,2,1,2,1,2,3,2,3,1,4,5,3]				
	210	154	150.6619	37.4804	0.5453
M.Eminescu, *În căutarea Şeherezadei*	[2,2,3,3,2,3,3,2,2,2,3,2,2,2,2,3,3,4,3,2,3,3,4,2,5,2,2,4,3,3,2,2, 2,3,3,3,2,7,3,3,2,4,3,3,2,2,2,3,2,2,2,2,3,2,2,2,5,3,2,2,2,3,2,3, 3,5,2,2,2,4,3,3,3,4,3,3,3,2,2,3,2,2,3,2,3,2,4,3,2,4,2,3,2,3,3,3, 3,2,3,5,3,2,5,3,2,3,3,3,3,2,3,3,3,3,2,2,3,2,2,6,2,3,3,2,3,3,2,2, 2,2,2,2,3,3,2,3,2,3,3,3,3,2,3,2,2,2,2,4,2,4,3,2,4,2,3,2]				
	156	95	93.9038	32.3922	0.1926
M.Eminescu, *Muresanu*	[3,2,1,1,2,3,2,2,2,2,4,2,3,2,3,3,2,2,2,3,2,2,2,3,2,3,3,3,2,4,3,2, 2,1,2,2,2,2,2,2,2,2,2,1,3,1,2,2,3,3,2,1,2,3,2,1,1,2,2,2,2,1,3,2,2, 1,2,1,2,1,1,3,2,1,1,1,1,2,1,2,1,2,4,1,1,1,1,1,2,6,2,4,2,3,1,2,4, 2,1,3,2,3,2,2,2,3,1,4,1,3,1,3,1,5,1,4,2,2,2,1,1,3,2,5,3,2,2,4,3, 2,1,2,2,1,1,2,2,1,1,2,3,2,3,3,2,1,4,1,3,2,3,1,3,3,3,1,1,2,2,2,1, 4,2,1,3,2,2,2,3,2,1,2,4,2,1,2,3,3,2,3,2,1,2,2,1,2,2,2,3,5,2,2,1, 2,1,2,2,2,2,2,2,2,1,2,2,3,4,2,3,3,1,1,2,3,2,1,3,1,3,1,2,2,2,1]				

	223	155	150.1614	40.8503	0.7570
M.Eminescu, *Scrisoarea I*	[4,3,3,3,2,2,2,3,3,3,3,5,2,2,2,2,1,2,2,2,1,2,1,3,1,2,3,3,2,3,1,2, 2,1,3,3,2,2,2,2,4,3,2,3,2,3,2,2,3,2,2,2,2,2,2,2,3,5,3,4,1,2,3,3, 2,2,4,3,2,4,3,2,4,3,2,4,1,4,1,2,3,2,4,3,2,2,3,2,2,4,2,2,3,4,2,3, 4,2,4,2,2,3,2,2,3,2,3,3,1,1,1,1,2,3,2,3,2,3,2,2,5,5,3,1,3,2,3,3, 2,4,1,3,3,3,2,4,2,3,3,2,1,2,3,2,2,3,2,2,4,4,3,3,3,4,2,2]				
	156	108	106.5128	28.2509	0.2798
M.Eminescu, *Icoană si privaz*	[1,2,2,1,3,2,2,4,2,3,2,1,3,5,2,3,1,2,1,1,4,2,2,1,2,2,1,1,2,1,2,3, 1,2,1,1,2,2,1,1,2,3,2,3,4,2,2,1,3,3,3,2,1,2,2,3,2,2,4,3,1,3,2,3, 2,2,1,2,2,2,2,3,1,2,3,2,3,2,2,2,1,2,2,1,2,1,2,2,3,2,2,3,1,1,2,1, 3,1,3,2,2,3,2,2,1,3,2,2,1,2,1,2,1,2,3,2,2,2,3,2,2,3,2,2,2,2,2,2, 1,2,2,3,3,2,3,3,3,2,2,4,2,4,3,2,4,2,2,2,3,2,2,1,1,4,3,2,2,3,1,1, 2,1,3,2,3,3,2,2,2,4,1,1,2,2,2,2,2,2,2,1,3,2,2,3,1,1,2,2]				
	188	129	120.6489	33.5601	1.4416
M.Lermontov, *Mtsyri*	[2,2,2,2,2,2,3,2,2,1,1,1,1,2,4,2,1,1,3,1,2,1,2,2,2,2,2,2,3,3, 1,3,2,2,1,2,2,1,1,1,3,3,3,3,2,2,1,2,2,1,3,2,2,2,2,2,2,3,1,2,2,1, 2,1,1,2,2,3,1,1,3,3,3,1,2,2,2,2,1,3,2,4,3,1,1,2,2,3,2,2,2,1,1,1, 2,2,2,2,2,1,2,2,2,2,2,2,3,2,1,1,3,2,2,2,2,1,2,2,2,2,2,2,3,2,1,3, 4,1,2,2,1,3,2,3,2,1,3,1,1,2,2,2,2,2,3,2,2,2,3,2,1,1,2,2,2,1,1,2, 2,2,2,3,1,3,3,3,2,2,1,1,2,3,2,2,2,3,3,3,2,1,3,1,1,2,2,2,3,3,3,1, 2,2,1,2,2,1,3,1,3,3,2,2,2,1,3,1,2,3,1,2,1,2,2,2,2,2,2,3,3,2,3,2, 2,2,1,3,3,1,1,2,1,2,1,2,2,2,1,2,2,2,2,1,1,1,3,2,1,1,2,2,1,2,2,2, 2,2,1,2,2,1,2,2,2,1,1,1,3,2,2,1,2,2,2,2,2,2,2,1,1,2,2,2,3,1,3,2, 2,3,3,2,3,2,2,1,2,2,2,2,1,1,2,2,2,1,2,1,1,1,3,2,1,2,1,3,2,2,2,3, 3,1,1,2,2,3,2,1,2,1,2,3,2,2,1,3,1,3,2,1,1,3,2,2,2,2,3,2,2,2,1,1, 2,2,2,2,1,1,2,3,2,1,2,2,3,2,3,3,2,3,2,2,2,2,2,2,2,2,2,3,1,1,2,2, 2,1,2,2,3,1,1,3,2,2,2,1,2,2,2,2,3,2,1,2,2,2,1,2,2,3,1,1,1,3,2,1, 2,2,2,1,2,2,3,3,3,3,1,2,3,1,1,2,2,2,2,3,1,2,2,2,2,3,1,2,2,2,2,1, 1,3,2,3,3,2,1,2,2,2,3,2,2,2,2,1,2,2,2,2,3,3,2,1,2,2,2,2,1,1,2,2, 2,1,2,1,1,2,3,2,1,1,3,1,1,2,2,2,1,2,3,2,1,1,1,2,2,2,2,2,4,1,2,2, 3,1,1,2,1,1,2,2,3,2,1,1,2,1,2,1,1,1,2,2,2,2,2,1,2,2,2,4,2,1,1,2, 1,1,2,2,2,2,2,3,2,3,3,3,1,2,2,2,1,1,3,2,1,2,1,3,1,3,2,2,2,2,2,2, 1,2,2,1,1,2,2,2,2,2,2,3,1,1,1,3,1,2,1,2,2,2,2,1,3,1,3,3,1,2,2,2, 3,1,2,3,4,1,1,2,2,2,2,2,3,2,3,2,1,2,2,4,2,3,2,2,2,2,1,2,2,2,2,2, 2,1,3,1,1,2,1,3,1,2,2,2,3,2,2,2,2,2,1,1,2,4,2,2,3,2,2,2,2,2,3,3, 2,2,3,1,3,3,2,1,2,1,1,2,1,2,2,1,2,1,3,3,2,2,2,2,3,1,2,3,3,2,1,1, 1,2,1,1,3,2,3,2,2,1,2,2,1,3,1,2,2,2,1,3,2,2,2,1,2,1,3,1,1,3,1,1, 2,2,2,2,2,2,2,2,2,1,2,1,2,2,2,2,2,3,2,2,2,2,2,1,2,2,3,3,1,2,2,2, 2,2,3,3,1,2,1,1,2,2,2,3,2,1,1,1,2,1,2,2,2,2,3];				
	791	435	475.3856	148.8158	-3.3106*

In the next table, one finds the sequences of parts of speech.

Table 8.2
Runs of POS

Text	***N***	***R***	***E*(*R*)**	**va(*R*)**	***z***
J.W.v.Goethe, *Der Erlkönig*	[N,N,N,Av,N,Part,N,N,Pn,Pn,N,N,Part,V,N,N,V,Av,N,Av, Av,N,Av,Aj,N,N,Av,V,Av,N,N,Aj]				
	32	23	21.9375	4.6613	0.49
R.M.Rilke, *Die Waise*	[N,V,Aj,N,N,Aj,N,V,Aj,N,N,N,V,V,V,N,N,V,Aj,N,N,V,V,N, N,Av,N,N,V,N,N,V,V,N,Aj,V,N,N,N,N,N,V,N,Av,Av,N,V, V,Av,N,N,N,V,Av,N,Av,N,V,N,N,V,V,V,V,V,V]				
	66	40	41.5455	12.7276	-0.43
F.v.Schiller, *Der Taucher*	[N,N,Av,N,V,Aj,N,Aj,N,N,Av,Av,Av,Av,N,V,V,V,Av,Aj,N, Av,N,V,N,Av,V,V,N,N,V,V,N,V,V,V,N,N,N,N,N,V,V,V,V, V,N,Av,N,Av,N,Av,V,N,Av,N,V,N,V,N,V,Av,N,N,N,V,V,V, N,V,N,N,N,Av,Av,N,N,N,Av,N,V,Part,N,N,N,V,Av,V,N,V, Pn,N,Av,Part,V,N,Av,N,N,N,N,V,V,N,N,N,N,V,Av,Av,V,V, N,N,N,V,N,N,N,N,V,Av,N,N,N,N,Av,Av,N,N,N,Av,Av,Pn, Pn,N,N,N,N,V,N,V,V,V,Av,Av,N,V,V,N,N,Av,N,Av,V,N, Av,N,N,Pn,Av,Av]				
	162	99	107.5185	30.1538	-1.55
V.Turčány, *Mám svoje mesto rád*	[N,N,N,N,N,N,N,N,N,N,N,N,N,Av,N,Aj,Pn,V,N,V,N,N,N,V, N,N,Aj,N,N,N,V,N,Aj,Aj,N,N,N,N,V,N,V,N,V,N,N,Aj,N,N, N,N,N,N,Aj,V,N,N,N,Av,V,V,V,V,N,Av]				
	64	32	33.4687	7.9575	-0.52
A.Sládkovič, *Kykymora*	[Aj,Aj,Aj,Aj,Aj,Aj,V,V,V,V,N,V,N,N,N,V,V,N,N,V,V,N,N, N,N,N,V,Aj,Aj,V,V,N,V,V,N,N,N,V,N,N,Aj,V,Aj,V,N,V,N, N,N,N,V,N,N,Aj,V,N,V,V,Aj,V,V,Aj,V,Aj,Nu,Nu,V,N,Aj,V, N,V,N,V,Aj,Aj,Aj,V,V,Aj,N,V,N,V,V,V,N,N,N,V,V,N,V,V, N,N,N,V,V,N]				
	100	58	63.144	20.8818	-1.56
S.Chalupka, *Turčín Poničan*	[Aj,N,N,N,V,V,V,V,N,N,N,Aj,N,N,N,Pn,V,N,V,V,V,V,V,V, N,Aj,V,Av,Aj,N,N,N,V,N,Pn,V,N,N,N,N,Pn,N,V,V,V,V,V,V, Aj,Aj,N,N,N,N,V,V,N,Pn,N,V,V,V,Av,V,N,N,N,N,Aj,N,V,N, V,V,N,N,N,N,N,V,V,N,N,Pn,Pn,V,V,N,N,Aj,V,Pn,N,Aj,V]				
	96	51	62.5833	18.2557	-2.77*
S.Chalupka, *Mor ho*	[N,N,N,N,V,N,Av,N,N,N,V,N,V,V,N,V,V,V,N,N,N,Aj,V,N, N,N,Pn,V,N,N,V,V,N,N,N,Pn,N,N,Av,V,N,N,N,N,Aj,N,Aj,N, V,N,Av,N,V,V,N,N,N,V,Pn,N,Pn,Pn,N,V,N,N,N,V,N,N,V,V, N,V,V,V,N,Pn,V,V,V,V,V,V,N,N,Aj,Pn,Av,N,N,V,V,V,Av, N,V,N,N,N,V,N,N,V,N,,N,N,V,N,V,V,N,Aj,N,N,N,Aj,N,,Av, V,N,V,N,Aj,N,N,N,N,Aj,N,N,N,V,V,V,V,V,V,V,V,N,V,N,V, N,V,Aj,Aj,N,V,N,V,N,Aj,N,N,Aj,V,V,V,V,V,N,V,N,V,N,N, Aj,N]				
	170	104	105.8235	33.2472	-0.32
A.Sládkovič, *Ctibor*	[N,N,N,Aj,N,V,V,V,N,N,V,N,V,Aj,V,N,N,N,N,N,Aj,V,N,N, N,V,N,N,N,N,V,Aj,Aj,V,Aj,Aj,Aj,V,Aj,Aj,N,V,N,V,N,V,N,				

	V,Aj,V,N,V,V,V,N,N,Aj,V,N,Aj,N,N,N,N,Aj,Aj,Aj,N,V,N,N, V,Pn,Aj,Aj,V,N,N,V,V,N,N,N,N,N,V,N,Aj,N,N,N,N,Aj,N,V, V,N,Aj,Aj,N,N,V,N,N,V,N,Aj,N,N,N,N,N,N,N,N,Av,N,N,V, N,V,N,V,V,N,V,Aj,Aj,Aj]				
	129	77	80.4806	24.9502	-0.70
V. Turčány, *List Vitězslavovi Nezvalovi*	[Aj,N,N,N,N,N,N,N,N,N,N,N,N,N,N,N,N,N,Pn,N,N,V,Av,N, Aj,Av,V,N,N,N,N,V,Aj,V,N,N,N,N,V,N,Aj,N,V,N,N,V,N,V, N,N,N,N,N,V,V,N]				
	56	27	26.6786	6.1587	0.13
A.Dante, *Inferno Canto 1*	[N,Aj,Aj,Aj,Aj,N,Aj,V,V,V,N,V,Nu,N,Aj,N,N,N,Aj,V,N,Aj, N,Aj,V,N,Aj,Aj,Aj,Aj,N,Av,Aj,N,N,N,N,N,Aj,Aj,N,N,N,V,N, V,N,V,N,N,Av,N,N,N,V,V,V,N,Av,V,N,V,Av,N,Pn,Aj,V,Aj, Aj,Av,N,Aj,Aj,N,V,N,N,N,N,N,N,N,N,N,N,V,N,V,N,N,N,V, Aj,V,N,V,Aj,N,Av,V,N,N,N,N,N,Aj,N,N,N,N,V,V,N,Aj,N, Aj,V,Aj,V,N,V,Aj,N,V,N,V,V,N,V,V,V,Av,V,N,Aj,Av]				
	136	90	91.6544	24.8247	-0.33
A.Dante, *Inferno Canto 1I*	[Aj,N,Nu,N,N,V,V,V,N,V,Aj,V,N,Aj,Av,Aj,N,Pn,N,N,Aj,N, Aj,N,N,N,N,N,N,N,V,V,V,V,Aj,V,V,N,V,N,N,Aj,N,N,Aj,V, V,N,V,V,V,Aj,Aj,V,N,Aj,N,Aj,Aj,Ak,N,Aj,N,Aj,V,Aj,Aj,N, Aj,V,V,V,Pn,Pn,Pn,Pn,Aj,Pn,N,Av,N,V,N,V,Av,V,V,N,Av, Aj,Aj,V,V,V,V,V,N,N,V,N,V,N,Aj,Aj,N,N,V,V,Aj,N,Aj,N, Aj,V,Pn,V,Av,V,V,V,V,Aj,V,Aj,N,V,N,V,N,Aj,V,Aj,V,Aj,V, Aj,Pn,N,Nu,N,V,N]				
	142	102	103.2183	25.7381	-0.24
A.Dante, *Inferno Canto III*	[Aj,N,N,N,N,N,Aj,Aj,V,Aj,N,Aj,Aj,N,Aj,V,Aj,N,N,V,N,N,N, V,N,N,Pn,V,V,V,Aj,V,V,N,Pn,N,N,N,V,Aj,V,Pn,Aj,Av,Av, N,Aj,N,V,V,V,N,Aj,Aj,V,V,V,N,Pn,N,V,Aj,Pn,Aj,Av,Av,N, N,V,V,N,V,N,Aj,Aj,N,N,N,Aj,Aj,V,N,N,Aj,N,N,N,Aj,Aj,V, N,V,V,V,V,V,N,N,Aj,Aj,N,Aj,N,N,N,Av,Aj,V,N,V,V,N,N,N, N,Nu,N,Aj,V,V,Aj,N,N,N,V,V,N,Aj,V,N,Aj,N,V]				
	133	85	93.1805	24.8141	-1.64
P.O.Hviedoslav *Krvavé sonety*	[N,V,N,V,N,V,N,V,Aj,N,N,V,N,N,N,N,Av,N,N,N,N,Pn,V,N, V,N,V,N,N,N,Aj,N,N,Aj,N,N,N,N,Aj,V,N,N,N,N,N,N,N,Aj, N,N,N,V,N,N,N,N,N,N,N,N,N,V,N,N,N,N,Aj,N,N,V,N,N,N, N,N,V,N,N,N,N,N,Aj,N,N,N,V,V,Conj,N,N,Conj,N,V,V,N, Aj,V,Aj,Aj,N,Av,Av,N,Aj,V,N,N,V,N,N,Av,N,N,V,V,N,N,V, V,Av,N,N,N,N,N,N,Pn,Aj,V,N,Aj,Aj,V,N,N,N,N,N,N,N,N,N, N,N,Aj,N,N,V,N,V,N,Aj,N,V,N,N,V,V,Aj,Aj,N,N,N,N,N,N, N,N,N,N,N,N,N,Aj,N,N,V,Aj,Aj,Pn,N,Pn,Aj,N,V,N,N,N,V,V,N, V,N,Aj,N,N,N,Aj,N,V,Aj,N,N,V,N,Aj,N,Av,N,V,N,Av,N,N, N,V,N,Aj,N,Pn,Aj,N,N,Pn,N,N,N,Av,N,Aj,N,N,N,Aj,Aj,N,N, N,V,N,Pn,N,Aj,N,Av,N,N,N,N,N,Aj,N,N,N,V,N,N,N,N,N,N, Aj,V,N,V,N,V,N,V,N,N,N,N,V,N,N,N,N,Aj,Av,V,V,V,N,V, V,N,Pn,V,V,N,Av,N,V,Pn,N,N,N,Av,Av,N,N,N,N,N,N,Aj,N, Pn,N,N,N,Aj,Aj,N,V,N,N,V,N,N,N,N,N,N,V,N,V,N,N,Aj,V, N,N,N,Av,V,V,V,N,Av,V,N,N,V,N,N,N,N,N,V,N,N,Aj,N,N,				

	N,N,N,N,N,N,V,N,V,V,Pn,N,Int,V,N,N,N,N,N,N,N,N,Aj,Aj, Aj,N,N,N,V,N,Aj,Av,N,N,Aj,N,Pn,N,N,Av,Pn,N,N,Aj,N,Pn, N,N,V,N,N,Aj,N,V,V,N,N,Aj,V,V,N,V,N,N,N,Aj,Aj,N,N,N, Aj,N,Aj,Aj,N,N,Int,N,N,Aj,Aj,Aj,N,Av,N,Aj,Aj,Av,Aj,Av,Aj, N,N]				
	448	257	258.0402	59.1010	-0.27
M.Rázus, *Matka*	[V,Pn,N,Pn,N,V,N,V,V,N,Aj,N,V,N,V,Aj,Av,Pn,V,V,Aj,Pn, N,N,V,Aj,Aj,N,V,V,N,N,Av,V,Av,V,V,Aj,N,V,N,N,V,V,N, N,V,Aj]				
	48	38	34.375	8.4977	1.24
D.Kosztolányi, *Hajnali részegség*	[V,N,N,Av,N,N,N,N,Pn,N,Pn,N,N,N,N,N,V,V,N,Art,V,V,N, V,N,Av,V,Av,N,N,Pn,N,Av,Av,V,N,N,V,Art,N,Av,Av,Av, Pn,N,N,N,N,N,V,N,V,N,V,Aj,V,Av,N,V,Av,Av,Pn,V,N,Av, N,N,Av,V,V,V,V,V,Av,Aj,N,V,V,N,N,Aj,N,N,V,N,Aj,N,V, V,Aj,N,N,N,N,V,N,V,Av,V,N,V,Art,V,N,Nu,V,V,V,V,Art,N, V,Aj,Av,Av,V,N,Pn,N,N,N,Nu,V,Av,Pn,N,Av,Av,V,V,Av,N, N,V,Av,V,N,V,N,V]				
	141	100	100.9929	23.9951	-0.20
J.Arany, *Válasz Petöfinek*	[N,Pn,N,V,Av,Pn,N,N,N,V,V,V,N,Av,V,N,V,V,Aj,N,N,Av,V, N,N,V,N,V,N,N,N,Pn]				
	32	23	21.2500	5.7090	0.73
J.Arany, *Czakó sírján*	[N,N,N,Av,V,N,N,Av,N,N,V,N,V,Aj,Pn,Av,Pn,N,V,V,N,N,V, N,N,V,V,N,N,N,N,N,N,V,V,N,Av,N,N,V,N,N,N,N,Aj,N,N,V]				
	48	29	28.1667	7.4034	0.31
J.Arany, *Emléklapra*	[N,V,N,Av,V,N,Av,N,N,N,N,Pn,V,V,Aj,V,N,V,Pn,N,N,Pn,N, Pn,N,V,N,N,N,V,N,V,V,N,N,N,Pn,N,Av,N,N,V,N,Av,V,Av, N,Av,N,Av,V,N,N]				
	53	41	34.6415	8.8052	2.14*
M.Eminescu, *Andrei Mureşanu*	[N,V,N,N,V,Aj,Aj,Aj,V,N,V,Aj,V,V,V,V,Aj,Aj,N,Pn,Aj,Aj, N,Aj,V,Aj,Aj,Pn,N,N,V,N,V,Av,Pn,Aj,N,Av,V,V,N,Aj,Aj,Aj, N,N,N,N,Aj,Aj,N,N,Aj,N,N,Aj,V,V,Av,V,V,V,Aj,Aj,N,N,N, N,N,N,V,V,N,N,N,N,N,N,Aj,Aj,N,N,N,Pn,V,Aj]				
	86	49	60.6279	15.9792	-2.91*
M.Eminescu, *Basmul ce i l-aş spune ei*	[N,Aj,N,V,V,N,N,Aj,N,Av,Aj,Av,Aj,Av,Aj,N,Pn,Aj,N,Pn,N, V,N,N,Aj,Aj,V,V,N,V,N,V,Aj,Aj,N,N,N,N,N,N,N,V,N,Av,V, N,Aj,Aj,N,Av,N,V,N,N,V,N,Av,Aj,Aj,Aj,N,N,N,N,V,N,Pn,V, N,N,Aj,Aj,Aj,Aj,Int,N,V,V,N,Pn,N,V,N,Aj,V,V,V,Aj,Aj,Aj]				
	90	62	64.3111	15.7472	-0.58
M.Eminescu, *Călin (File de poveste)*	[N,Aj,N,N,N,V,N,N,Aj,V,Aj,Pn,N,Aj,N,N,V,Aj,N,N,V,N,V,N ,V,Aj,V,V,V,N,V,N,Aj,N,V,Aj,V,V,V,V,Aj,Aj,Aj,Aj,N,V,V, Pn,N,N,V,N,N,N,V,Aj,Aj,V,N,N,N,V,N,V,Aj,V,N,V,V,V,Pn, Pn,Aj,N,N,Aj,V,N,N,N,Aj,Aj,N,N,N,N,N,N,N,V,V,N,Pn,N,N, N,N,N,V,N,V,V,V,N,N,N,N,N,V,N,N,V,N,N,Aj,Aj,N,Aj,N,V, Aj,N,N,N,V,V,N,Aj,N,Aj,Aj,N,V,V,V,N,N,N,N,N,N,N,N,Aj, Aj,N,Aj,Aj,Aj,V,V,N,V,V,N,N,Aj,Aj,N,N,N,V,Pn,Pn,N,N,N,				

	N,Aj,N,N,N,N,Aj,N,Aj,N,N,N,Aj,N,N,V,V,V,N,V,V,V,V,V, N,Aj,N,N,Aj,N,V,V,N,N,Aj,N,N,N,V,Aj,Aj,N,V,N,Aj,N,Aj, V,Aj,N,N,N,N,N,Aj,N,N,V,N,N,N,Aj,Aj,V,V,V,N,N,N,N,V, N,N,N,N,N,N,N,N,N,N,V,N,N,N,N,N,Aj,N,N,Av]				
	258	140	160.4341	47.0849	-2.98*
M.Eminescu, *Când crivăţul cu iarna…*	[N,Aj,V,V,N,V,N,N,Aj,N,N,V,Aj,Aj,Aj,Aj,Aj,Aj,V,Aj,V,V,N, N,Pn,Aj,N,Aj,N,V,Aj,N,Aj,N,Aj,N,V,V,V,V,N,Aj,Aj,N,V,Aj, N,N,Aj,Pn,N,Pn,V,N,Aj,V,N,V,Av,V,V,V,V,Aj,N,N,Aj,Aj, Aj,V,V,Pn,Aj,Pn,V,Pn,N,V,N,N,Aj,N,N,V,V,V,N,V,Aj,V,N, V,Aj,Aj]				
	94	67	66.7447	18-5084	0.06
M.Eminescu, *Ecò*	[V,Aj,Aj,Aj,Aj,V,N,N,N,Aj,Aj,N,V,N,N,N,N,Aj,N,V,Aj,Aj, N,Aj,N,V,Aj,V,Aj,Aj,Aj,N,V,Aj,N,Aj,N,N,N,Aj,N,Aj,Aj,V, V,N,V,V,Pn,V,N,N,V,N,N,V,Aj,N,V,Aj,N,Aj,N,N,N,Aj,Aj, Aj,V,N,N,N,N,N,N,N,V,Aj,Aj,Aj,Aj,Aj,N,N,Aj,N,V,V,N,N, Aj,Aj,N,Aj,Aj,N,V,N,N,N,V,N,N,N,N,Aj,N,V,N,N,N,N,Pn,N, N,V,N,N,V,V,Aj,Pn,Aj,N,N,V,N,V,Aj,N,V,N,V,N,Aj,Aj,Aj, N,Aj,N,N,V,N,N,N,Aj,N,N,N,N]				
	150	92	95.5067	29.7366	-0.64
M.Eminescu, *Epigonii*	[Aj,Aj,N,N,N,N,N,N,Aj,N,N,Aj,N,V,N,Aj,Aj,N,Aj,Aj,N,Aj, Aj,N,N,V,N,N,N,N,Aj,Aj,N,N,Aj,Pn,Aj,Aj,N,V,V,N,Aj,Aj,N, Aj,Aj,Aj,Aj,V,N,N,Aj,N,Aj,Aj,Aj,N,Aj,N,N,Aj,N,Aj,N,Aj,Aj, Aj,Aj,N,N,N,Aj,Aj,Aj,V,Aj,Aj,N,N,N,Aj,Aj,V,N,V,Aj,N,V,N, V,V,N,N,Aj,N,N,N,N,V,Aj,Aj,Aj,Aj,V,Aj,Aj,Aj,Aj,V,N,N,N, Pn]				
	114	64	70.1228	24.1306	-1.25
M.Eminescu, *Feciorul de împărat fără de stea*	[N,Aj,N,Av,N,N,N,N,Aj,N,Aj,V,Aj,V,V,N,N,Aj,Aj,N,N,N,N, Aj,Aj,V,Av,V,Aj,Aj,N,N,N,N,N,Aj,N,V,Pn,N,N,N,Aj,Av,N, Aj,Aj,V,Aj,N,N,V,Aj,V,V,V,N,N,N,N,N,V,V,N,Aj,Aj,Aj,N, Pn,N,N,Pn,N,V,Aj,N,V,V,Aj,N,N,N,V,N,V,N,V,V,N,V,V,N, V,Aj,V,Aj,V,N,V,N,Av,N,V,V,Aj,Aj,Aj,Aj,V,N,V,V,Aj,N,N, N,Aj,N,V,V,N,Aj,N,N,Aj,Aj,Aj,Pn,Aj,N,N,N,N,Aj,Aj,N,V,N, V,V,V,V,V,Aj,N,N,N,N,V,Pn,Aj,N,V,N,V,Aj,V,Aj,V,V,Aj,N, Aj,N,Aj,N,Pn,N,Aj,V,Aj,Aj,Aj,Aj,Aj,N,Aj,V,Aj,V,Aj,V,Pn,N, N,Aj,Av,V,Aj,Aj,Aj,N,N,Aj,V,V,V,N,N,Pn,V,N,V,N,V,N,N, Aj,N,N,N,Aj,Aj,V,Aj,V,Aj,V,Aj,V,N,V,V,V,V,N,V,V,V,Pn, N,N,Aj,N,Aj,N,V,N,V,V,V,Aj,N,Aj,N,Aj,N,Aj,Aj,V,N,V,Aj, V,N,N,N,V,V,Aj,Aj,Av,Aj,N,N,Aj,Aj,N,N,Aj,N,N,N,V,N,V, N,V,N,V,Aj,Aj,Aj,Aj,Aj,Aj,V,Aj,N,N,N,N,N,N,Aj,V,N,Aj,N, N,Aj,V,N,V,N,N,V,N,N,Aj,Aj,N,V,N,V,V,Av,Aj,N,Aj,Aj,N, N,N,Aj,N,V,V,Aj,N,V,V,N,N,N,N,N,Aj,N,Aj,Aj,N,V,N,V,Aj, N,Aj,Aj,Aj,Aj,N,Aj,V,N,Aj,Aj,Aj,V,Av,V,Aj,N,V,N,N,Aj,V, Pn,N,V,N,Aj,Aj,Aj,N,N,Aj,Av,N,N,N,V,V,V,Aj,V,Aj,N,Aj,N, N,N,V,Aj,Aj,N,N,V,N,Aj,V,N,N,N,N,N,V,N,N,V,N,V,Aj,N, N,Av,Pn,N,Av,Pn,V,V,V,Aj,V,N,Pn,V,Aj,Aj,N,Pn,N,Aj,N,Aj,				

	N,N,N,N,Aj,V,Aj,V,N,Aj,Aj,N,Aj,Aj,Aj,V,V,V,Aj,N,N,N,V, N,N,V,Aj,N,Aj,N,N,V,N,N,N,N,V,N,N,V,N,Aj,N,Aj,N,V,V, V,V,V,N,N,N,N,N,V,N,V,V,N,Av,V,V,Aj,V,V,V,Aj,Aj,N,V, Aj,V,N,N,N,V,V,N,Aj,N,Aj,N,Pn,Aj,V,Aj,V,N,Aj,N,N,Aj,N, Aj,N,Aj,Aj,N,N,N,N,Aj,N,Aj,Pn,Aj,Aj,N,Av,N,N,Pn,V,N,V, N,N,N,Aj,V,N,N,N,N,N,Aj,N,Aj,Aj,Aj,N,N,Aj,Pn,Aj,Pn,V, Pn,V,Pn,N,N,V,N,V,Pn,Av,Pn,V,Aj,Aj,N,N,N,V,V,N,N,V,N, N,V,N,V,V,V,V,N,N,N,Aj,Pn,N,N,Aj,N,N,Aj,V,Aj,N,Aj,N, Aj,N,Av,N,Aj,V,V,Aj,Aj,Aj,Aj,Aj,V,Aj,Aj,Aj,Aj,V,V,V,V,N, Aj,V,Aj,Pn,N,Aj,Aj,N,V,Pn,V,Av,N,N,Aj,V,Aj,V,V,V,Aj,Pn, Aj,N,N,Aj,N,N,Aj,V,N,Aj,V,Aj,N,N,N,V,N,N,N,Aj,Aj,Pn,V, Pn,N,Aj,N,N,N,Aj,V,N,N,Aj,Pn,Aj,Aj,N,Aj,N,Pn,N,Aj,Av,Aj, Pn,Pn,V,Pn,Aj,N,Aj,V,Aj,V,N,N,Aj,N,Aj,Aj,N,N,V,N,N,Aj, N,Aj,Aj,N,N,N,V,Aj,Aj,V,N,N,V,N,N,Aj,Aj,N,N,N,V,Aj,Aj, Av,Pn,V,V,Aj,V,Av,Aj,Aj,Aj,N,V,V,N,Aj,V,V,V,N,Aj,N,V, Aj,N,Av,Pn,V,N,V,Pn,N,V,V,N,N,N,N,N,N,N,Aj,Aj,V,N,N, V,N,N,Aj,N,N,N,Aj,N,Aj,N,N,N,N,N,N,N,N,N,N,V,Aj,V,Aj, Av,Pn,N,Aj,Aj,N,Aj,Aj,Aj,N,V,N,V,N,V,V,V,N,Av]				
	843	567	587.1222	161.5962	-1.58
M.Eminescu, *Icoană şi privaz*	[V,V,V,Aj,N,V,Pn,Aj,Av,Aj,Aj,Aj,V,Aj,Aj,V,N,N,V,V,Aj,N, V,V,N,V,V,Pn,Aj,V,Aj,V,N,N,V,N,N,V,V,N,N,N,Aj,V,N,N, Aj,Aj,N,N,V,N,V,V,N,N,V,N,N,N,V,N,Av,V,N,N,Pn,N,V,N, N,Aj,N,N,Aj,V,Aj,N,N,N,Aj,V,V,N,N,Aj,N,N,Aj,V,V,N,N, Aj,Aj,Aj,N,N,N,N,Aj,N,N,N,N,N,N,N,N,N,N,N,N,N,N,N,N, N,N,N,N,N,V,N,N,N,N,N,N,V,Av,N,V,N,N,Aj,N,V,Aj,Aj,V, V,Aj,N,N,N,V,N,V,V,N,V,V,V,V,Aj,N,N,Aj,V,N,V,N,Av,N, N,Aj,N,N,N,N,N,N,Pn,N,N,N,V,V,Aj,V,V,V,Aj,N,N,V,V]				
	188	104	118.9787	34.4791	-2.55*
M.Eminescu, *Împărat şi proletar*	[Aj,Aj,Aj,Aj,Aj,N,N,Aj,N,N,V,N,V,V,Aj,N,V,N,N,V,Conj,Aj, V,Aj,Aj,Aj,Pn,Aj,V,N,Aj,N,N,Aj,N,N,Aj,N,N,Aj,V,V,N,Pn, V,Aj,V,Pn,Aj,V,N,V,V,N,V,V,V,Aj,Aj,V,V,N,N,N,N,Aj,Pn, V,Aj,N,Aj,Aj,V,Aj,N,Aj,N,Aj,V,N,Aj,V,N,Aj,N,N,N,N,N,Aj, N,N,V,V,Aj,V,V,Aj,Aj,V,N,Av,V,Aj,Aj,N,V,N,N,V,Aj,V,V, V,V,N,Aj,N,V,Aj,Aj,N,Aj,V,Pn,Aj,Aj,N,V,N,V,Aj,N,Aj,V, Aj,Aj,Aj,Aj,V,V,N,V,Aj,N,Aj,N,Aj,Aj,Av,Aj,N,V,N,Aj,Aj, Aj,N,N,V,Aj,N,N,Aj,Aj,Aj,N,Aj,V,N,N,Aj,N,N,Aj,Aj,N,N,Aj, N,N,V,N,N,N,N,N,N,N,N,N,Aj,N,N,V,V,N,N,N,V,N,N,N,V, N,V,V,V,V,N]				
	210	139	143.4667	42.9213	-0.68
M.Eminescu, *În căutarea Şeherezadei*	[Aj,N,N,N,N,N,Aj,Pn,N,V,Aj,V,N,N,N,N,Aj,N,Aj,N,Aj,N,N, N,N,N,Pn,N,Aj,Aj,V,N,N,N,V,N,Aj,N,Aj,V,N,Aj,N,V,N,N,N, V,N,N,N,N,Aj,N,Aj,Pn,Aj,N,N,Pn,Aj,Aj,V,N,V,N,Aj,V,N,V, N,V,N,N,N,N,Aj,N,N,N,N,N,N,N,N,V,N,V,N,N,N,N,N,Aj,N, Aj,Aj,N,Aj,Aj,V,N,N,N,V,Aj,N,V,N,N,N,N,N,Aj,V,Pn,V,Pn, N,N,N,N,N,Aj,N,N,N,N,Pn,Aj,N,Aj,V,N,N,N,Pn,N,N,N,Aj,V, Aj,N,Pn,N,Pn,N,N,N,V,Pn,V,N,N,Aj]				

	156	99	92.5897	23.6968	1.32
M.Eminescu, *Înger şi demon*	[Aj,N,Aj,Aj,N,N,N,V,Aj,V,V,N,Aj,V,V,Aj,Aj,Aj,Aj,V,V,Aj, Aj,V,Aj,Aj,Aj,N,N,N,Aj,N,Aj,V,Aj,Aj,N,Aj,Aj,V,V,V,Aj,N, N,V,V,N,N,N,N,Aj,Pn,N,Pn,Aj,Aj,Aj,Aj,Pn,Aj,Aj,Aj,Aj,Aj,V, Aj,N,Aj,N,N,Aj,V,Aj,Aj,Aj,N,Aj,N,V,N,Aj,Aj,V,N,Aj,N,V,V, N,N,V,V,Aj,Pn,V,V,N,N,V,Aj,N,N,N,N,Aj,V,N]				
	108	66	72.9630	22.0333	-1.48
M.Eminescu, *Luceafărul*	[N,Av,Aj,N,N,Pn,N,N,N,V,N,V,N,V,N,V,N,Aj,N,N,V,N,N,V, Pn,N,N,V,Pn,N,N,N,Av,V,N,Aj,N,V,Aj,Aj,N,N,N,V,N,V,N, V,Aj,N,N,V,Av,Av,Av,N,V,V,Aj,V,N,N,N,N,N,Aj,N,Aj,Aj, N,Aj,Av,Av,N,Pn,N,V,Av,N,N,Aj,V,Av,N,N,Aj,N,V,N,V,V, Av,N,N,N,V,N,V,Pn,Aj,N,V,N,V,Aj,N,N,V,V,N,V,V,N,N,N, V,N,V,N,N,V,N,Aj,N,Aj,Aj,N,N,Aj,Av,Pn,N,Aj,V,Av,N,Aj, N,V,Pn,N,V,V,Av,N,N,V,V,V,Av,Aj,Aj,Aj,V,N,V,N,Pn,N, Pn,Pn,N,Av,Aj,N,N,Aj,V,V,N,Av,N,N,N,N,N,N,N,N,N,N,N, Aj,N,V,N,Av,N,Aj,Av,N,N,V,Av,V,N,V,Av,N,N,V,N,V,Av, N,N,Aj,N,Aj,V,N,N,Av,N,Aj,N,Av,Aj,V,V,N,Aj,Aj,V,Aj,Pn, N,Pn,Aj,N,Aj,N,V,N,V,Pn,Aj,V,Av,V,Aj,V,N,Av,V,N,Aj,V, V,N,N,N,Aj,Aj,N,N,V,N,V,N,Av,N,Av,Pn,N,Pn,N,N,V,Av,N, Aj,N,V,N,V,V,V,Av,Aj,N,V,V,N,N,N,N,N,N,N,N,N,V,N,V, N,N,N,N,N,V,V,Av,N,N,N,N,N,N,N,N,N,Av,V,N,N,V,V,V, V,V,V,N,N,N,N,N,N,V,N,N,N,N,V,Av,V,V,V,Aj,V,N,V,Av, V,N,V,Aj,N,N,N,N,Av,N,V,Aj,Aj,Aj,V,N,N,V,V,N,Av,Av,N, V,N,N,N,N,Aj,N,V,Aj,V,Aj,N,N,V,N,N,N,N,N,N,N,Aj,Aj, V,V,Aj]				
	392	267	266.6378	65.8690	0.04
M.Eminescu, *Memento mori*	[N,Aj,Aj,N,N,V,N,N,N,V,N,Aj,Aj,Aj,Aj,N,N,Aj,V,N,N,Av,V, Av,V,V,V,N,Aj,N,N,N,V,N,Pn,V,N,V,V,N,V,V,N,N,N,N,N, N,N,N,N,N,N,N,N,N,N,V,N,V,V,Av,Aj,N,N,Aj,Aj,Aj,Aj,N,V, Aj,V,N,N,V,Aj,V,N,N,N,N,Aj,N,N,Aj,Av,V,Aj,Aj,N,N,N,N, N,Aj,Aj,V,N,N,N,Aj,N,Aj,Aj,V,N,N,Av,N,V,Av,V,V,N,N,N, N,N,Aj,N,N,Aj,V,Aj,Aj,Av,N,N,Aj,Aj,Aj,N,N,Aj,N,N,N,V,N, Aj,N,Aj,V,N,V,Aj,Aj,N,N,Aj,Aj,N,N,V,V,N,N,N,N,Av,N,Av, Pn,Pn,N,V,Aj,Aj,N,Av,V,Av,N,N,N,V,N,Aj,Aj,Aj,N,V,Aj,Aj, Aj,Aj,Aj,N,N,Aj,N,N,Aj,N,N,N,Aj,Av,Aj,V,V,N,N,N,N,N,N, N,Aj,N,Aj,N,N,Aj,Aj,V,N,N,N,V,N,N,Aj,Aj,N,N,N,V,Aj,Aj, V,N,N,V,Aj,Aj,V,N,N,V,Aj,Aj,Aj,N,N,Aj,N,N,N,N,N,Av,N, V,V,Aj,Aj,Av,N,V,N,Aj,Pn,V,Aj,Aj,N,V,N,N,N,N,Aj,Aj,N,N, Aj,V,Aj,N,N,N,N,N,V,N,Aj,N,V,Aj,N,V,V,N,N,Aj,N,N,N,Aj, N,N,Av,Aj,Aj,Av,N,Aj,Aj,Aj,N,Aj,N,Aj,Pn,N,Aj,N,Aj,Aj,V, N,N,N,N,N,N,Aj,N,Aj,Aj,Aj,N,Aj,N,Av,Aj,Aj,V,Av,N,N,V, Aj,Av,Aj,Aj,N,Aj,N,Pn,N,Aj,Pn,V,V,N,Aj,Aj,N,N,Aj,V,N,Aj, N,N,N,Aj,N,N,N,N,V,Aj,V,V,N,N,N,Aj,Aj,N,N,V,N,N,Aj,Aj, Av,Aj,N,Aj,N,Aj,N,V,N,N,Aj,Aj,Aj,Aj,Aj,N,N,Aj,V,N,N,N, N,Aj,Av,V,V,Av,V,V,Aj,N,Aj,N,Aj,Aj,Aj,N,N,Aj,N,N,Aj,Aj,				

	N,N,Aj,Aj,Aj,N,N,N,Aj,Aj,Aj,N,Aj,V,Av,Aj,Aj,Av,V,N,Aj, Aj,V,N,N,V,N,V,V,Aj,N,Av,N,N,V,N,N,Aj,Aj,V,N,N,N,Aj, Av,N,Aj,Av,V,N,N,N,V,Aj,N,N,N,N,N,Aj,Aj,N,Aj,Aj,Aj,Aj, Aj,Aj,Aj,Aj,N,Aj,V,V,N,N,V,N,N,N,Aj,Aj,N,N,N,N,V,Aj,N, N,Av,Aj,N,N,Av,N,N,Aj,N,N,V,V,N,Av,Pn,N,Aj,N,N,N,N,N, V,N,Pn,N,Aj,N,N,Aj,V,N,N,N,N,N,N,N,N,V,N,Aj,Aj,Aj,N,N, N,N,N,V,N,Av,N,N,N,V,Aj,Aj,Aj,N,N,Aj,N,V,Aj,Aj,V,Aj,Aj, Aj,Av,N,Aj,V,N,N,V,N,N,Aj,V,Aj,N,N,N,N,N,N,N,N,N,N,N, V,N,Aj,Aj,N,N,N,V,V,V,N,Aj,Aj,N,N,N,Av,Aj,N,N,N,N,N, Aj,Aj,N,N,N,V,N,V,N,N,N,V,N,N,N,N,N,Aj,N,Aj,Aj,N,N,Aj, N,V,Aj,Aj,N,N,Aj,Aj,N,Aj,Aj,Aj,N,N,Aj,N,N,N,N,V,Aj,Aj, Aj,Aj,N,N,N,N,N,V,N,N,N,N,Aj,N,Aj,Aj,N,V,V,N,N,Aj,Pn, N,N,Aj,N,N,N,N,N,N,Aj,Aj,Pn,N,N,Pn,Aj,N,Aj,Aj,Aj,V,N,N, N,V,N,Aj,N,N,Av,N,N,N,N,Aj,Av,N,V,V,N,N,Aj,V,V,Aj,V, N,N,V,N,N,N,N,Pn,N,N,Aj,N,N,Av,N,N,Aj,V,Aj,N,V,Av,N, Aj,N,N,N,N,Av,Aj,N,Aj,V,V,Av,N,V,Av,N,N,N,Aj,V,N,N,Aj ,N,N,N,N,N,N,N,Aj,Aj,Aj,N,Aj,N,Aj,Aj,N,Aj,Aj,N,Aj,N,V,N, Aj,N,V,V,Aj,N,N,N,N,N,Pn,V,N,N,Aj,V,Av,N,N,N,N,N,N,N, N,N,N,N,Pn,N,N,N,N,V,N,N,N,Pn,Aj,Pn,N,Aj,Aj,N,N,N,Pn, N,Aj,N,N,V,Int,Aj,Aj,Aj,N,V,N,V,N,Av,N,N,N,N,N,N,Av,N, N,V,N,N,N,N,N,Aj,N,N,N,N,N,V,Aj,N,V,N,Aj,N,N,N,Aj,V, N,V,N,N,N,N,Pn,N,N,N,Aj,Aj,N,Aj,V,V,N,V,Aj,N,V,Aj,Aj, Aj,N,N,V,N,N,Aj,N,Aj,N,N,V,N,N,N,Aj,V,N,Aj,N,N,V,Aj,N, N,Aj,N,N,N,V,V,N,N,N,Aj,N,N,Aj,N,Aj,N,N,V,N,N,N,Aj,N, Aj,N,N,N,N,N,Aj,N,Av,V,V,Aj,Aj,V,N,Aj,N,V,N,N,N,N,Aj, N,N,N,V,N,N,Aj,N,N,N,V,Aj,N,N,V,N,N,N,N,N,N,N,V,N,N, N,N,N,N,N,N,N,V,V,N,N,Pn,N,N,N,N,N,Nu,N,V,N,N,N,V,N, Aj,N,N,N,N,N,N,V,N,N,Aj,V,V,N,Aj,N,N,N,N,N,N,Av,N,Aj, Aj,N,Aj,N,N,N,N,N,N,N,V,Pn,Av,V,N,Aj,N,N,Aj,N,N,N,Aj, N,N,V,Pn,N,Aj,Aj,Aj,N,N,Aj,N,N,Aj,V,Aj,V,Av,N,N,N,N,N, N,N,N,N,Pn,N,V,Pn,N,N,N,N,Av,N,V,N,N,N,Pn,N,Aj,N,N,N, N,N,N,Av,N,N,N,N,N,V,N,N,N,N,Aj,N,Aj,Av,N,N,N,V,V,Aj,Av, V,Aj,V,V,N,V,V,Av,V,N,Av,N,N,Aj,N,Aj,N,Aj,Aj,Aj,Nu,Aj, N,N,N,V,Nu,N,Av,Aj,Aj,V,Aj,N,N]				
	1212	706	763.0421	203.7344	-4.00*
M.Eminescu, *Mureşanu*	[N,N,V,Aj,Aj,Aj,V,N,V,Aj,V,V,V,V,Aj,Aj,N,V,V,N,N,Aj,N, V,N,Aj,V,N,N,V,N,V,N,N,N,N,N,Pn,V,N,V,V,N,N,N,N,Aj, N,N,N,N,N,N,Aj,V,V,N,V,Aj,Aj,Pn,N,N,N,N,N,N,V,Aj,V,V, V,N,N,N,N,N,N,Aj,N,Aj,N,V,Av,Aj,N,V,Aj,Aj,Aj,Aj,V,Aj, Aj,N,Aj,N,Av,N,Aj,N,Aj,N,Pn,Aj,N,Aj,N,Aj,N,V,V,N,Aj,Aj, V,Aj,V,Pn,Pn,Aj,N,Aj,V,N,Pn,N,V,V,Aj,V,Aj,N,N,N,N,Aj, Aj,Aj,V,V,Aj,Aj,V,V,N,N,Aj,Aj,V,N,V,N,Aj,N,N,N,V,N,N, N,Aj,N,Aj,V,N,N,V,Aj,N,Aj,Aj,N,Aj,N,V,V,N,N,V,N,N,V,V, Aj,N,Aj,V,Aj,V,N,N,N,V,N,N,N,N,V,V,Aj,N,N,N,V,N,N,N, Aj,V,N,N,N,V,N,V,N,Aj,N,N,N,Pn,N]				
	223	144	147.9731	43.4361	-0.60

M.Eminescu, *Ondina (Fantazie)*	[Aj,Aj,N,Aj,N,N,N,N,N,Aj,N,V,Aj,Aj,N,Aj,N,V,Aj,V,Aj,Aj, Aj,N,V,Aj,N,Aj,Aj,N,N,Aj,N,Aj,Aj,Aj,V,N,V,V,Pn,N,Aj,Aj, N,N,N,V,Aj,Aj,Aj,N,N,Aj,N,N,V,V,V,Aj,N,Av,N,N,N,N,N, N,Aj,N,N,N,N,V,Aj,V,Aj,Pn,V,N,N,N,N,Pn,Pn,Av,Pn,N,N, N,N,Pn,N,N,Aj,Aj,V,N,V,V,N,V,V,N,Aj,N,N,N,N,N,N,N,V, Aj,Aj,N,N,N,Av,V,N,V,V,Av,Aj,V,Aj,Aj,N,N,V,V,Aj,Aj,Aj, N,N,Aj,N,N,N,N,Aj,N,N,N,V,Aj,V,Aj,Aj,N,N,N,Pn,Aj,Pn,V, Aj,N,N,N,N,Pn,Pn,Pn,Aj,Aj,Aj,N,Aj,N,N,Aj,V,N,N,Pn,N,Aj, N,N,N,N,N,N,V,V,Aj,N,N,Aj,N,Aj,N,N,N,V,N,Pn,N,N,N,N, N,N]				
	206	118	135.6117	36.2401	-2.93*
M.Eminescu, *Scrisoarea I*	[N,N,N,N,V,Aj,V,V,N,N,V,N,N,V,N,V,N,N,N,N,N,N,N,N,N, N,N,N,N,V,Aj,N,N,Aj,V,V,N,N,N,N,N,N,Aj,N,N,V,N,V,V,N, Int,N,N,N,N,N,Aj,Aj,N,Aj,Aj,N,N,Aj,N,Av,Aj,V,N,V,Aj,Av, N,Aj,N,Av,Aj,Aj,N,N,V,V,N,N,V,N,Aj,Aj,Aj,Aj,N,V,Aj,Aj, V,Aj,V,N,N,V,V,Av,N,N,V,V,N,N,N,V,N,N,N,N,N,Aj,V,V, N,N,N,Aj,N,Pn,V,Aj,V,Aj,Aj,Aj,N,N,Av,N,V,V,Pn,N,N,N,V, N,Aj,V,N,N,V,Aj,N,N,N,N,V,N,N,N]				
	156	89	97.3333	26.4803	-1.62
M.Eminescu, *Scrisoarea III*	[N,V,Aj,V,V,N,N,N,N,N,N,N,N,V,V,V,V,N,Pn,V,V,V,V, V,V,Aj,Aj,Aj,N,N,N,N,N,N,N,V,N,V,Av,Aj,N,Aj,Av,N,N,N, N,N,N,N,N,N,N,V,V,Aj,V,N,N,V,N,V,Aj,N,N,Aj,N,N,N,Pn, N,N,N,N,N,N,V,N,V,V,V,V,N,Pn,Pn,N,V,N,V,N,V,N,N,Pn, Aj,N,V,N,N,N,N,N,N,N,V,Aj,N,N,N,N,N,N,V,Aj,V,N,N,N,N, N,V,N,V,N,N,N,V,N,N,N,N,N,V,N,N,N,N,N,Aj,N,N,N,N,N, N,Av,N,N,N,Aj,N,N,N,N,V,V,N,N,N,N,N,N,N,Aj,Aj,V,Aj, V,V,Aj,N,Pn,N,N,N,N,Av,N,Pn,N,Av,V,Pn,Pn,N,N,V,Pn,N, N,N,N,Aj,N,Aj,N,N,V,N,Av,N,V,N,N,N,N,N,Pn,Aj,V,N,N,N, N,N,N,N,N,N,N,Pn,N,N,N,N,Aj,N,V,N,N,N,N,N,N,N,N,N,V, Aj,N,N,N,Pn,N,N,N,N,N,N,N,N,N,N,N,N,N,Aj,N,N,N,N,N, N,N,Aj,Aj,V,V,N,V,V,N,N,N,N,N,N,N,Aj,Pn,N,V,N]				
	285	129	151.6842	35.5506	-3.80*
M.Eminescu, *Scrisoarea IV*	[N,N,N,N,Av,N,V,V,V,N,N,Aj,V,N,N,N,N,N,N,N,N,N,N,N, N,V,V,N,V,N,N,N,N,N,N,Aj,N,N,N,N,V,N,Av,Aj,N,N,N,N,N, Aj,N,V,Aj,V,V,Av,N,N,N,V,N,V,N,N,N,V,N,V,V,N,V,Av,Aj, Aj,Pn,N,N,V,Aj,V,N,Aj,N,Aj,N,V,V,N,Av,N,N,Aj,N,Aj,V,N, Aj,N,Aj,Aj,N,V,V,V,N,N,N,N,N,N,V,Aj,N,N,N,Av,Aj,N,V, Aj,Aj,N,Aj,N,N,N,V,N,N,V,V,N,V,V,V,V,Aj,Aj,N,Aj,V,Aj, Av,V,N,Aj,Aj,V,N]				
	148	89	93.7838	26.1309	-0.94
M.Eminescu, *Scrisoarea V*	[N,N,N,N,N,N,N,Aj,N,Av,N,N,N,N,N,N,N,N,Aj,N,Av,V,V,N, Aj,Aj,N,N,N,Pn,N,N,N,V,N,N,Pn,N,N,N,V,V,N,N,N,N,V,V,N,N, V,N,Pn,N,N,Pn,V,Aj,N,N,N,N,V,Av,N,Pn,V,V,N,N,N,N,Aj, Aj,V,V,N,Aj,N,Av,V,V,N,V,Aj,Aj,V,N,N,N,Aj,Aj,N,N,Aj,Pn, N,N,N,N,Aj,N,V,N,Aj,V,N,N,Aj,N,N,N,N,N,N,Aj,N,Av,N,N,				

	N,N]				
	120	66	70.5500	16.1467	-1.13
J.Arany, *Év kezdetén*	[N,N,Int,N,V,N,Pn,N,N,V,V,N,N,N,V,N,N,V,N,N,V,N,N,N, Av,N,N,N,N,V,V,N,V,N,N,N,N,N,V,N,Av,N,N,N,V,Aj,Av,N]				
	48	29	25.2292	6.5323	1.48
J.Arany, *Alkalmi vers*	[V,V,N,N,Aj,N,Av,N,N,N,N,N,V,N,N,N,N,N,N,N,N,V,N,N, V,V,N,N,V,V,N,N,Av,N,Av,N,V,N,N,N,N,N,Av,N]				
	44	22	21.3182	5.6614	0.29
Ch.Baudelaire, *Benediction*	[Aj,Aj,N,N,N,N,Aj,N,N,N,N,Aj,V,N,Aj,Aj,N,Aj,N,Aj,N,N,V, N,N,N,N,N,N,N,N,N,N,V,N,Aj,V,Aj,V,N,N,V,Aj,Aj,N,N,N, V,N,Aj,N,Aj,Aj,Aj,Aj,N,N,N,Aj,N,N,N,N,Aj,N,Aj,N,N,N,V, Aj,N,Aj,Aj,Aj]				
	75	41	49.4933	5.7300	-3.55*
Ch.Baudelaire, *Confession*	[N,Aj,N,Aj,Aj,V,N,V,Aj,Av,Aj,Av,Aj,N,V,N,N,Aj,Aj,Av,Aj, V,N,Av,Aj,Aj,V,Aj,N,Aj,V,Aj,Aj,N,N,N,Aj,N,Aj,N]				
	40	33	27.2500	7.5766	2.09*
Ch.Baudelaire, *Une martyre*	[Aj,Aj,Aj,Aj,N,Aj,N,Aj,N,Aj,V,N,N,N,N,Aj,N,N,N,Aj,Aj,N, Aj,N,N,V,V,Aj,N,Aj,N,Aj,Aj,Aj,N,N,Aj,Aj,Aj,Aj,Aj,Aj,Aj, V,V,Aj,N,Aj,Aj,Aj,N,Aj,Aj,N,Aj,Aj,V,Aj,N]				
	60	34	33.9000	12.2235	0.03
P.Verlaine, *Adieu*	[N,V,N,Aj,Aj,N,V,N,Aj,V,Aj,N,N,N,N,Av,V,N,V,Aj,V,Pn,N, Pn,N,Av,N,N,N,Aj,N,N,Aj,Aj,V,N]				
	36	28	24.6111	6.0659	1.38
M.Lermontov, *Mtsyri*	[Av,V,N,N,N,N,N,N,N,N,Pn,N,N,Pn,Aj,Aj,Aj,N,N,V,Pn,N,N, N,V,V,N,N,N,N,N,V,V,V,N,Nu,Aj,N,N,N,Pn,N,V,V,V,V,N, N,Pn,Partiz,N,Pn,Aj,N,N,Aj,V,N,N,Aj,N,N,V,N,Av,Pn,Av,V, V,Aj,N,V,V,V,Aj,N,N,N,N,N,V,Pn,V,Pn,N,N,N,V,V,N,Nu,N, V,N,N,V,V,V,V,N,N,N,N,Aj,N,N,N,V,V,N,V,Aj,N,N,N,V,N, N,V,N,Aj,Pn,N,V,N,N,V,Av,N,Aj,Aj,Pn,N,Aj,N,V,V,N,Pn, Pn,N,V,V,Av,N,Aj,Av,N,N,Aj,N,N,Aj,V,N,V,V,Pn,N,N,Av, N,Aj,N,V,V,Partiz,Av,Pn,N,N,Av,N,N,N,N,Aj,N,N,N,N,N,N, N,N,N,Pn,Pn,V,V,Pn,Aj,N,Av,N,N,N,N,N,N,N,N,N,N,Pn, Aj,Aj,Pn,N,N,N,N,N,N,Pn,N,Aj,N,V,V,N,N,N,N,N,Pn,N,Aj, Pn,Pn,N,Aj,Aj,Pn,Pn,N,N,N,N,Pn,N,Pn,N,N,N,Aj,V,V,N,Av, Aj,N,Pn,N,N,V,N,N,N,AdvPartiz,N,Pa,N,N,N,N,N,V,N,N, AdvPartiz,N,Pn,N,N,Pn,N,N,Aj,N,N,N,N,N,Av,N,N,N,N,N, N,N,Pn,V,N,V,N,N,V,N,V,N,N,N,N,Pn,Aj,Av,N,V,V,N,N,V, N,N,V,N,N,Av,N,V,Av,N,N,V,Aj,N,N,N,N,V,V,N,N,V,N,Av, N,Av,Av,N,N,Aj,Aj,N,N,Pn,N,N,N,Partiz,N,V,V,Aj,Aj,Pn,N, N,Partiz,V,V,V,V,N,N,N,Av,N,Pn,N,Av,N,N,Aj,N,N,Aj,N, Pn,Pn,N,Pn,Pn,Av,N,Av,Av,Pn,N,N,N,N,Aj,Aj,Aj,Av,N,Av, V,N,ZuKa,N,V,Partiz,N,Pn,N,Aj,N,N,V,N,Nu,Pn,Pn, AdvPartiz,Aj,N,Aj,Aj,Pn,N,N,V,N,N,Av,Nu,N,V,V,Aj,Aj,V, Av,N,N,Av,N,N,N,N,N,N,N,N,V,V,N,V,N,Aj,Aj,Aj,N,N,N,N, N,Av,Av,N,N,N,N,N,N,Pn,Pn,N,Av,N,V,N,N,N,V,V,N,Pn,Pn,					

	N,N,Av,N,N,N,Pn,N,N,Aj,N,N,Pn,N,V,V,N,V,V,Aj,N,V,N, Av,N,N,N,N,V,V,V,V,N,N,N,N,N,N,Aj,Pn,Partiz,N,N,N,Pn, N,N,N,V,V,V,N,N,Av,N,N,N,N,N,Pn,N,V,N,V,V,V,N,Aj,N, N,Pn,Pa,N,V,N,N,N,V,V,N,Av,Av,Aj,V,Av,Pn,N,V,V,N,N,N, AdvPartiz,PN,Aj,N,N,Partiz,N,N,N,N,Pn,Av,N,Aj,N,N,N,N, V,N,V,Pn,N,Av,N,N,Av,Pn,Aj,N,Av,N,N,N,Aj,N,N,N,Aj,Aj, Aj,N,N,N,N,Partiz,N,N,N,V,N,Pn,N,N,N,N,N,N,N,Pn,N,N,V, Aj,N,N,N,N,N,N,AdvPartiz,N,Aj,N,N,Av,PN,Pn,N,Partiz,Pn, N,N, N,N,N,N,N,N,N,N,Av,Av,Pn,N,N,Aj,V,V,Pn,N,V,N, AdvPartiz, N,N,V,Pn,N,N,N,N,N,N,Av,Pn,Aj,N,Aj,V,N,Aj, V,V,N,V,V,Pn,N,Pn,N,N,Aj,N,Pn,Aj,N,N,N,V,V,N,Pn,Pn,N, Pn,Aj,N,N,V,V,Pn,N,Aj,N,Aj,Aj,Pn,Aj,Pn,Pn,Pn,N,N,Pn,Pn, N,N,Pn,N,N,N,N,N,N,N,V,V,V,V,V,V,N,Aj,Aj,Aj,Aj,N,Pn, N,N,N,N,V,N,N,N,N,Pn,N,N,V,N,V,V,V]				
	783	458	780.1916	2.7847	1.68

For Russian, it was necessary to introduce some special categories. As can be seen, runs play a secondary role in creating a poem. That means that stereotypy expressed by a very small number of runs, in this sense occurs very seldom, but nevertheless, it can be found in some poems. In order to find them in the above table, one could merely look for $z < -1.96$ or $z > 1.96$. We marked them with an asterisk. As can be seen, in the majority of cases there is no special tendency; that means, if there can be found a tendency, the given text must be analyzed separately and the subsidiary conditions should be found by a literary scientist. Here, we only show the method which can be used for studying any position in the poem.

9. Motifs of POS

If we define a qualitative motif as a sequence in which there may not occur identical elements and only the first element of the next motif may be repeated, we obtain very clear results. Consider for example the Hungarian poem *Alkalmi vers* by J. Arany (see Table 8.2) in which we can define the motifs as

[V],[V,N],[N,Aj],[N,Av],[N],[N],[N],[N],[N,V],[N],[N],[N],[N],[N],[N],[N],
[N,V],[N],[N,V],[V],[N],[N,V],[V],[N],[N,Av],[N],[Av,N,V],[N],[N],[N],[N],
[N,Av],[N].

The length of the qualitative motif is defined by the number of its elements. Here we obtain

Length	Frequency
1	$f_1 = 23$
2	$f_2 = 9$
3	$f_3 = 1$

The POS-stereotypy of the poem rhyme can be measured in many different ways. The strongest stereotypy is given if the single-element motifs are the most frequent ones. Hence, it is sufficient to take their proportion. In the above case we would obtain $P_1 = 23/33 = 0.70$. Its variance is $V(P)=P(1-P)/n$, here $V(P) = 0.7(0.3)/33 = 0.0064$. However, P_1 alone is sufficient for ordering the texts.

Another method is to consider the Repeat rate. The greater it is, the stronger is the POS-stereotypy.
In the above example, we obtain $RR = (23^2 + 9^2 + 1^2)/23^2 = 0.56$.

A third simple method is to consider the mean of the length-distribution. Here we obtain $m_1' = (1*23 + 2*9 + 3*1)/33 = 1.33$. For skewness one must compute up to the third central moment, and hence it can be omitted here.

The results and the ordering of texts according to $P_1 = f_1/n$ is presented in Table 9.1

Table 9.1
Measuring the POS-motif stereotypy

Text	POS-motifs	P_1
M.Eminescu, *Scrisoarea III*	[N,V,Aj],[V],[V,N],[N],[N],[N],[N],[N],[N],[N], [N,V],[V],[V],[V,N,Pn],[V],[V],[V],[V],[V],[V,Aj], [Aj],[Aj,N],[N],[N],[N],[N],[N],[N,V],[N], [V,Av,Aj,N],[Aj],[Av,N],[N],[N],[N],[N],[N],[N], [N],[N],[N,V],[V,Aj],[V,N],[N],[V,N],[V,Aj],[N], [N,Aj],[N],[N],[N,Pn],[N],[N],[N],[N],[N],[N,V], [N],[V],[V],[V],[V,N,Pn],[Pn],[N,V],[N],[V,N],[V], [N],[N,Pn,Aj],[N,V],[N],[N],[N],[N],[N],[N], [N,V,Aj],[N],[N],[N],[N],[N],[N,V,Aj],[V],[N],[N], [N],[N],[N,V],[N],[V,N],[N],[N,V],[N],[N],[N],[N], [N,V],[N],[N],[N],[N],[N,Aj],[N],[N],[N],[N],[N],	0.72

	[N,Av],[N],[N],[N,Aj],[N],[N],[N],[N,V],[V],[N], [N],[N],[N],[N],[N],[N],[N,Aj],[Aj,V],[Aj],[V], [V,Aj,N,Pn],[N],[N],[N],[N,Av],[N,Pn],[N,Av,V], [Pn],[Pn,N],[N,V],[Pn,N],[N],[N],[N,Aj],[N],[Aj,N], [N,V],[N,Av],[N,V],[N],[N],[N],[N],[N,Pn,Aj,V], [N],[N],[N],[N],[N],[N],[N],[N],[N],[N,Pn],[N],[N], [N],[N,Aj],[N,V],[N],[N],[N],[N],[N],[N],[N],[N], [N,V,Aj],[N],[N],[N,Pn],[N],[N],[N],[N],[N],[N], [N],[N],[N],[N],[N],[N],[N,Aj],[N],[N],[N],[N],[N], [N],[N,Aj],[Aj,V],[V,N],[V],[V,N],[N],[N],[N],[N], [N],[N,Aj,Pn],[N,V],[N] **frequencies:(152, 47, 9, 3)**	
V.Turčány, *Mám svoje mesto rád*	[N],[N],[N],[N],[N],[N],[N],[N],[N],[N],[N],[N], [N,Av],[N,Aj,Pn,V],[N],[V,N],[N],[N,V],[N],[N,Aj], [N],[N],[N,V],[N,Aj],[Aj],[N],[N],[N],[N,V],[N], [V,N],[V],[N],[N,Aj],[N],[N],[N],[N],[N],[N,Aj,V], [N],[N],[N,Av,V],[V],[V],[V,N,Av] **frequencies: (33, 9, 3,1)**	0.72
V.Turčány, *List Vitězslavovi Nezvalovi*	[Aj,N],[N],[N],[N],[N],[N],[N],[N],[N],[N],[N],[N], [N],[N],[N],[N],[N,Pn],[N],[N,V,Av],[N,Aj], [Av,V,N],[N],[N],[N,V,Aj],[V],[N],[N],[N],[N,V], [N,Aj],[N,V],[N],[N,V],[N],[V,N],[N],[N],[N], [N,V],[V],[N] **frequencies: (29, 9, 3)**	0.71
J.Arany, *Alkalmi vers*	[V],[V,N],[N,Aj],[N,Av],[N],[N],[N],[N],[N,V],[N], [N],[N],[N],[N],[N],[N],[N,V],[N],[N,V],[V],[N], [N,V],[V],[N],[N,Av],[N],[Av,N,V],[N],[N],[N],[N], [N,Av],[N] **frequencies: (23, 9, 1)**	0.70
M.Eminescu, *Scrisoarea I*	[N],[N],[N],[N,V,Aj],[V],[V,N],[N],[V,N],[N], [V,N],[V],[N],[N],[N],[N],[N],[N],[N],[N],[N],[N], [N],[N],[N,V,Aj],[N],[N,Aj,V],[V],[N],[N],[N],[N], [N],[N,Aj],[N],[N,V],[N],[V],[V,N,I],[N],[N],[N], [N],[N,Aj],[Aj],[N,Aj],[Aj],[N],[N,Aj],[N,Av,Aj,V], [N],[V,Aj,Av,N],[Aj],[N,Av,Aj],[Aj],[N],[N,V],[V], [N],[N,V],[N,Aj],[Aj],[Aj],[Aj,N,V],[Aj],[Aj,V], [Aj],[V,N],[N],[V],[V,Av,N],[N],[V],[V,N],[N], [N,V],[N],[N],[N],[N],[N,Aj,V],[V],[N],[N],[N,Aj], [N,Pn,V],[Aj,V],[Aj],[Aj],[Aj,N],[N,Av],[N,V], [V,Pn],[N],[N],[N,V],[N,Aj],[V,N],[N],[V,Aj,N], [N],[N],[N,V],[N],[N],[N]**]** **frequencies: (68, 25, 10, 2)**	0.65
Ch.Baudelaire, *Benediction*	[Aj],[Aj,N],[N],[N],[N,Aj],[N],[N],[N],[N,Aj,V],[N], [Aj],[Aj,N],[Aj],[N,Aj],[N],[N,V],[N],[N],[N],[N], [N],[N],[N],[N],[N],[N,V],[N,Aj],[V,Aj],[V,N],[N], [V,Aj],[Aj,N],[N[,[N,V],[N,Aj],[N],[Aj],[Aj],[Aj],	0.65

	[Aj,N],[N],[N,Aj],[N],[N],[N],[N,Aj],[N],[Aj,N], [N],[N,V,Aj],[N],[Aj],[Aj],[Aj] **frequencies: (35, 17, 2)**	
A.Sládkovič**,** *Kykymora*	[Aj],[Aj],[Aj],[Aj],[Aj],[Aj,V],[V],[V],[V,N],[V], [N],[N],[N,V],[V],[N],[N,V],[V],[N],[N],[N],[N], [N,V,Aj],[Aj],[V],[V,N],[V],[V,N],[N],[N,V],[N], [N,Aj,V],[Aj],[V,N],[V],[N],[N],[N],[N,V],[N], [N,Aj,V],[N],[V],[V,Aj],[V],[V,Aj],[V],[Aj,Nu], [Nu,V, N],[Aj,V],[N,V],[N],[V,Aj],[Aj],[Aj,V],[V], [Aj,N,V],[N],[V],[V],[V,N],[N],[N,V],[V],[N,V], [V],[N],[N],[N,V],[V],[N] **frequencies: (45, 20, 5)**	0.64
M.Eminescu, *Icoană şi privaz*	[V],[V],[V,Aj,N],[V,Pn],[Aj,Av],[Aj],[Aj],[Aj,V], [Aj],[Aj,V,N],[N],[V],[V,Aj,N],[V],[V,N],[V], [V,Pn,Aj],[V],[Aj,V,N],[N],[V,N],[N],[V],[V,N], [N],[N,Aj,V],[N],[N,Aj],[Aj],[N],[N,V],[N],[V], [V,N],[N],[V,N],[N],[N,V],[N,Av],[V,N],[N,Pn], [N,V],[N],[N,Aj],[N],[N,Aj],[V,Aj],[N],[N], [N,Aj,V],[V],[N],[N,Aj],[N],[N,Aj,V],[V],[N], [N,Aj],[Aj],[Aj,N],[N],[N],[N,Aj],[N],[N],[N],[N], [N],[N],[N],[N],[N],[N],[N],[N],[N],[N],[N],[N], [N],[N],[N],[N],[N,V],[N],[N],[N],[N],[N],[N,V,Av], [N],[V,N],[N,Aj],[N,V],[Aj],[Aj,V],[V],[Aj,N],[N], [N,V],[N],[V],[V,N],[V],[V],[V],[V,Aj],[N], [N,Aj,V],[N],[V],[N,Av],[N],[N,Aj],[N],[N],[N],[N], [N],[N,Pn],[N],[N],[N,V],[V,Aj],[V],[V],[V,Aj,N], [N],[V],[V] **frequencies: (83, 36, 11)**	0.64
Ch.Baudelaire, *Une martyre*	[Aj],[Aj],[Aj],[Aj,N],[Aj],[N,Aj],[N],[Aj,V,N],[N], [N],[N,Aj],[N],[N],[N,Aj],[Aj],[N,Aj],[N],[N,V], [V,Aj],[N,Aj],[N],[Aj],[Aj],[Aj,N],[N],[Aj],[Aj], [Aj],[Aj],[Aj],[Aj],[Aj],[Aj,V],[V],[Aj,N],[Aj],[Aj], [Aj,N],[Aj],[Aj,N],[Aj],[Aj,V],[Aj,N] **frequencies: (27, 15, 1)**	0.63
P.O.Hviezdoslav, *Krvavé sonety*	[N,V],[N],[V,N],[V],[N,V,Aj],[N],[N,V],[N],[N], [N],[N,Av],[N],[N],[N],[N,Pn,V],[N],[V,N],[V], [N],[N],[N,Aj],[N],[N,Aj],[N],[N],[N],[N,Aj,V],[N], [N],[N],[N],[N],[N],[N,Aj],[N],[N],[N,V],[N],[N], [N],[N],[N],[N],[N],[N],[N,V],[N],[N],[N],[N,Aj], [N],[N,V],[N],[N],[N],[N],[N,V],[N],[N],[N],[N], [N,Aj],[N],[N],[N,V],[V,Conj],[N],[N,Conj],[N,V], [V],[N,Aj,V],[Aj],[Aj,N,Av],[Av],[N,Aj,V],[N], [N,V],[N],[N,Av],[N],[N,V],[V],[N],[N,V],[V,Av], [N],[N],[N],[N],[N],[N,Pn,Aj,V],[N],[Aj],[Aj,V,N], [N],[N],[N],[N],[N],[N],[N],[N],[N],[N,Aj],[N],	0.63

	[N,V],[N],[V,N,Aj],[N],[V,N],[N],[V],[V,Aj],[Aj,N], [N],[N],[N],[N],[N],[N],[N],[N],[N],[N],[N],[N,Aj],[N], [N,V,Aj],[Aj,Pn],[N,Pn],[Aj,N,V],[N],[N],[N,V], [V],[N,V],[N,Aj],[N],[N],[N,Aj],[N,V],]Aj,N],[N,V], [N,Aj],[N,Av],[N,V],[N,Av],[N],[N],[N,V], [N,Aj],[N,Pn,Aj],[N],[N,Pn],[N],[N],[N,Av],[N,Aj], [N],[N],[N,Aj],[Aj],[N],[N],[N,V],[N,Pn],[N,Aj], [N,Av],[N],[N],[N],[N],[N,Aj],[N],[N],[N,V],[N], [N],[N],[N],[N],[N,Aj,V],[N],[V,N],[V],[N,V],[N], [N],[N],[N,V],[N],[N],[N],[N,Aj,Av,V],[V],[V,N], [V],[V,N,Pn],[V],[V,N,Av],[N],[V,Pn,N],[N], [N,Av],[Av],[N],[N],[N],[N],[N],[N,Aj],[N,Pn], [N],[N],[N,Aj],[Aj],[N,V],[N],[N,V],[N],[N],[N], [N],[N],[N,V],[N],[V,N],[N,Aj],[V,N],[N], [N,Av,V],[V],[V,N,Av],[V],[N],[N,V],[N],[N], [N],]N],[N,V],[N],[N,Aj],[N],[N],[N],[N],[N],[N], [N],[N,V],[N],[V],[V,Pn,N,Int],[V],[N],[N],[N],[N], [N],[N],[N],[N,Aj],[Aj],[Aj,N],[N],[N,V],[N,Aj,Av], [N],[N,Aj],[N,Pn],[N],[N,Av,Pn],[N],[N,Aj],[N,Pn], [N],[N,V],[N],[N,Aj],[N,V],[V],[N],[N,Aj,V],[V], [N,V],[N],[N],[N,Aj],[Aj],[N],[N],[N,Aj],[N],[Aj], [Aj,N],[N,Int],[N],[N,Aj],[Aj],[Aj,N,Av],[N],[Aj], [Aj, Av],[Aj],[Av,Aj,N],[N] **frequencies: (192, 89, 22, 3)**	
S.Chalupka, *Mor ho*	[N],[N],[N],[N,V],[N,Av],[N],[N],[N,V],[N],[V], [V,N],[V],[V],[V],[N],[N],[N,Aj,V],[N],[N], [N,Pn,V],[N],[N,V],[V],[N],[N],[N,Pn],[N], [N,Av,V],[N],[N],[N],[N,Aj],[N],[Aj,N,V],[N,Av], [N,V],[V],[N],[N],[N,V,Pn],[N],[Pn],[Pn,N,V],[N], [N],[N,V],[N],[N,V],[V],[N,V],[V],[V,N,Pn],[V], [V],[V],[V],[V],[V,N],[N,Aj,Pn,Av],[N],[N,V],[V], [V,Av,N],[V],[N],[N],[N,V],[N],[N,V],[N],[N], [N,V],[N],[V],[V,N,Aj],[N],[N],[N,Aj],[N,Av,V], [N],[V,N,Aj],[N],[N],[N],[N,Aj],[N],[N],[N,V],[V], [V],[V],[V],[V],[V],[V],[N,V],[N],[V,N],[V,Aj], [Aj,N],[V,N],[V],[N,Aj],[N],[N,Aj,V],[V],[V],[V], [V,N],[V],[N,V],[N],[N,Aj],[N] **frequencies: (72, 29, 12, 1)**	0.63
M.Eminescu, *Scrisoarea V*	[N],[N],[N],[N],[N],[N],[N,Aj],[N,Av],[N],[N],[N], [N],[N],[N],[N],[N,Aj],[N,Av,V],[V],[N,Aj],[Aj], [N],[N],[N,Pn],[N],[N,V],[N],[N,Pn],[N],[N,V],[V], [N], [N],[N],[N,V],[V],[N],[N,V],[N,Pn],[N], [N,Pn,V,Aj],[N],[N],[N],[N,V,Av],[N,Pn,V],[V],[N], [N],[N],[N,Aj],[Aj,V],[V,N],[Aj,N,Av],[V],[V,N], [V,Aj],[Aj],[V,N],[N],[N,Aj],[Aj],[N],[N,Aj,Pn],[N], [N],[N],[N,Aj],[N,V],[N,Aj],[V,N],[N,Aj],[N],[N],	0.62

	[N],[N],[N],[N,Aj],[N,Av],[N],[N],[N],[N] **frequencies: (51, 25, 5, 1)**	
M.Eminescu, *În căutarea Şeherezadei*	[Aj,N],[N],[N],[N],[N,Aj,Pn],[N,V],[Aj,V],[N],[N], [N],[N,Aj],[N],[Aj,N],[Aj],[N],[N],[N],[N],[N,Pn], [N,Aj],[Aj,V],[N],[N],[N,V],[N,Aj],[N],[Aj,V,N], [Aj],[N,V],[N],[N],[N,V],[N],[N],[N],[N,Aj],[N], [Aj,Pn],[Aj,N],[N,Pn],[Aj],[Aj,V,N],[V],[N,Aj,V], [N],[V,N],[V],[N],[N],[N],[N,Aj],[N],[N],[N],[N], [N],[N],[N],[N,V],[N],[V,N],[N],[N],[N],[N,Aj],[N], [Aj],[Aj,N],[Aj],[Aj,V,N],[N],[N,V,Aj],[N],[V,N], [N],[N],[N],[N,Aj,V,Pn],[V],[Pn,N],[N],[N],[N], [N,Aj],[N],[N],[N],[N,Pn,Aj],[N],[Aj,V,N],[N], [N,Pn],[N],[N],[N,Aj,V],[Aj],[N,Pn],[N],[Pn,N],[N], [N,V,Pn],[V],[N],[N,Aj] **frequencies: (64, 29, 10, 1)**	0.62
A.Sládkovič, *Marína*	[N,Aj],[N],[Aj,V],[V],[V,N],[N],[N,Aj,V],[V],[N], [N],[N,Pn],[N],[N],[N,V],[V],[V,Aj,N],[N],[N],[N], [N],[N,V],[N],[V,N],[N],[N],[N],[N],[N],[N],[N,V], [N],[V,N],[N],[N,V],[N,Pn,Aj],[N,Nu],[N],[N,V], [V],[N,V],[V],[N.Aj],[N],[Aj],[Aj],[Aj],[Aj,N], [N,V],[V],[N,V],[N],[V],[V],[N,V],[N],[V],[V,N], [V],[N],[N],[N,Av],[N],[N],[N,Av],[N,Pn],[Pn,V], [N],[N],[N,V],[N],[N,Aj],[N],[Aj,V,N],[Aj],[N,V], [V],[V],[V],[V],[V],[V],[V,N],[N],[V,N],[V],[N,V], [N],[N],[N],[N,V],[V],[N,V,Aj],[N],[Aj],[Aj,N], [Aj,V],[V],[V],[V],[V,Av],[V],[V],[V],[V],[V],[V], [V],[V],[V,Pn],[V,N],[V],[V],[V,Pn],[V],[V,N],[V], [N],[N],[N,V], [V],[V],[V],[V],[V],[V],[V,Aj],[V], [V,Aj],[V],[V,Aj],[Aj],[V,N,Nu],[N],[V],[V],[V], [V,N],[N,Pn],[N,V],[V],[V],[V,Aj],[V],[Aj,V,N], [N],[V,N],[N],[N,V],[V,Aj],[N,V],[N],[V],[V],[V], [V,Aj,N],[N],[Aj,V,N],[N],[N],[N],[N,V],[N],[N,Aj], [N],[Aj],[Aj,V],[V],[V,Aj],[V],[V],[V],[V],[V],[V], [V,Aj,N],[V],[N,V],[N],[V,N,Aj],[N],[V,N,Pn],[V], [Pn,V,N],[N],[N],[N,V],[V],[V,N],[V],[N,V],[V], [N],[N,V],[N],[N,V],[V],[V,N],[N],[V,N],[N],[V,N], [N],[V.N],[V,Aj],[V],[V,N],[V],[N,V],[V],[N,V], [N,Aj],[N,V],[N],[N,V,Aj],[N],[V],[V],[V],[V,N,Aj], [V],[N],[N],[N,V],[V],[N],[N,V],[N],[N,V],[V,Pn], [V],[Pn,N,Aj,V],[V],[N,V,Aj],[N],[Aj,N,V],[V],[V], [V],[V],[V,N],[N],[N],[N],[N],[N,Pn,V],[V],[N], [N,V],[N],[N],[N],[N,V,Aj],[N,Part],[V,N],[V],[N], [N],[N],[N,Aj],[Aj],[N],[N],[N,Pn],[N],[N], [N,V,Pn],[V],[V],[V],[V],[V],[V],[V,N],[V],[N,V], [V,Pn],[N,V],[V],[N],[N,V],[V],[V],[V,N],[V], [N,V],[N],[N],[N],[N],[N,V],[N],[V,N],[V],[N,V],	0.62

	[V],[N],[N,V],[N],[N,Aj],[N],[Aj],[Aj,V],[Aj], [Aj,V],[Aj],[V,Aj],[V,N],[N,Aj],[V],[V],[V,N],[V], [N,V],[N],[N,V],[N],[N,V,Pn],[N],[N],[N,Av], [Av,V],[V,Aj],[V],[V,Pn],[V,Aj],[V],[V],[V,N],[N], [V,N,Av],[N],[V],[V],[V],[V],[V,N],[V],[V],[V],[V], [V,N],[N],[N],[N,V],[N,Pn],[N,Aj],[N],[N],[N],[N], [N,V],[N,Aj],[N],[Aj,N],[N],[N],[N,V,Aj],[V],[N,V], [V],[V],[V],[V,N],[N],[V],[V,N],[V],[N,V],[V],[V], [V],[V],[V],[V,N],[N],[V,N],[N],[N],[N],[N],[N], [N],[N,V],[N],[V,N],[N],[N],[N],[N],[N,Aj],[N,V], [N],[V],[V,N],[N],[N],[N],[N,V,Aj],[V],[V,N],[V], [N],[N,V,Aj],[N],[Aj,V,N],[V],[N,Aj,V],[N],[N,Aj], [Aj],[N,Aj],[Aj,V,Av],[V],[V],[V,N],[N],[N,V],[V], [V,Aj,N],[V],[V],[V,N],[V],[V],[V],[N],[N],[N],[N], [N,Aj],[N,V],[N],[N,V],[N],[V],[V],[V],[V,Aj],[V], [Aj],[Aj,V],[V],[V],[V],[V,N],[V],[N,Aj],[Aj,V],[V], [V],[V,N,Aj],[N],[Aj],[Aj],[Aj,N],[N],[N],[N,Aj], [N,V],[N,Aj],[N,V],[V],[V],[V,Pn,Aj,N],[V],[V], [V],[V,Aj],[Aj],[V,N],[N],[N],[N],[N,Aj,V],[Aj],[V], [V,Aj,N],[N,Pn],[N],[N,V],[V],[V,N,Pn],[N,Nu],[N], [N,V],[N,Pn],[Pn],[N],[N],[N},[N,V],[V],[V],[V,N], [N],[V,N],[V,Av],[V,N],[V],[V,N],[N],[V],[V,Aj], [V],][Aj,V],[V],[V],[V,N],[N],[N,V],[N],[V],[V], [V,N],[V],[V,N],[N,Av],[N],[N],[N],[N],[N],[N],[N], [N],[N,V],[N,Int],[V],[V],[V],[V],[V,N,Aj],[N], [V,N],[N,Aj],[Aj],[N],[N,V],[V,Pn],[V,Aj,N],[N], [N,V],[V],[N,V],[N],[V,N],[V],[V,N],[N],[N],[N], [N],[N,V],[N],[V],[V,N],[V],[N,V],[N],[N,Pn], [N,Aj],[N,V,Aj],[V],[Aj,N,V],[N],[N,V],[N], [N,Aj,Av],[N,V],[Aj],[Aj],[Aj,V],[V,N],[N],[N], [N,Aj],[V,N],[V],[V],[V,Aj],[V],[V,Pn],[V],[Pn,V], [V,N],[V,Aj],[Aj],[Aj],[Aj],[Aj,N],[Aj],[N],[N],[N], [N,V],[V],[N,V,Aj],[V],[Aj],[Aj,V,N],[Aj],[Aj,N,V], [V],[V],[V,N],[N],[N],[N,Pn],[N],[N],[N,Aj],[Aj], [N,Aj,Pn,V],[V],[N,Pn,V,Aj],[V],[N],[N,Aj],[N], [N,V],[N],[N,V],[N],[N,Aj,V],[V],[V],[V,N],[N], [N,Av,V],[V,Aj],[N,Aj],[V,N],[Aj,N],[Aj,V],[Aj,N], [V],[V],[V,Aj,N],[Aj],[N],[N,V,Aj],[Aj],[V,Pn,Aj], [V],[Aj,V],[Aj],[V],[V],[V],[V],[V,N],[V],[V,N,Pn], [V],[N,V],[V,Aj],[V,N],[V],[N,V],[V],[V,Aj],[Aj], [V],[V,N],[V],[N],[N,V],[N,Aj],[N],[N],[N],[N],[N], [N,V],[V],[V],[V],[V],[V],[V,N],[V],[N,V],[V],[V], [V],[V],[V,Aj],[Aj],[Aj,N,V],[V],[N,V],[V,Pn],[V], [V,N],[V],[V],[V,Pn],[V],[V,Aj],[Aj],[V,N],[V],[V], [V,N,Aj],[Aj],[N,Aj],[Aj],[Aj,Pn,V],[V],[V,Av,Pn], [V,N],[V],[N,V],[V],[V,N,Aj],[Aj],[N,V],[V],[N],	

	[N,Av],[N,V],[N],[V,Aj],[V],[Aj,V],[V],[V,N],[N], [V],[V],[V],[V],[V],[V],[V],[V,Aj],[V],[V,Aj], [V,N],[Aj,V],[V,N],[V],[V,N],[V],[V],[V],[V],[V], [V],[V],[V],[V,N],[N],[V,N],[V],[N],[N,V],[N], [N,V],[V],[V],[V],[V],[V],[V,Aj],[V],[V,N],[V], [N,V],[N,Aj],[V],[V],[V,N],[V],[V],[V],[V],[V],[V], [V],[V],[V],[V],[V],[V,N],[V],[N,V],[V],[N,V],[V], [N],[N],[N,V],[N],[N],[N,V],[N,Aj],[V],[V],[V],[V], [V],[V],[V],[V,N],[N],[V,N],[V],[N,V],[N],[N], [N,V],[V],[N,V],[N],[V],[V],[V],[V,N],[N],[V], [V,N],[V,Pn],[V],[V],[V,N],[N],[N],[N],[N,Pn],[N], [N,V],[V],[N],[N],[N],[N,V,Aj],[V],[Aj,V], [V], [V,N],[V],[N,V,Aj],[V],[Aj,N],[N],[N,V],[V],[N], [N],[N],[N],[N,V],[V],[N,V,Aj],[N],[N],[N],[N],[N], [N,V],[V],[N],[N,V],[N],[N],[N],[N],[N],[N,V],[V], [V],[V,N],[N],[N,V],[V],[V],[V,N,Aj],[N],[N],[N], [N], [N,V],[V],[N],[N],[N,V],[V],[V],[V,N,Pn],[V], [V,N],[N],[V],[V,N],[V],[N],[N],[N,Av,V],[V,Aj], [Aj],[V],[V],[V],[V],[V],[V],[V],[V],[V,N],[N],[N], [N],[N],[N,V],[V],[N],[N],[N],[N],[N,V],[N,Aj], [V],[V,Aj],[V,N],[V,Aj],[V],[V],[V],[V],[V],[V,N], [V],[V],[V],[V],[V],[V,N],[N],[N],[N],[N],[N], [N,V],[N],[V,N],[V],[V,Av,Pn],[V],[V],[V],[V],[V], [V],[V],[V],[V,Aj],[V,N],[V,Pn,Nu],[V],[V],[V,N], [V],[V],[V],[V],[V],[V,N],[V],[V,N],[N].[V,N],[V], [V],[V],[V],[V],[V],[V],[V],[V],[V],[V],[V],[V,N], [V],[V],[V],[V,N],[V],[V,N],[V],[V,N],[N],[N], [N,Nu,V],[V],[N,V],[V],[V,N],[N,Aj],[V,N],[N],[V], [V],[V],[V,N],[N],[N],[N],[N,V],[N],[N,V],[N], [V,N],[V],[N],[N],[N,V],[N],[V,N],[N],[V,N],[V], [V],[V],[V,N],[N],[N,Aj],[N,V],[V],[V],[V,N],[V], [V],[V,N],[N],[N],[N,V,Aj],[V],[V],[V,N],[N],[N], [N],[N],[N,V],[V],[N],[N],[N,V],[V],[V],[V],[V,Aj], [V],[V,N],[V],[N,V],[N],[V],[V],[V],[V,N],[N], [V,N,Aj],[V],[N,V],[V],[N],[N],[N],[N],[N,V],[N], [V],[V],[V,N],[V],[V,N],[V],[N,V],[N],[N,Pn,V], [N],[N],[N],[N],[N,V],[N,Aj],[Aj],[N,Aj],[N,V],[N], [N],[N],[N,V],[N,Aj],[V],[V,Pn],[V,N],[V,Aj],[V], [V,N],[N],[V,Pn,N],[N],[N,V],[V],[V],[V,N],[V], [V],[V,N,Aj],[N],[N,Aj,V],[V],[V],[V,Aj,N],[V], [N,Aj],[N,V],[V],[V],[V,N],[V],[N,V],[N,Pn],[V,N], [N],[V,Aj],[V],[V],[V],[V],[V,N],[N],[N,V],[V], [V,Av],[V],[V],[V,Nu,N],[V],[N,V],[N],[V,N,Aj], [V],[N,V],[V],[N],[N],[N],[N],[N,V],[V],[N,Av],[N], [N],[N,V],[V],[N,Aj],[Aj,V],[V,N],[V],[V,N],[V], [V,N],[N],[N,V],[V,Aj],[N],[N],[N],[N],[N],	

	[N,V,Aj],[N],[V],[V,Pn],[V,N],[N],[V],[V],[V],[V], [V],[V,N],[V],[N],[N],[N,V],[N],[N,V],[N], [V,N,Aj],[V],[N],[N],[N,V],[N],[N,V,Av],[N],[V], [V,N],[V],[V,N],[N],[V,N],[V],[N],[N],[N,V],[V], [V,Av],[V],[Av,V,Pn,N,Aj],[Aj],[V,N],[N],[N],[N], [V,N],[V],[N,V],[N],[N,V],[N],[N,Aj,V],[V],[V], [V],[V],[V,N],[V],[N,V],[V],[N,Aj],[N,Pn,V],[N], [N],[N,Av,V],[V],[N,V],[V],[N],[N].[N],[N,V],[V], [V,N],[V],[V,Aj,N],[N],[N],[N],[N],[N,V],[N], [N,V],[N],[N].[N].[N.V],[V],[N,Aj],[Aj,V],[N,Aj], [N,V],[N],[N,Aj,V],[N],[Aj,V,N],[V],[Aj,N],[N,V], [Aj,N],[Aj,V],[Aj],[V,Pn,Aj,N],[N],[N],[N],[N], [N,V],[N],[N],[N],[N,V],[V],[V],[V,N],[V],[N,V], [N],[N,V],[N],[V,N],[V],[N,V],[N],[V],[V,N],[V], [V],[V,N],[N],[V,N],[V],[N],[N,Aj],[Aj],[N],[N], [N,Aj,V],[V],[V],[V,Aj,N],[N],[N,Aj,V],[V],[N,V], [V],[N],[N,V],[N],[V,N],[V],[N,Aj,V],[V], [V,Aj,Pn],[Pn,N],[N],[N,Pn],[N,V],[V],[N,Aj],[N], [Aj,V],[V],[V],[V],[V],[V],[V,N],[V,Av],[V,N],[N], [N],[N],[N,V],[N],[N],[N],[N,Aj],[Aj],[N],[N],[N], [N],[N,Pn,V,Nu],[N],[N],[N,V],[V],[N,Pn,V],[N], [V],[V],[V,N].[N].[V,N],[V],[N,V],[N],[V],[V], [V,N],[V],[V,Aj,N],[Aj],[N,Aj],[Aj],[Aj,N],[N], [Aj,N],[N,V],[N],[N],[N,V],[N],[N,V],[N],[N], [N,V,Aj],[N],[N],[N],[N],[N],[N],[N],[N],[N],[N], [N,V],[V,Aj],[N,V],[N],[N],[N],[N],[N],[N],[N], [N,V],[V],[V,N],[V],[V],[V,N,Aj],[N,Pn],[N,V],[V], [V],[V,N],[N],[N],[N,V,Aj],[N],[Aj],[Aj,N],[N,V], [N],[N,V],[N],[V,Pn,Aj],[V],[V,N],[N],[N],[N], [N,V],[N],[N,V],[V],[N],[N,V],[N],[N,V],[V],[V,N], [V],[V,Pn,N],[V],[N,V,Aj],[N],[V],[V,N],[N,Aj], [N],[N,V],[N],[V,N],[V],[N,Pn],[N,Aj],[N,V], [Aj,V],[Aj,N],[Aj],[N],[N,V],[N],[N],[N],[N,Aj], [Aj,V],[N],[N,Aj],[Aj],[N],[N],[N],[N],[N],[N], [N,V],[N],[N,V,Aj],[N],[V,N],[N,Av],[Av], [Av,V,N],[N,Aj],[N],[N,V],[V],[N,V],[N],[V,N],[V], [N],[N],[N],[N,V],[N],[N],[N],[N,V],[N,Aj],[N],[N], [N],[N,V],[N],[V],[V,Aj,N,Pn],[N],[N],[N],[N],[N], [N],[N],[N],[N,V],[V],[V],[V,Pn,N,Nu],[N],[N], [N,V,Pn],[N],[V,Aj],[V,N],[V],[N,Aj],[N],[N],[N], [N,V,Aj],[V,Pn],[Aj,N],[N],[N],[N],[N,V],[N], [V,N],[N],[N],[N,V],[V],[N,Aj],[N],[Aj,N,V],[N], [N,Av],[N],[N],[N],[N],[N],[N,Aj,V],[N],[N,V],[N], [V,N],[V],[V],[V],[V,N],[V],[V,N],[N],[N],[N],[N], [N],[N,V,Aj],[Aj],[N,Aj],[N],[Aj,N],[N],[N],[N,Aj], [N],[N],[N,V],[N],[V],[V],[V],[V],[V],[V],[V,N],	

	[V],[N],[N],[N],[N],[N],[N,V],[N],[N],[N],[N],[N], [N],[N,Av],[N],[N],[N],[N],[N],[N],[N,V],[V],[V], [V,N],[N],[N,V],[N],[V,N],[V,Aj],[N],[N,Aj],[N], [N,Aj]**,[**Aj],[N],[N],[N],[N,Aj],[N,Pn],[N],[N], [N,Aj,V],[Aj],[V],[V],[V,N],[V],[V],[V],[V], [V,Aj,N],[V],[Aj,N,V,Pn],[V],[N],[N],[N],[N], [N,V],[N],[V,N],[V],[V,N],[N],[V],[V,N],[N], [N,Aj],[N,V],[V],[V,N],[N],[N,V],[V],[N,V,Aj],[N], [N,Aj],[Aj],[N],[N,Aj,V],[Aj],[N,V],[N],[V],[V,N], [V],[V],[V,Av,N],[V],[V],[V],[V],[V],[V,Aj,N],[Aj], [N,V],[V,Aj],[Aj],[V,N],[V],[V],[V],[V],[V,N],[V], [V],[V],[V],[V],[V],[V],[V],[V,N],[V],[V,N],[N,Aj], [N],[Aj,N],[N,V],[Aj],[Aj,V],[V],[V,N],[V],[N],[N], [N,V],[N,Pn],[N,V,Aj],[Pn,V],[N,V],[N],[V,N,Aj], [N],[Aj,V],[V],[V],[V],[V],[V],[V],[V],[V],[V], [V,N],[V],[N],[N,V],[V,Aj],[N,V],[V],[V],[V,N], [N],[N,Aj],[N],[Aj,V],[V],[V,N],[V],[V,N,Aj],[N], [Aj,V,N],[N],[N],[N],[N,V,Aj],[N],[Aj,N],[Aj], [Aj,V,N],[N],[V],[V.N],[V],[N,V],[V],[N,Aj,V],[N], [N,Aj],[N],[Aj,N],[N,V],[Aj],[Aj,V,N],[V,Av], [V,N],[N],[N],[N,V],[N],[N,Aj],[N],[Aj,V],[V,N], [V],[N],[N,V],[N],[V,N],[N],[N,Aj],[N],[Aj],[Aj], [Aj],[Aj,V],[Aj],[V,N,Aj],[Aj],[Aj],[Aj,V],[V],[V], [V],[V],[V,N],[V],[V,N,Pn],[V,Aj],[V,N],[Aj,V], [N],[N,V],[V],[V],[V],[V,N],[N],[V],[V],[V],[V,N], [N],[N],[N,V],[V],[V,N,Pn],[V],[N,V,Aj],[V], [N,Pn],[N,Aj,V],[N],[N],[N],[N,V],[N],[N,V],[V], [V,Aj,N],[N],[N],[N,Aj],[N,V],[N],[N,V],[N,Aj],[N], [N,V],[N],[N],[N],[N],[N,V,Aj],[N],[Aj],[Aj,N,V], [N],[V],[V,N],[V],[N,V],[N],[N,Aj,V],[V],[N,V], [N,Pn],[V,N],[N],[N,Pn],[N],[N,V],[N],[V,N],[N], [N,V],[N],[V],[V,N],[V],[N,Aj,V],[V],[N,V],[V], [N,Pn,V],[V],[V,N],[N],[V],[V,N],[V],[N,V],[N], [V],[V,N],[N],[V],[V,Aj],[V],[Aj,V],[Aj],[V,Av], [V,N],[N],[V],[V,Aj],[V],[Aj,N],[N,V],[V],[V], [V,Pn,N],[N],[N],[N],[N],[N,V],[N],[N,V],[N], [V,Nu,N],[N],[V,N],[N],[V],[V,N],[V],[N],[N], [N,V,Aj],[Aj],[V,N],[V],[N,V,Aj],[Aj],[V],[V,N], [N],[V],[V],[V],[V,N],[N],[N],[N],[N],[N,Aj,V], [Aj],[V,N],[N],[V,Aj],[Aj],[V,N],[N],[N,V],[N],[V], [V],[V],[V],[V,Aj,N,Pn],[N],[V,N],[N],[N,Av,V,Aj], [N],[Aj,N],[N,V,Av],[V],[V,N,Pn],[N],[N],[N,V], [V],[V],[V],[V],[V] **frequencies: (1238, 608, 131, 11, 1)**	
M.Eminescu, *Călin (File de*	[N,Aj],[N],[N],[N,V],[N],[N,Aj,V],[Aj,Pn],[N,Aj], [N],[N,V,Aj],[N],[N,V],[N],[V,N],[V,Aj],[V],[V],	0.61

poveste)	[V,N],[V],[N,Aj],[N,V],[Aj,V],[V],[V],[V,Aj],[Aj], [Aj],[Aj,N,V],[V,Pn],[N],[N,V],[N],[N],[N,V,Aj], [Aj],[V,N],[N],[N,V],[N],[V,Aj],[V,N],[V],[V], [V,Pn],[Pn,Aj,N],[N],[Aj,V,N],[N],[N,Aj],[Aj],[N], [N],[N],[N],[N],[N],[N,V],[V],[N,Pn],[N],[N],[N], [N],[N,V],[N],[V],[V],[V,N],[N],[N],[N],[N,V],[N], [N,V],[N],[N,Aj],[Aj],[N],[Aj,N,V],[Aj],[N],[N], [N,V],[V],[N,Aj],[N],[Aj],[Aj,N,V],[V],[V,N],[N], [N],[N],[N],[N],[N],[N,Aj],[Aj],[N,Aj],[Aj],[Aj,V], [V,N],[V],[V,N],[N,Aj],[Aj],[N],[N],[N,V,Pn],[Pn], [N],[N],[N],[N,Aj],[N],[N],[N],[N,Aj],[N],[Aj,N], [N],[N,Aj],[N],[N,V],[V],[V,N],[V],[V],[V],[V], [V,N,Aj],[N],[N,Aj],[N,V],[V],[N],[N,Aj],[N],[N], [N,V,Aj],[Aj],[N,V],[N,Aj],[N],[Aj,V],[Aj,N],[N], [N],[N],[N,Aj],[N],[N,V],[N],[N],[N,Aj],[Aj,V],[V], [V,N],[N],[N],[N,V],[N],[N],[N],[N],[N],[N],[N], [N], [N],[N,V],[N],[N],[N],[N],[N,Aj],[N],[N,Av] **frequencies: (109, 58, 11)**	
J.Arany, *Év kezdetén*	[N],[N,Int],[N,V],[N,Pn],[N],[N,V],[V],[N],[N], [N,V],[N],[N,V],[N],[N,V],[N],[N],[N,Av],[N],[N], [N],[N,V],[V],[N,V],[N],[N],[N],[N],[N,V],[N,Av], [N],[N],[N,V,Aj,Av],[N] **frequencies: (20, 12, 0, 1)**	0.61
M.Eminescu, *Ondina (Fantazie)*	[Aj],[Aj],[N,Aj],[N],[N],[N],[N],[N,Aj],[N,V],[Aj], [Aj,N],[Aj],[N,V,Aj],[V],[Aj],[Aj],[Aj,N,V],[Aj], [N,Aj],[Aj],[N],[N,Aj],[N],[Aj],[Aj],[Aj,V,N],[V], [V,Pn,N,Aj],[Aj],[N],[N],[N,V,Aj],[Aj],[Aj,N],[N], [Aj,N],[N,V],[V],[V,Aj,N,Av],[N],[N],[N],[N],[N], [N,Aj],[N],[N],[N],[N,V,Aj],[V],[Aj,Pn,V,N],[N], [N],[N,Pn],[Pn,Av],[Pn,N],[N],[N],[N,Pn],[N], [N,Aj],[Aj,V],[N,V],[V],[N,V],[V],[N,Aj],[N],[N], [N],[N],[N],[N],[N,V,Aj],[Aj],[N],[N],[N,Av,V],[N], [V],[V,Av,Aj],[V],[Aj],[Aj,N],[N,V],[V,Aj],[Aj], [Aj,N],[N],[Aj,N],[N],[N],[N,Aj],[N],[N],[N,V,Aj], [V],[Aj],[Aj,N],[N],[N,Pn,Aj],[Pn,V],[Aj,N],[N],[N], [N,Pn],[Pn],[Pn,Aj],[Aj],[Aj,N],[Aj],[N],[N,Aj,V], [N],[N,Pn],[N,Aj],[N],[N],[N],[N],[N],[N,V],[V,Aj], [N],[N,Aj],[N,Aj],[N],[N],[N,V],[N,Pn],[N],[N],[N], [N],[N],[N] **frequencies: (83, 39, 11, 3)**	0.61
M.Eminescu, *Memento mori*	[N,Aj],[Aj],[N],[N,V],[N],[N],[N,V],[N,Aj],[Aj], [Aj], [Aj,N],[N],[Aj,V,N],[N,Av],[V,Av],[V],[V], [V,N,Aj],[N],[N],[N,V],[N,Pn],[V,N],[V],[V,N], [V],[V,N],[N],[N],[N],[N],[N],[N],[N],[N],[N],[N], [N],[N],[N,V],[N],[V],[V,Av,Aj,N],[N],[Aj],[Aj], [Aj],[Aj,N,V],[Aj],[V,N],[N],[V,Aj],[V,N],[N],[N],	0.60

	[N,Aj],[N],[N,Aj,Av,V],[Aj],[Aj,N],[N],[N],[N], [N,Aj],[Aj,V],[N],[N],[N,Aj],[N],[Aj],[Aj,V,N], [N,Av],[N,V],[Av,V],[V,N],[N],[N],[N],[N,Aj],[N], [N,Aj,V],[Aj],[Aj,Av,N],[N],[Aj],[Aj],[Aj,N],[N], [Aj,N],[N],[N,V],[N,Aj],[N],[Aj,V,N],[V],[Aj], [Aj,N],[N],[Aj],[Aj,N],[N,V],[V],[N],[N],[N], [N,Av],[N],[Av,Pn],[Pn,N,V,Aj],[Aj],[N,Av,V], [Av],[N],[N],[N,V],[N,Aj],[Aj],[Aj,N,V],[Aj],[Aj], [Aj],[Aj],[Aj,N],[N],[Aj,N],[N],[Aj],[N],[N], [N,Aj,Av],[Aj,V],[V,N],[N],[N],[N],[N],[N],[N,Aj], [N],[Aj,N],[N],[Aj],[Aj,V,N],[N],[N,V],[N],[N,Aj], [Aj],[N],[N],[N,V,Aj],[Aj],[V,N],[N],[V,Aj],[Aj], [V,N],[N],[V,Aj],[Aj],[Aj,N],[N],[Aj,N],[N],[N],[N], [N,Av],[N,V],[V,Aj],[Aj,Av,N],[V,N],[Aj,Pn,V], [Aj],[Aj,N,V],[N],[N],[N],[N,Aj],[Aj],[N],[N,Aj,V], [Aj],[N],[N],[N],[N],[N,V],[N,Aj],[N,V],[Aj,N],[V], [V,N],[N,Aj],[N],[N],[N,Aj],[N],[N,Av,Aj],[Aj], [Av,N,Aj],[Aj],[Aj,N],[Aj],[N,Aj,Pn],[N],[Aj,N], [Aj],[Aj,V,N],[N],[N],[N],[N],[N,Aj],[N],[Aj],[Aj], [Aj,N],[Aj],[N,Av,Aj],[Aj,V],[Av,N],[N,V,Aj], [Av,Aj],[Aj,N],[Aj],[N,Pn],[N,Aj],[Pn,V],[V,N,Aj], [Aj],[N],[N,Aj,V],[N],[Aj,N],[N],[N,Aj],[N],[N], [N],[N,V,Aj],[V],[V,N],[N],[N,Aj],[Aj],[N],[N,V], [N],[N,Aj],[Aj,Av],[Aj,N],[Aj],[N,Aj],[N,V],[N], [N,Aj],[Aj],[Aj],[Aj], [Aj,N],[N],[Aj,V,N],[N],[N], [N,Aj,Av,V],[V],[Av,V],[V,Aj,N],[Aj],[N,Aj],[Aj], [Aj,N],[N],[Aj,N],[N],[Aj],[Aj,N],[N],[Aj],[Aj], [Aj,N],[N],[N,Aj],[Aj],[Aj,N],[Aj,V,Av],[Aj], [Aj,Av,V,N],[Aj],[Aj,V,N],[N],[V,N],[V], [V,Aj,N,Av],[N],[N,V],[N],[N,Aj],[Aj,V],[N],[N], [N,Aj,Av],[N],[Aj,Av,V,N],[N],[N,V,Aj],[N],[N], [N],[N],[N,Aj],[Aj],[N,Aj],[Aj],[Aj],[Aj],[Aj],[Aj], [Aj],[Aj,N],[Aj,V],[V,N],[N],[V,N],[N],[N,Aj],[Aj], [N],[N],[N],[N,V,Aj],[N],[N,Av,Aj],[N],[N,Av],[N], [N,Aj],[N],[N,V],[V],[N,Av,Pn],[N,Aj],[N],[N],[N], [N],[N,V],[N,Pn],[N,Aj],[N],[N,Aj,V],[N],[N],[N], [N],[N],[N],[N],[N,V],[N,Aj],[Aj],[Aj,N],[N],[N], [N],[N,V],[N,Av],[N],[N],[N,V,Aj],[Aj],[Aj,N],[N], [Aj,N,V],[Aj],[Aj,V],[Aj],[Aj],[Aj,Av,N],[Aj,V], [N],[N,V],[N],[N,Aj,V],[Aj],[N],[N],[N],[N],[N], [N],[N],[N],[N],[N],[N,V],[N,Aj],[Aj],[N],[N], [N,V],[V],[V,N,Aj],[Aj],[N],[N],[N,Av,Aj],[N],[N], [N],[N],[N,Aj],[Aj],[N],[N],[N,V],[N],[V,N],[N], [N,V],[N],[N],[N],[N],[N,Aj],[N],[Aj],[Aj,N],[N], [Aj,N,V],[Aj],[Aj,N],[N],[Aj],[Aj,N],[Aj],[Aj], [Aj,N],[N],[Aj,N],[N],[N],[N,V,Aj],[Aj],[Aj],	

	[Aj,N],[N],[N],[N],[N,V],[N],[N],[N],[N,Aj],[N], [Aj],[Aj,N,V],[V],[N],[N,Aj,Pn],[N],[N,Aj],[N],[N], [N],[N],[N],[N,Aj],[Aj,Pn],[N],[N,Pn,Aj],[N],[Aj], [Aj], [Aj,V,N],[N],[N,V],[N,Aj],[N],[N,Av],[N], [N],[N],[N,Aj,Av],[N,V],[V],[N],[N,Aj,V],[V,Aj], [V,N],[N],[V,N],[N],[N],[N,Pn],[N],[N,Aj],[N], [N,Av],[N],[N,Aj,V],[Aj],[N,V,Av],[N,Aj],[N],[N], [N],[N,Av,Aj],[N],[Aj,V],[V,Av,N],[V],[Av,N],[N], [N,Aj,V],[N],[N,Aj],[N],[N],[N],[N],[N],[N],[N,Aj], [Aj],[Aj,N],[Aj],[N,Aj],[Aj],[N,Aj],[Aj],[N,Aj], [N,V],[N,Aj],[N,V],[V,Aj],[N],[N],[N],[N], [N,Pn,V],[N],[N,Aj,V,Av],[N],[N],[N],[N],[N],[N], [N],[N],[N],[N],[N,Pn],[N],[N],[N],[N,V],[N],[N], [N,Pn,Aj],[Pn],[N,Aj],[Aj],[N],[N],[N,Pn],[N,Aj], [N],[N,V,I,Aj],[Aj],[Aj,N,V],[N],[V,N,Av],[N],[N], [N],[N],[N],[N,Av],[N],[N,V],[N],[N],[N],[N], [N,Aj],[N],[N],[N],[N],[N,V,Aj],[N],[V,N,Aj],[N], [N],[N,Aj,V],[N],[V],[N],[N],[N],[N,Pn],[N],[N], [N,Aj],[Aj],[N,Aj,V],[V],[N,V,Aj],[N],[V,Aj],[Aj], [Aj,N],[N,V],[N],[N,Aj],[N],[Aj,N],[N,V],[N],[N], [N,Aj,V],[N],[Aj,N],[N,V],[Aj,N],[N],[Aj,N],[N], [N,V],[V],[N],[N],[N,Aj],[N],[N,Aj],[N],[Aj,N], [N,V],[N],[N],[N,Aj],[N],[Aj,N],[N],[N],[N],[N,Aj], [N,Av,V],[V,Aj],[Aj],[V,N,Aj],[N],[V,N],[N],[N], [N,Aj],[N],[N],[N,V],[N],[N,Aj],[N],[N],[N,V,Aj], [N],[N,V],[N],[N],[N],[N],[N],[N],[N,V],[N],[N], [N],[N],[N],[N],[N],[N,V],[V],[N],[N,Pn],[N],[N], [N],[N],[N,Nu],[N,V],[N],[N],[N,V],[N,Aj],[N],[N], [N],[N],[N],[N,V],[N],[N,Aj,V],[V],[N,Aj],[N],[N], [N],[N],[N],[N,Av],[N,Aj],[Aj],[N,Aj],[N],[N],[N], [N],[N],[N],[N,V,Pn,Av],[V],[N,Aj],[N],[N,Aj],[N], [N],[N,Aj],[N],[N,V,Pn],[N,Aj],[Aj],[Aj,N],[N], [Aj,N],[N],[Aj,V],[Aj],[V,Av,N],[N],[N],[N],[N], [N],[N],[N],[N,Pn],[N,V],[Pn,N],[N],[N],[N,Av], [N,V],[N],[N],[N,Pn],[N,Aj],[N],[N],[N],[N],[N], [N,Av],[N],[N],[N],[N,V],[N],[N],[N],[N,Aj],[N], [Aj,Av,N],[N,V],[V,Aj,Av],[V],[Aj,V],[V,N],[V], [V,Av],[V,N],[Av,N],[N,Aj],[N],[Aj,N],[Aj],[Aj], [Aj,Nu],[Aj,N],[N],[N,V,Nu],[N,Av,Aj],[Aj,V], [Aj,N],[N] **frequencies: (474, 238, 74, 10)**	
A.Dante, *Inferno, Canto 1*	[N,Aj],[Aj],[Aj],[Aj,N],[Aj,V],[V],[V,N],[V,Nu], [N,Aj],[N],[N],[N,Aj,V],[N],[Aj],[N,Aj,V],[N],[Aj], [Aj],[Aj],[Aj,N,Av],[Aj],[N],[N],[N][N],[N,Aj],[Aj], [N],[N],[N,V],[N],[V,N],[V],[N],[N,Av],[N],[N], [N,V],[V],[V,N,Av],[V],[N,V,Av],[N,Pn,Aj],[V,Aj],	0.60

	[Aj,Av,N],[Aj],[Aj,N,V],[N],[N],[N],[N],[N],[N], [N], [N],[N],[N,V],[N],[V,N],[N],[N,V,Aj],[V], [N,V,Aj],[N,Av],[V,N],[N],[N],[N],[N,Aj],[N],[N], [N],[N,V],[V],[N,Aj],[N],[Aj,V],[Aj],[V,N],[V,Aj], [N,V],[N],[V],[V,N],[V],[V],[V,Av],[V,N,Aj],[Av] **frequencies: (53, 25, 11)**	
M.Eminescu, *Ecò*	[V,Aj],[Aj],[Aj],[Aj,V,N],[N],[N,Aj],[Aj],[N,V],[N], [N],[N],[N,Aj],[N,V],[Aj],[Aj,N],[Aj],[N,V,Aj],[V], [Aj],[Aj],[Aj,N,V],[Aj],[N,Aj],[N],[N],[N,Aj],[N], [Aj],[Aj,V],[V,N],[V],[V,Pn],[V,N],[N],[V,N],[N], [V,Aj,N],[V],[Aj,N],[Aj],[N],[N],[N,Aj],[Aj], [Aj,V, N],[N],[N],[N],[N],[N],[N,V,Aj],[Aj],[Aj], [Aj], [Aj,N],[N],[Aj,N,V],[V],[N],[N,Aj],[Aj], [N,Aj],[Aj],[N,V],[N],[N],[N,V],[N],[N],[N],[N,Aj], [N,V],[N],[N],[N],[N,Pn],[N],[N,V],[N],[N,V], [V,Aj,Pn],[Aj,N],[N,V],[N],[V,Aj,N],[V],[N,V], [N,Aj],[Aj],[Aj,N],[Aj],[N],[N,V],[N],[N],[N,Aj], [N],[N],[N],[N] **frequencies: (59, 32, 9)**	0.59
M.Eminescu, *Epigonii*	[Aj],[Aj,N],[N],[N],[N],[N],[N,Aj],[N],[N,Aj],[N,V], [N,Aj], [Aj],[N,Aj],[Aj],[N,Aj],[Aj],[N],[N,V],[N], [N],[N],[N,Aj],[Aj],[N],[N,Aj,Pn],[Aj],[Aj,N,V],[V], [N,Aj],[Aj],[N,Aj],[Aj],[Aj],[Aj,V,N],[N],[Aj,N], [Aj], [Aj], [Aj,N],[Aj],[N],[N,Aj],[N],[Aj,N],[Aj], [Aj],[Aj],[Aj,N],[N],[N,Aj],[Aj],[Aj,V],[Aj],[Aj,N], [N],[N,Aj],[Aj,V,N],[V],[Aj,N,V],[N],[V],[V,N], [N,Aj],[N],[N],[N],[N,V,Aj],[Aj],[Aj],[Aj,V],[Aj], [Aj],[Aj],[Aj,V,N],[N],[N,Pn] **frequencies: (45, 24, 7)**	0.59
J.Arany, *Czakó sírján*	[N],[N],[N,Av,V],[N],[N,Av],[N],[N,V],[N], [V,Aj,Pn,Av],[Pn,N],[V],[V,N],[N],[V,N],[N],[V], [V,N],[N],[N],[N],[N],[N,V],[V],[N,Av],[N],[N,V], [N],[N],[N],[N,Aj],[N],[N,V] **frequencies: (19, 11, 1, 1)**	0.59
M.Eminescu, *Andrei Mureşanu*	**[**N,V],[N],[N,V,Aj],[Aj],[Aj,V,N],[V],[Aj,V],[V], [V],[V,Aj],[Aj,N,Pn],[Aj],[Aj,N],[Aj,V],[Aj], [Aj,Pn,N],[N,V],[N],[V,Av,Pn,Aj,N],[Av],[V], [V,N,Aj],[Aj],[Aj,N],[N],[N],[N,Aj],[Aj],[N],[N,Aj], [N],[N,Aj],[V],[V,Av],[V],[V],[V,Aj],[Aj,N],[N], [N],[N],[N],[N,V],[V],[N],[N],[N],[N],[N],[N,Aj], [Aj],[N],[N],[N,Pn,V,Aj] **frequencies: (32, 15, 5, 1, 1)**	0.59
F.v.Schiller, *Der Taucher*	[N],[N,Av],[N,V,Aj],[N],[Aj,N],[N,Av],[Av],[Av], [Av,N,V],[V],[V,Av,Aj,N],[Av],[N],[V,N,Av],[V], [V,N],[N],[V],[V,N],[V],[V],[V,N],[N],[N],[N],	0.58

	[N,V],[V], [V],[V],[V,N,Av],[N],[Av,N],[Av,V], [N,Av], [N,V],[N],[V,N],[V,Av],[N],[N],[N,V],[V], [V,N],[V],[N],[N],[N,Av],[Av],[N],[N],[N,Av], [N,V,Part], [N],[N],[N,V,Av],[V],[N,V,Pn], [N,Av,Part],[V,N],[Av,N],[N],[N],[N,V],[V],[N], [N],[N],[N,V,Av],[Av],[V],[V,N],[N],[N,V],[N], [N], [N],[N,V,Av],[N],[N],[N],[N,Av],[Av],[N],[N], [N,Av],[Av,Pn],[Pn,N],[N],[N],[N,V],[N],[V],[V], [V,Av],[Av,N],[V],[V,N],[N,Av],[N],[Av,V,N],[Av], [N],[N,Pn,Av],[Av] **frequencies: (60, 31, 12, 1)**	
M.Eminescu, *Împărat şi proletar*	[Aj],[Aj],[Aj],[Aj],[Aj,N],[N],[Aj,N],[N,V],[N],[V], [V,Aj,N],[V],[N],[N,V,Conj,Aj],[V],[Aj],[Aj], [Aj,Pn],[Aj,V,N],[Aj],[N],[N,Aj],[N],[N,Aj],[N], [N,Aj,V],[V],[N,Pn,V,Aj],[V],[Pn,Aj,V,N],[V], [V,N],[V],[V],[V,Aj],[Aj],[V],[V,N],[N],[N], [N,Aj,Pn,V],[Aj],[N,Aj],[Aj,V],[Aj,N],[Aj], [N,Aj,V],[N],[Aj,V,N],[Aj],[N],[N],[N],[N],[N,Aj], [N],[N,V],[V,Aj],[V],[V,Aj],[Aj],[V,N,Av],[V,Aj], [Aj,N],[V,N],[N],[V,Aj],[V],[V],[V],[V,N,Aj],[N], [V,Aj],[Aj,N],[Aj,V,Pn],[Aj],[Aj,N,V],[N],[V,Aj,N], [Aj],[V,Aj],[Aj],[Aj],[Aj,V],[V,N],[V,Aj],[N,Aj], [N],[Aj],[Aj,Av],[Aj,N,V],[N],[Aj],[Aj],[Aj,N], [N,V],[Aj,N],[N],[Aj],[Aj],[Aj,N],[Aj,V],[N],[N,Aj], [N],[N,Aj],[Aj],[N],[N,Aj],[N],[N,V],[N],[N],[N], [N],[N],[N],[N],[N],[N,Aj],[N],[N,V],[V],[N],[N], [N,V],[N],[N],[N,V],[N],[V],[V],[V],[V,N] **frequencies: (77, 42, 11, 4)**	0.57
M.Lermontov, *Mtsyri*	[Av,V,N],[N],[N],[N],[N],[N],[N],[N,Pn],[N], [N,Pn,Aj],[Aj],[Aj,N],[N,V,Pn],[N],[N],[N,V],[V], [N[,[N],[N],[N],[N,V],[V],[V,N,Nu,Aj],[N],[N], [N,Pn],[N,V],[V],[V],[V,N],[N,Pn,Partiz],[N], [Pn,Aj,N],[N],[Aj,V,N],[N],[Aj,N],[N,V],[N,Av,Pn], [Av,V],[V,Aj,N],[V],[V],[V,Aj,N],[N],[N],[N], [N,V,Pn],[V],[Pn,N],[N],[N,V],[V],[N,Nu],[N,V], [N],[N,V],[V],[V],[V,N],[N],[N],[N,Aj],[N],[N], [N,V],[V],[N,V,Aj],[N],[N],[N,V],[N],[N,V], [N,Aj,Pn],[N,V],[N],[N,V,Av],[N,Aj],[Aj,Pn], [N,Aj],[N,V],[V],[N,Pn],[Pn],[N,V],[V,Av], [N,Aj,Av],[N],[N,Aj],[N],[N,Aj,V],[N],[V], [V,Pn,N],[N,Av],[N,Aj],[N,V],[V,Partiz,Av,Pn],[N], [N,Av],[N],[N],[N],[N,Aj],[N],[N],[N],[N],[N],[N], [N],[N],[N,Pn],[Pn,V],[V],[Pn,Aj,N,Av],[N],[N],[N], [N],[N],[N],[N],[N],[N],[N],[N,Pn,Aj],[Aj],[Pn,N], [N],[N],[N],[N],[N,Pn],[N,Aj],[N,V],[V],[N],[N], [N],[N],[N,Pn],[N,Aj],[Pn],[Pn,N,Aj],[Aj],[Pn],	0.57

	[Pn,N],[N],[N],[N,Pn],[N],[Pn,N],[N],[N,Aj,V],[V], [N,Av,Aj],[N,Pn],[N],[N,V],[N],[N],[N,AdvPartiz], [N,Pa],[N],[N],[N],[N],[N,V],[N],[N,AdvPartiz], [N,Pn],[N],[N,Pn],[N],[N,Aj],[N],[N],[N],[N], [N,Av],[N],[N],[N],[N],[N],[N],[N,Pn,V],[N],[V,N], [N],[V,N],[V],[N],[N],[N],[N,Pn,Aj,Av],[N,V],[V], [N],[N,V],[N],[N,V],[N],[N,Av],[N,V],[Av,N], [N,V,Aj],[N],[N],[N],[N,V],[V],[N],[N,V],[N,Av], [N],[Av],[Av,N],[N,Aj],[Aj],[N],[N,Pn],[N],[N], [N,Partiz],[N,V],[V,Aj],[Aj,Pn,N],[N,Partiz,V],[V], [V],[V,N],[N],[N,Av],[N,Pn],[N,Av],[N],[N,Aj],[N], [N,Aj],[N,Pn],[Pn],[N,Pn],[Pn,Av],[N,Av],[Av,Pn], [N],[N],[N],[N,Aj],[Aj],[Aj,Av,N],[Av,V],[N,ZuKa], [N,V,Partiz],[N,Pn],[N,Aj],[N],[N,V],[N,Nu,Pn], [Pn,AdvPartiz,Aj],[N,Aj],[Aj,Pn],[N],[N,V],[N], [N,Av,Nu],[N,V],[V,Aj],[Aj],[V,Av,N],[N],[Av,N], [N],[N],[N],[N],[N],[N],[N,V],[V],[N,V],[N,Aj], [Aj],[Aj,N],[N],[N],[N],[N,Av],[Av],[N],[N],[N], [N],[N],[N,Pn],[Pn],[N,Av],[N,V],[N],[N],[N,V], [V],[N,Pn],[Pn],[N],[N,Av],[N],[N],[N,Pn],[N], [N,Aj],[N],[N,Pn], [N,V],[V],[N,V],[V,Aj],[N,V], [N,Av],[N],[N],[N],[N,V],[V],[V],[V,N],[N],[N], [N],[N],[N,Aj,Pn,Partiz],[N],[N],[N,Pn],[N],[N], [N,V],[V],[V,N],[N,Av],[N],[N],[N],[N],[N,Pn], [N,V],[N],[V],[V],[V,N,Aj],[N],[N,Pn],[Pa,N,V], [N],[N],[N,V],[V],[N,Av],[Av,Aj,V],[Av,Pn,N], [V],[V,N],[N],[N,AdvPartiz,Pn,Aj],[N],[N,Partiz], [N],[N],[N],[N,Pn,Av],[N,Aj],[N],[N],[N],[N,V],[N], [V,Pn,N,Av],[N],[N,Av,Pn,Aj],[N],[Av,N],[N], [N,Aj], [N],[N],[N,Aj],[Aj],[Aj,N],[N],[N], [N,Partiz],[N],[N],[N,V],[N,Pn],[N],[N],[N],[N],[N], [N],[N,Pn],[N],[N,V,Aj],[N],[N],[N],[N],[N], [N,AdvPartiz],[N,Aj],[N],[N,Av,Pn],[Pn], [N,Partiz,Pn],[N],[N],[N],[N],[N],[N],[N],[N],[N], [N,Av],[Av,Pn],[N],[N,Aj,V],[V,Pn],[N,V], [N,AdvPartiz],[N],[N,V,Pn],[N],[N],[N],[N],[N], [N,Av,Pn,Aj],[N],[Aj,V,N],[Aj],[V],[V,N],[V], [V,Pn,N],[Pn], [N],[N,Aj],[N,Pn],[Aj,N],[N],[N,V], [V],[N,Pn],[Pn],[N,Pn,Aj],[N],[N,V],[V,Pn],[N,Aj], [N], [Aj],[Aj,Pn],[Aj],[Pn],[Pn],[Pn,N],[N],[Pn], [Pn,N],[N],[Pn,N],[N],[N],[N],[N],[N],[N,V],[V], [V],[V],[V],[V],[V,N,Aj],[Aj],[Aj],[Aj,N,Pn],[N], [N],[N],[N,V],[N],[N],[N],[N,Pn],[N],[N,V],[N], [V],[V],[V] **frequencies: (288,160,46,10)**	

M.Eminescu, *Înger şi demon*	[Aj,N],[Aj],[Aj,N],[N],[N,V,Aj],[V],[V,N,Aj],[V], [V,Aj],[Aj],[Aj],[Aj,V],[V],[Aj],[Aj,V],[Aj],[Aj], [Aj,N],[N],[N,Aj],[N],[Aj,V],[Aj],[Aj,N],[Aj], [Aj,V],[V],[V,Aj,N],[N],[V],[V,N],[N],[N], [N,Aj,Pn],[N],[Pn,Aj],[Aj],[Aj],[Aj,Pn],[Aj],[Aj], [Aj],[Aj],[Aj,V],[Aj,N],[Aj],[N],[N,Aj,V],[Aj],[Aj], [Aj,N],[Aj],[N,V],[N,Aj],[Aj,V],[N,Aj],[N,V],[V], [N],[N,V],[V,Aj,Pn],[V],[V,N],[N],[V,Aj,N],[N],[N], [N,Aj,V],[N] **frequencies: (38, 23, 8)**	0.55
M.Eminescu, *Scrisoarea IV*	[N],[N],[N],[N,Av],[N,V],[V],[V,N],[N,Aj],[V,N], [N],[N],[N],[N],[N],[N],[N[,[N],[N],[N],[N,V],[V], [N,V],[N],[N],[N],[N],[N],[N,Aj],[N],[N],[N],[N,V], [N,Av,Aj],[N],[N],[N],[N,Aj],[N,V],[Aj,V], [V,Av,N],[N],[N,V],[N],[V,N],[N],[N,V],[N],[V], [V,N],[V,Av,Aj],[Aj,Pn,N],[N,V],[Aj,V],[N,Aj],[N], [Aj,N,V],[V],[N,Av],[N],[N,Aj],[N],[Aj,V,N],[Aj], [N,Aj],[Aj],[N,V],[V],[V,N],[N],[N],[N],[N], [N,V,Aj],[N],[N],[N,Av,Aj],[N,V],[Aj],[Aj,N],[Aj], [N],[N],[N,V],[N],[N,V],[V],[N,V],[V],[V],[V,Aj], [Aj,N],[Aj,V],[Aj,Av],[V,N,Aj],[Aj],[V,N] **frequencies: (53, 34, 9)**	0.55
A.Sládkovič, *Ctibor*	[N],[N],[N,Aj],[N,V],[V],[V,N],[N],[V,N],[V,Aj], [V,N],[N],[N],[N],[N,Aj,V],[N],[N],[N,V],[N],[N], [N],[N,V,Aj],[Aj],[V,Aj],[Aj],[Aj,V],[Aj],[Aj,N,V], [N],[V,N],[V],[N,V,Aj],[V],[N,V],[V],[V,N],[N,Aj], [V,N],[Aj,N],[N],[N],[N,Aj],[Aj],[Aj,N,V],[N], [N,V,Pn,Aj],[Aj],[V,N],[N],[V],[V,N],[N],[N],[N], [N,V],[N,Aj],[N],[N],[N],[N,Aj],[N,V],[V],[N,Aj], [Aj,N],[N,V],[N],[N,V],[N,Aj],[N],[N],[N],[N],[N], [N],[N],[N,Av],[N],[N,V],[N],[V,N],[V],[V,N], [V,Aj],[Aj],[Aj] **frequencies: (46, 32, 5, 1)**	0.55
J.W.v.Goethe, *Der Erlkönig*	[N],[N],[N,Av],[N,Part],[N],[N,Pn],[Pn],[N], [N,Part,V],[N],[N,V,Av],[N],[Av],[Av,N],[Av,Aj], [N],[N,Av,V],[Av],[N],[N,Aj] **frequencies: (11, 6, 3)**	0.55
R.M.Rilke, *Die Waise*	[N,V,Aj],[N],[N,Aj],[N,V],[Aj,N],[N],[N,V],[V], [V,N],[N],[V,Aj,N],[N],[V],[V,N],[N,Av],[N],[N,V], [N],[N,V],[V],[N,Aj,V],[N],[N],[N],[N],[N,V], [N,Av],[Av],[N,V],[V,Av],[N],[N],[N,V,Av],[N], [Av,N,V],[N],[N,V],[V],[V],[V],[V],[V] **frequencies: (23, 14, 5)**	0.55
M.Eminescu, *Când crivăţul cu iarna...*	[N,Aj,V],[V],[N,V],[N],[N,Aj],[N],[N,V,Aj],[Aj], [Aj], [Aj],[Aj],[Aj,V],[Aj],[V],[V,N],[N,Pn,Aj],[N], [Aj,N,V],[Aj],[N,Aj],[N],[Aj,N,V],[V],[V],	0.54

	[V,N,Aj],[Aj],[N,V,Aj],[N],[N,Aj,Pn],[N], [Pn,V,N,Aj],[V],[N,V,Av],[V],[V],[V],[V,Aj,N], [N],[Aj],[Aj],[Aj,V],[V,Pn],[Aj,Pn],[V,Pn,N],[V], [N],[N,Aj],[N],[N,V],[V],[V,N],[V,Aj],[V,N], [V,Aj],[Aj] **frequencies:** (**29, 14, 11, 1)**	
M.Eminescu, *Feciorul de împărat fără de stea*	[N,Aj],[N,Av],[N],[N],[N],[N,Aj],[N],[Aj,V],[Aj], [V],[V,N],[N,Aj],[Aj],[N],[N],[N],[N,Aj],[Aj,V,Av], [V],[Aj],[Aj,N],[N],[N],[N],[N,Aj],[N,V,Pn],[N],[N], [N,Aj,Av],[N],[Aj],[Aj,V],[Aj,N],[N,V],[Aj,V],[V], [V,N],[N],[N],[N],[N,V],[V],[N,Aj],[Aj],[Aj,N,Pn], [N],[N,Pn],[N,V,Aj],[N],[V],[V,Aj,N],[N],[N,V], [N],[V,N],[V],[V,N],[V],[V,N],[V,Aj],[V],[Aj,V,N], [V],[N,Av],[N,V],[V,Aj],[Aj],[Aj],[Aj,V,N],[V], [V,Aj,N],[N],[N,Aj],[N,V],[V],[N,Aj],[N],[N,Aj], [Aj],[Aj,Pn],[Aj,N],[N],[N],[N,Aj],[Aj],[N,V],[N], [V],[V],[V],[V],[V,Aj,N],[N],[N],[N,V,Pn,Aj],[N], [V,N],[V,Aj],[V],[Aj,V],[V],[Aj,N],[Aj],[N], [Aj,N,Pn],[N],[Aj,V],[Aj],[Aj],[Aj],[Aj],[Aj,N], [Aj,V],[Aj],[V,Aj],[V,Pn,N],[N,Aj,Av],[V],[Aj], [Aj],[Aj,N],[N],[Aj,V],[V],[V,N],[N,Pn],[V,N],[V], [N,V],[N],[N,Aj],[N],[N],[N,Aj],[Aj,V],[Aj],[V,Aj], [V],[Aj,V,N],[V],[V],[V],[V,N],[V],[V],[V,Pn,N], [N,Aj],[N],[Aj,N],[V,N],[V],[V],[V,Aj,N],[Aj], [N,Aj],[N],[Aj],[Aj,V,N],[V],[Aj,V,N],[N],[N,V], [V,Aj],[Aj,Av],[Aj,N],[N],[Aj],[Aj,N],[N],[Aj,N], [N],[N,V],[N],[V,N],[V],[N,V,Aj],[Aj],[Aj],[Aj], [Aj],[Aj,V],[Aj,N],[N],[N],[N],[N],[N,Aj,V],[N], [Aj,N],[N],[Aj,V,N],[V],[N],[N,V],[N],[N,Aj],[Aj], [N,V],[N],[V],[V,Av,Aj,N],[Aj],[Aj,N],[N],[N,Aj], [N,V],[V,Aj],[N,V],[V],[N],[N],[N],[N],[N,Aj],[N], [Aj],[Aj,N,V],[N],[V,Aj,N],[Aj],[Aj],[Aj],[Aj,N], [Aj,V],[N,Aj],[Aj],[Aj,V,Av],[V],[Aj,N,V],[N], [N,Aj,V,Pn],[N],[V,N,Aj],[Aj],[Aj,N],[N], [Aj,Av,N],[N],[N,V],[V],[V,Aj],[V],[Aj,N],[Aj],[N], [N],[N,V,Aj],[Aj],[N],[N,V],[N,Aj],[V,N],[N],[N], [N],[N,V],[N],[N,V],[N],[V,Aj,N],[N,Av,Pn],[N], [Av,Pn,V],[V],[V,Aj],[V,N,Pn],[V,Aj],[Aj,N,Pn], [N],[Aj,N],[Aj],[N],[N],[N],[N,Aj,V],[Aj],[V,N,Aj], [Aj], [N,Aj],[Aj],[Aj,V],[V],[V,Aj,N],[N],[N,V],[N], [N,V,Aj],[N],[Aj,N],[N,V],[N],[N],[N],[N,V],[N], [N,V],[N,Aj],[N],[Aj,N,V],[V],[V],[V],[V,N],[N], [N],[N],[N,V],[N],[V],[V,N,Av],[V],[V,Aj],[V],[V], [V,Aj],[Aj,N],[V,Aj],[V,N],[N],[N,V],[V],[N,Aj], [N],[Aj,N,Pn],[Aj,V],[Aj],[V,N,Aj],[N],[N,Aj],[N], [Aj,N],[Aj],[Aj,N],[N],[N],[N,Aj],[N],[Aj,Pn],[Aj],	0.54

	[Aj,N,Ajv],[N],[N,Pn,V],[N],[V,N],[N],[N,Aj,V], [N],[N],[N],[N],[N,Aj],[N],[Aj],[Aj],[Aj,N],[N], [Aj,Pn],[Aj], [Pn,V],[Pn],[V,Pn,N],[N],[V,N], [V,Pn,Av],[Pn],[V,Aj],[Aj,N],[N],[N,V],[V],[N], [N,V],[N],[N,V],[N],[V],[V],[V],[V,N],[N], [N,Aj,Pn],[N],[N,Aj],[N],[N,Aj,V],[Aj],[N,Aj],[N], [Aj,N,Av],[N],[Aj,V],[V],[Aj],[Aj],[Aj],[Aj],[Aj,V], [Aj],[Aj],[Aj],[Aj,V],[V],[V],[V,N,Aj],[V], [Aj,Pn,N],[Aj],[Aj,N,V,Pn],[V,Av],[N],[N,Aj,V], [Aj],[V],[V],[V,Aj,Pn],[Aj,N],[N],[Aj,N],[N], [Aj,V,N],[Aj],[V,Aj,N],[N],[N,V],[N],[N],[N,Aj], [Aj,Pn,V],[Pn,N],[Aj,N],[N],[N,Aj,V],[N],[N,Aj,Pn], [Aj],[Aj,N],[Aj],[N,Pn],[N,Aj,Av],[Aj,Pn],[Pn,V], [Pn,Aj,N],[Aj,V],[Aj],[V,N],[N,Aj],[N],[Aj],[Aj,N], [N,V],[N],[N,Aj],[N],[Aj],[Aj,N],[N],[N,V,Aj],[Aj], [V,N],[N],[V,N],[N,Aj],[Aj],[N],[N],[N,V,Aj], [Aj,Av,Pn],[V],[V,Aj],[V,Av],[Aj],[Aj],[Aj,N,V], [V],[N,Aj,V],[V],[V,N,Aj],[N],[V,Aj,N,Av,Pn],[V], [N,V, Pn],[N],[V],[V,N],[N],[N],[N],[N],[N],[N,Aj], [Aj,V],[N],[N,V],[N],[N,Aj],[N],[N],[N,Aj],[N], [Aj,N],[N],[N],[N],[N[,[N],[N],[N],[N],[N,V,Aj], [V],[Aj,Av,Pn,N],[Aj],[Aj,N],[Aj],[Aj],[Aj,N,V],[N], [V,N],[V],[V],[V,N,Av] **frequencies: (281, 162, 70, 5, 1)**	
M.Eminescu, *Mureşanu*	[N],[N,V,Aj],[Aj],[Aj,V,N],[V],[Aj,V],[V],[V], [V,Aj],[Aj,N],[V],[V,N],[N,Aj],[N,V],[N,Aj], [V,N],[N],[V,N],[V],[N],[N],[N],[N],[N,Pn,V],[N], [V],[V,N],[N],[N],[N,Aj],[N],[N],[N],[N],[N], [N,Aj,V],[V],[N,V,Aj],[Aj,Pn],[N],[N],[N],[N],[N], [N,V,Aj],[V],[V],[V,N],[N],[N],[N],[N],[N,Aj],[N], [Aj,N],[V,Av,Aj],[N,V],[Aj],[Aj],[Aj],[Aj,V],[Aj], [Aj],[N,Aj],[N,Av],[N,Aj],[N],[Aj,N,Pn],[Aj], [N,Aj],[N],[Aj,N,V],[V],[N,Aj],[Aj,V],[Aj],[V,Pn], [Pn,Aj,N],[Aj,V],[N,Pn],[N,V],[V,Aj],[V],[Aj,N], [N],[N],[N,Aj],[Aj],[Aj,V],[V],[Aj],[Aj,V],[V,N], [N,Aj],[Aj,V],[N,V],[N,Aj],[N],[N],[N,V],[N],[N], [N,Aj],[N],[Aj,V,N],[N],[V,Aj,N],[Aj],[Aj,N],[Aj], [N,V],[V],[N],[N,V],[N],[N,V],[V,Aj],[N,Aj], [V,Aj],[V,N],[N],[N,V],[N],[N],[N],[N,V],[V,Aj], [N],[N],[N,V],[N],[N],[N,Aj,V],[N],[N],[N,V],[N], [V,N,Aj],[N],[N],[N,Pn],[N] **frequencies: (75, 53,14)**	0.53
M.Eminescu *Luceafărul*	[N,Av,Aj],[N],[N,Pn],[N],[N],[N,V],[N],[V,N],[V], [N,V],[N,Aj],[N],[N,V],[N],[N,V,Pn],[N],[N,V,Pn], [N],[N],[N,Av,V],[N,Aj],[N,V],[Aj],[Aj,N],[N], [N,V],[N],[V,N],[V,Aj],[N],[N,V,Av],[Av],	0.53

	[Av,N,V],[V,Aj],[V,N],[N],[N],[N],[N,Aj],[N],[Aj], [Aj,N],[Aj,Av],[Av,N,Pn],[N,V],[Av,N],[N,Aj,V], [Av,N],[N,Aj],[N,V],[N],[V],[V,Av,N],[N],[N,V], [N],[V,Pn,Aj,N],[V],[N,V,Aj],[N],[N,V],[V],[N,V], [V],[N],[N],[N,V],[N],[V,N],[N],[V,N,Aj],[N],[Aj], [Aj,N],[N],[Aj,Av,Pn,N],[Aj],[V,Av,N,Aj],[N], [V,Pn,N],[V],[V,Av,N],[N],[V],[V],[V,Av,Aj],[Aj], [Aj,V,N],[V],[N,Pn],[N],[Pn],[Pn,N,Av,Aj],[N], [N,Aj,V],[V],[N,Av],[N],[N],[N],[N],[N],[N],[N], [N],[N],[N],[N,Aj],[N,V],[N,Av],[N,Aj],[Av,N], [N,V],[Av,V],[N,V],[Av,N],[N,V],[N],[V,Av,N], [N,Aj],[N],[Aj,V,N],[N,Av],[N,Aj],[N,Av],[Aj,V], [V,N],[Aj],[Aj,V],[Aj,Pn,N],[Pn],[Aj,N],[Aj],[N,V], [N],[V,Pn,Aj],[V,Av],[V,Aj],[V,N,Av],[V],[N,Aj], [V],[V,N],[N],[N,Aj],[Aj],[N],[N,V],[N],[V,N,Av], [N],[Av,Pn,N],[Pn],[N],[N,V,Av],[N,Aj],[N,V],[N], [V],[V],[V,Av,Aj,N],[V],[V,N],[N],[N],[N],[N],[N], [N],[N],[N,V],[N],[V,N],[N],[N],[N],[N,V],[V,Av], [N],[N],[N],[N],[N],[N],[N],[N],[N,Av,V],[N], [N,V],[V],[V],[V],[V],[V,N],[N],[N],[N],[N],[N,V], [N],[N],[N],[N,V,Av],[V],[V],[V,Aj],[V,N],[V,Av], [V,N],[V,Aj],[N],[N],[N],[N,Av],[N,V,Aj],[Aj], [Aj,V,N],[N],[V],[V,N,Av],[Av],[N,V],[N],[N],[N], [N,Aj],[N,V],[Aj,V],[Aj,N],[N,V],[N],[N],[N],[N], [N],[N],[N,Aj],[Aj,V],[V],[Aj] **frequencies: (127, 78, 29, 5)**	
A.Dante, *Inferno, Canto 1I*	[Aj,N,Nu],[N],[N,V],[V],[V,N],[V,Aj],[V,N], [Aj,Av],[Aj,N,Pn],[N],[N,Aj],[N,Aj],[N],[N],[N], [N],[N],[N],[N,V],[V],[V],[V,Aj],[V],[V,N],[V], [N],[N,Aj],[N],[N,Aj,V],[V],[N,V],[V],[V,Aj],[Aj], [V,N],[Aj,N],[Aj],[Aj],[Aj,N],[Aj],[N,Aj,V],[Aj], [Aj,N],[Aj,V],[V],[V,Pn],[Pn],[Pn],[Pn,Aj], [Pn,N,Av],[N,V],[N],[V,Av],[V],[V,N,Av,Aj],[Aj], [V],[V],[V],[V],[V,N],[N],[V,N],[V],[N,Aj],[Aj],[N], [N,V],[V,Aj],[N,Aj],[N],[Aj,V,Pn],[V,Av],[V],[V], [V],[V,Aj],[V],[Aj,N,V],[N],[V,N,Aj],[V],[Aj,V], [Aj],[V,Aj,Pn,N,Nu],[N],[V,N] **frequencies: (45, 32, 8, 1, 1)**	0.52
S.Chalupka, *Turčín Poničan*	[Aj,N],[N],[N,V],[V],[V],[V,N],[N],[N,Aj],[N],[N], [N,Pn,V],[N],[V],[V],[V],[V],[V],[V,N,Aj],[V,Av], [Aj,N],[N],[N,V],[N,Pn],[V,N],[N],[N],[N,Pn], [N,V],[V],[V],[V], [V],[V,Aj],[Aj,N],[N],[N],[N,V], [V], [N,Pn],[N,V],[V],[V,Av],[V,N],[N],[N],[N,Aj], [N,V],[N],[V],[V,N],[N],[N],[N],[N],[N,V],[V],[N], [N,Pn],[Pn,V],[V,N],[N,Aj],[V,Pn,N],[Aj,V] **frequencies: (33, 27, 3)**	0.52

J.Arany, *Emléklapra*	[N,V],[N,Av],[V],[N,Av],[N],[N],[N],[N,Pn,V], [V,Aj],[V,N],[V,Pn],[N],[N,Pn],[N],[Pn,N,V],[N], [N],[N,V],[N],[V],[V,N],[N],[N,Pn],[N,Av],[N], [N,V],[N,Av],[V], [Av,N],[Av],[N,Av,V],[N],[N] **frequencies: (16, 14, 3)**	0.48
D.Kosztolányi, *Hajnali részegség*	[V,N],[N,Av],[N],[N],[N],[N,Pn],[N],[Pn,N],[N],[N], [N],[N,V],[V],[N,Art,V],[V],[N,V],[N,Av],[V,Av], [N],[N,Pn],[N,Av],[Av,V],[N],[N,V,Art],[N,Av], [Av],[Av,Pn,N],[N],[N],[N],[N,V],[N],[V,N],[V,Aj], [V,Av,N],[V],[Av],[Av,Pn,V,N],[Av],[N],[N,Av,V], [V],[V],[V],[V,Av,Aj,N],[V],[V,N],[N,Aj],[N], [N,V],[N,Aj],[N,V],[V,Aj],[N],[N],[N],[N,V],[N], [V,Av],[V,N],[V,Art],[V,N,Nu],[V],[V],[V], [V,Art,N],[V,Aj,Av],[Av],[V,N],[V,Pn],[N],[N], [N,Nu,V,Av,Pn],[N],[Av],[Av,V],[V],[Av,N],[N,V], [Av,V],[N,V],[N],[V] **frequencies: (40, 32, 8, 2, 1)**	0.48
A.Dante, *Inferno, Canto III*	[Aj,N],[N],[N],[N],[N,Aj],[Aj,V],[Aj,N],[Aj],[Aj,N], [Aj,V],[Aj,N],[N,V],[N],[N],[N,V],[N],[N,Pn,V],[V], [V,Aj],[V],[V,N,Pn],[N],[N],[N,V,Aj],[V,Pn], [Aj,Av],[Av,N],[Aj,N,V],[V],[V,N,Aj],[Aj],[V],[V], [V,N,Pn],[N],[V,Aj,Pn],[Aj,Av],[Av,N],[N,V],[V], [N,V],[N,Aj],[Aj],[N],[N],[N,Aj],[Aj,V],[N],[N,Aj], [N],[N],[N,Aj],[Aj,V],[N,V],[V],[V],[V],[V,N], [N,Aj],[Aj],[N,Aj],[N],[N],[N,Av,Aj,V],[N],[V], [V,N],[N],[N],[N,Nu],[N,Aj,V],[V],[Aj,N],[N], [N,V],[V],[N,Aj,V],[N],[Aj,N,V] **frequencies: (37, 31, 10, 1)**	0.47
M.Rázus, *Matka*	[V,Pn,N],[Pn],[N,V],[N],[V],[V,N,Aj],[N],[V,N], [V,Aj,Av,Pn],[V],[V,Aj,Pn,N],[N],[V,Aj],[Aj,N], [V],[V,N],[N,Av],[V,Av],[V],[V,Aj,N],[V],[N], [N,V],[V],[N],[N,V,Aj] **frequencies: (12, 8, 4, 2)**	0.46
M.Eminescu, *Basmul ce i l-aş spune ei*	[N,Aj],[N,V],[V],[N],[N,Aj],[N,Av],[Aj,Av],[Aj], [Av,Aj,N,Pn],[Aj],[N,Pn],[N,V],[N],[N,Aj],[Aj,V], [V,N],[V],[N,V,Aj],[Aj],[N],[N],[N],[N],[N],[N], [N,V],[N,Av],[V,N,Aj],[Aj],[N,Av],[N,V],[N],[N,V], [N,Av,Aj],[Aj],[Aj,N],[N],[N],[N,V],[N,Pn],[V,N], [N,Aj],[Aj],[Aj],[Aj,I,N,V],[V],[N,Pn],[N,V],[N,Aj], [V],[V],[V,Aj],[Aj],[Aj] **frequencies: (25, 24, 3, 2)**	0.46
P.Verlaine, *Adieu*	[N,V],[N,Aj],[Aj],[N,V],[N,Aj],[V,Aj],[N],[N],[N], [N,Av,V],[N],[V,Aj],[V,Pn,N],[Pn],[N,Av],[N],[N], [N,Aj],[N],[N,Aj],[Aj,V],[N] **frequencies: (10, 10, 2)**	0.45
J.Arany,	[N,Pn],[N,V,Av],[Pn,N],[N],[N,V],[V],[V,N,Av],	0.39

Válasz Petöfinek	[V],[N,V],[V,Aj],[N],[N,Av,V],[N],[N,V],[N],[V,N], [N],[N,Pn] **frequencies: (7, 8, 3)**	
Ch.Baudelaire, *Confession*	[N,Aj],[N],[Aj],[Aj,V,N],[V],[Aj,Av],[Aj], [Av,Aj,N,V],[N],[N,Aj],[Aj,Av],[Aj,V,N],[Av,Aj], [Aj,V],[Aj,N],[Aj,V],[Aj],[Aj,N],[N],[N,Aj],[N], [Aj,N] **frequencies: (8, 11, 2, 1)**	0.36

We ordered the texts according to decreasing P_1. The order may serve other researchers to study the development of the given writer or the development of poetry in some language. It is quite natural that here mostly motifs with length 1 are the most frequent ones because we took into account every restricted class, that of POS. Other entities, especially numerical ones, could contain longer motifs.

Since in most cases the frequencies of motif length decrease monotonically, one can fit to them the exponential distribution and consider the exponent as the characteristic of the poem. In a very short text it may happen that no function is adequate because there are a small number of classes. The ordering according to the exponent differs from that of the relative number of lengths 1 and we obtain a different order of poems.

The new order is presented in Table 9.2. In this case, one cannot use the Zipf-Alekseev function which has been applied to lengths of any kind in language. The reason is simple: the sequences are too short but the number of parameters (= 3) is too large. However, it is possible to add the empty class 4 having the frequency 0 and obtain sometimes a good fit. Unfortunately, this is not always possible.

Table 9.2

Fitting the exponential function to POS-motif lengths

Text	1	2	3	4	5	Parameters
M.Eminescu, *Scrisoarea III*	152.38	44.47	12.98	3.79	-	a = 522.0760, b = 1.2314 R^2 = 0.9984
V.Turčány, *Mám svoje mesto rád*	32.96	9.28	2.61	0.74	-	a = 117.0400, b = 1.2673 R^2 = 0.9995
M.Eminescu, *Scrisoarea I*	68.68	25.02	9.20	3.38	-	a = 184.9532, b = 1.0002 R^2 = 0.9990
P.O.Hviezdoslav, *Krvavé sonety*	194.58	77.51	30.87	12.29	-	a = 488.5071, b = 0.9205 R^2= 0.9861
M.Eminescu, *Scrisoarea V*	51.89	20.97	9.49	3.43	-	a = 128.3131, b = 0.9053 R^2= 0.9777
Ch.Baudelaire, ***	27.82	11.24	4.54	1.83	-	a = 68.8573,

Une martyre						b = 0.9062, R^2 =0.9377
V.Turčány, *ListVitězslavovi Nezvalovi* ***	29.02	8.92	2.74	0.84	-	a = 94.4400, b = 1.1798, R^2 = 0.9985
J.Arany, *Alkalmi vers****	23.23	7.70	2.55	0.84	-	a = 70.1306, b = 1.1049, R^2 = 0.9856
Ch.Baudelaire, *Benediction****	35.70	13.66	5.22	2.00	-	a = 93.3075, b =0.9609, R^2 = 0.9670
A.Sládkovič, *Kykymora****	45.55	17.52	6.74	2.59	-	a = 118.4569, b = 0.9557, R^2 = 0.9868
M.Eminescu, *** *Icoană şi privaz*	83.82	32.53	12.62	0.90	-	a = 215.9823, b = 0.9465, R^2 = 0.9855
S.Chalupka, *Mor ho*	72.25	28.24	11.04	4.31	-	a = 184.8626, b = 0.9395, R^2 =0.9957
M.Eminescu, *Încăutarea Şeherezadei*	64.63	26.52	10.88	4.47	-	a = 157.4816, b = 0.8907, R^2 = 0.9917
M.Eminescu,*** *Călin (File de poveste)*	111.67	46.65	19.49	8.14	-	a = 267.3149, b = 0.8729, R^2 = 0.9632
J.Arany, *Év kezdetén*	20.72	8.68	3.64	1.52	-	a = 49.4465, b = 0.8700, R^2 = 0.9082
M.Eminescu, *Ondina(Fantazie)*	83.99	34.72	14.35	5.93	-	a = 203.1569, b = 0.8833, R^2 = 0.9900
M.Eminescu, *Memento mori*	481.62	208.09	89.91	38.85	-	a = 1114.6840, b = 0.8392, R^2 = 0.9841
M.Eminescu, *** *Ecò*	60.41	26.60	11.72	5.16	-	a = 137.1649, b = 0.8201, R^2 = 0.9688
A.Dante, *Inferno Canto 1* ***	53.56	23.28	10.12	4.40	-	a = 123.2215, b = 0.8333, R^2 = 0.9851
M.Eminescu, *Epigonii****	46.00	20.16	8.84	3.87	-	a = 104.9757, b = 0.8250 R^2 = 0.9717

J.Arany, *Czakó sírján*	19.58	8.43	3.63	1.56	-	a = 45.4795, b = 0.8429, R^2 = 0.9378
M.Eminescu, *Andrei Mureşanu*	32.34	13.62	5.74	2.42	1.02	a = 76.8007, b = 0.8648, R^2 = 0.9934
F.v.Schiller, *Der Taucher*	60.98	27.64	12.53	5.68	-	a = 134.5385, b = 0.7913, R^2 = 0.9828
M.Eminescu, *** *Înger şi demon*	39.23	18.89	9.10	4.38	-	a = 81.4701, b = 0.7307, R^2 = 0.9542
M.Eminescu, *Împărat şi proletar*	78.62	35.49	16.02	7.23	-	a = 174.1543, b = 0.7953, R^2 = 0.9759
M.Eminescu,*** *Scrisoarea IV*	55.15	26.39	12.62	6.04	-	a = 115.2794, b = 0.7373 R^2 = 0.9356
A.Sládkovič, *Ctibor*	48.35	23.17	11.10	5.32	-	a = 100.8992, b = 0.7356, R^2 = 0.9006
J.W.v.Goethe,*** *Der Erlkönig*	11.21	5.44	2.64	1.28	-	a = 23.0896, b = 0.7227, R^2 = 0.9677
RM.Rilke, *** *Die Waise*	23.76	11.52	5.59	2.71	-	a = 48.9876, b = 0.7237, R^2 = 0.9534
M.Eminescu, *Când crivăţul cuiarna...*	28.96	14.97	7.74	4.00	-	a = 56.0181, b = 0.6597, R^2 = 0.9489
M.Eminescu,*** *Mureşanu*	78.99	39.61	19.86	9.96	-	a = 157.5126, b = 0.6902, R^2 = 0.9084
M.Eminescu, *Luceafărul*	130.84	65.54	32.83	16.45	-	a = 261.1896, b = 0.6913, R^2 = 0.9641
A.Dante, *Inferno Canto 1I*	47.50	23.66	11.78	5.87	2.92	a = 95.3602, b = 0.6970, R^2 = 0.9266
S.Chalupka, *** *Turčín Poničan*	35.58	17.78	8.89	4.44	-	a = 71.1870, b = 0.6935 R^2 = 0.8251
M.Eminescu, *Feciorul de împărat fără de stea*	288.81	139.21	67.10	32.34	15.59	a = 599.1934, b = 0.7298, R^2 = 0.9725

J.Arany, *** *Emléklapra*	17.22	9.06	4.77	2.51	-	a = 32.7291, b = 0.6422, R^2 = 0.8516
D.Kosztolányi, *Hajnali részegség*	42.96	22.72	12.01	6.35	3.36	a = 81.2492, b = 0.6372, R^2 = 0.8969
A.Dante, *Inferno Canto III*	38.94	22.41	12.57	7.05	-	a = 71.2087, b = 0.5781 R^2 = 0.8356
M.Rázus, *Matka*	12.28	7.21	4.24	2.49	-	a = 20.9052, b = 0.5320 R^2 = 0.9832
M.Lermontov, *Mtsyri*	294.67	134.57	61.46	28.07	-	a = 645.2133, b = 0.7837 R^2 = 0.9734
A.Sládkovič, Marina	1261.44	506.93	203.72	81.87	32.90	a = 3138.9302, b = 0.9116 R^2 = 0.9804

Since some poems represent rather an exception, we collected them in Table 9.3 and fitted to them some other functions. Needless to say, for several other texts some "better" functions could be found but we merely want to show a possible way.

Table 9.3
Exceptions

Text	**Function**				**Parameters**
	1	2	3	4	
Ch.Baudelaire, *Confession* (Zipf-Alekseev ft.)	**8** 8.01	**11** 10.97	**2** 2.21	**1** 0.32	a = 3.2332, b = -4.0088, c = 8.0071, R^2 = 0.9926
P.Verlaine, *Adieu* (Lorentzian 3 p.)	**10** 10.00	**10** 10.01	**2** 1.72	**0** 0.65	a = 25.0387, b = 1.5002, c = -0.4078, R^2 = 0.9940
M.Eminescu, *Basmul ce i l-aş spune ei* (Lorentzian 3 p.)	**25** 25.00	**24** 23.99	**3** 3.32	**2** 1.22	a = 116.7862, b = 1.4935, c = 0.2576, R^2 = 0.9985
J.Arany, *Válasz Petöfinek* (Lorentzian 3 p.)	**7** 6.98	**8** 8.05	**3** 2.48	**0** 1.02	a = 10.4238, b = 1.5640, c = 0.8027, R^2 = 0.9680

10. Inertia of POS

In the same way as words, word lengths, rhyme lengths etc. follow a kind of regularity, one can ask whether the POS to which the rhyme words belong follow some tendency. In some languages it is easier to create a rhyme using two words belonging to the same POS than for example, to rhyme an adjective with a noun. It depends also on the type of rhyme: for AABB… it is easier to state a kind of inertia than for ABAB,… In any case we check the Skinner hypothesis using some longer poems in various languages. The results are presented in Table 10.1. Here, we evaluate merely the fit of the above defined exponential function but other functions can be applied, too. The numbers in the first column denote the length of runs (chains) of equal POS.

Table 10.1
Fitting the exponential function to chains of rhyme-word-POS

	A.Dante, *Inferno, Canto III*		D.Kosztolányi, *Hajnali részegség*		M.Eminescu, *Feciorul de împărat fără de stea*		A.Dante, *Inferno Canto II*	
Chain	Freq	Exp	Freq	Exp	Freq	Exp	Freq	Exp
1	54	53.98	76	76.04	409	407.86	78	77.96
2	19	19.37	16	15.52	92	100.68	14	14.38
3	9	7.37	2	3.81	40	25.42	4	3.33
4	1	3.21	3	1.54	13	6.98	3	1.40
5	2	1.77	3	1.11	10	2.47	1	1.07
6					2	1.36	-	-
7					1	1.09	1	1.00
8					-	-		
9					-	-		
10					1	1.00		
	a = 152.7719 b = 1.0591 R^2 = 0.9960		a = 387.8376 b = 1.6426 R^2 = 0.9977		a =1660.6833 b = 1.4065 R^2 = 0.9972		a = 442.7745 b = 1.7497 R^2 = 0.9993	
	M.Eminescu, *Luceafărul*		M.Eminescu, *Mureşanu*		A.Sládkovič, *Ctibor*		M.Eminescu, *Scrisoarea IV*	
Chain	Freq	Exp	Freq	Exp	Freq	Exp	Freq	Exp
1	202	201.89	100	99.76	50	49.79	62	61.85
2	42	42.98	25	26.68	14	15.32	14	15.17
3	12	9.77	10	7.68	7	5.20	6	4.30
4	3	2.83	5	2.74	3	2.23	4	1.77
5	2	1.38	1	1.45	2	1.36	-	-
6	2	1.08	3	1.12	-	-	2	1.04
7	1	1.02			-	-	-	-
8	-	-			1	1.01	-	-

9	2	1.00					-	-
10	-	-					-	-
11	1	1.00					-	-
12							1	1.00
	a = 961.2957 b = 1.5655 R^2 = 0.9998		a = 379.8354 b = 1.3470 R^2 = 0.9977		a = 166.2708 b = 1.2260 R^2 = 0.9966		a = 261.3132 b = 1.4573 R^2 = 0.9963	
	M.Eminescu, *Împărat şi proletar*		M.Eminescu, *Înger şi demon*		F.v.Schiller, *Der Taucher*		M.Eminescu, *Epigonii*	
Chain	Freq	Exp	Freq	Exp	Freq	Exp	Freq	Exp
1	95	95.27	40	40.10	64	63.51	35	35.16
2	31	29.13	16	15.36	17	19.93	17	15.93
3	6	9.40	5	6.27	10	6.73	5	7.52
4	4	3.51	4	2.94	6	2.74	6	3.85
5	2	1.75	1	1.71	2	1.53	-	-
6	-	-					1	1.54
7	-	-						
8	-	-						
9	1	1.01						
	a = 315.8934 b = 1.2092 R^2 = 0.9977		a = 106.5123 b = 1.0020 R^2 = 0.9964		a = 206.4027 b = 1.1945 R^2 = 0.9882		a = 78.1642 b = 0.8278 R^2 = ß.9835	
	M.Eminescu, *Memento mori*		M.Eminescu, *Ondina*		M.Eminescu, *Călin (File de poveste)*		M.Eminescu, *În căutarea Şeherezadei*	
Chain	Freq	Exp	Freq	Exp	Freq	Exp	Freq	Exp
1	446	445.15	72	71.66	82	81.44	77	76.97
2	150	153.85	24	25.86	29	31.76	6	6.75
3	56	53.60	12	9.75	16	12.76	6	1.44
4	20	19.10	5	4.08	5	5.50	4	1.03
5	17	7.23	1	2.08	5	2.72	5	1.00
6	6	3.14	3	1.38	-	-	-	-
7	4	1.74	1	1.13	1	1.25	-	-
8	3	1.25			1	1.10	1	1.00
9	1	1.09			-	-		
10	-	-			1	1.01		
11	2	1.01						
12	-	-						
13	-	-						
14	1	1.00						
	a=1290.6219 b = 1.0667 R^2 = 0.9993		a = 200.8238 b = 1.0446 R^2 = 0.9966		a = 210.3858 b = 0.9614 R^2 = 0.9956		a = 1003.9676 b = 2.5814 R^2 = 0.9895	

	S.Chalupka, *Mor ho!*		M.Eminescu, *Scrisoarea III*		M.Eminescu, *Scrisoarea I*		M.Eminescu, *Scrisoarea V*	
Chain	Freq	Exp	Freq	Exp	Freq	Exp	Freq	Exp
1	70	69.48	85	84.89	54	54.47	39	39.33
2	15	18.96	15	15.99	23	20.49	17	14.90
3	13	5.71	5	3.68	5	8.10	2	6.04
4	3	2.23	6	1.48	3	3.59	5	2.83
5	1	1.32	4	1.09	2	1.94	-	-
6	1	1.08	4	1.02	1	1.34	1	1.24
7	-	-	4	1.00	-	-	1	1.09
8	1	1.01	1	1.00	-	-	1	1.03
9			2	1.00	-	-		
10			2	1.00	-	-		
11			-	-	-	-		
12			-	-	-	-		
13			1	1.00	1	1.00		
	a = 261.1297 b = 1.3385 R^2 = 0.9814		a = 469.5222 b = 1.7222 R^2 =0.9915		a = 146.7435 b = 1.0095 R^2 = 0.9929		a = 105.6970 b = 1.0143 R^2 = 0.9790	

	A.Dante, *Inferno, Canto 1*		M.Eminescu, *Icoana si privaz*		P.O.Hviezdoslav, *Krvavé sonety*		S.Chalupka, *Turčín Poničan*	
Chain	Freq	Exp	Freq	Exp	Freq	Exp	Freq	Exp
1	73	72.94	60	60.93	169	168.54	31	30.75
2	7	8.10	30	26.12	48	50.90	8	9.52
3	7	1.70	9	11.53	20	15.86	5	3.44
4	3	1.07	2	5.41	6	5.43	4	1.70
5	1	1.01	-	-	4	2.32	-	-
6	-	-	2	1.77	4	1.39	3	1.06
7	-	-	-	-	1	1.12		
8	-	-	-	-	2	1.03		
9	-	-	-	-	1	1.01		
10	1	1.00	-	-	-	-		
11			-	-	1	1.00		
12			-	-	1	1.00		
21			1	1.00				
	a = 728.7450 b = 2.3154 R^2 = 0.9918		a = 143.0079 b = 0.8696 R^2 = 0.9878		a = 562.4973 b = 1.2112 R^2 = 0.9986		a = 103.8174 b = 1.2498 R^2 = 0.9750	

	M.Eminescu, *Ecó*		J.Attila, *Eszmélet*		M.Eminescu, *Basmul ce i l-aş spune ei*		A.Sládkovič, *Marína*	
Chain	Freq	Exp	Freq	Exp	Freq	Exp	Freq	Exp
1	60	59.73	39	38.94	46	45.98	1083	1078.65
2	17	18.63	11	11.34	10	10.14	304	327.01

3	8	6.29	-	-	3	2.86	113	99.63
4	5	2.59	3	1.77	2	1.38	71	30.84
5	1	1.48	2	1.21	-	-	35	10.03
6	-	-	1	1.06	-	-	26	3.73
7	1	1.04	1	1.02	1	1.00	12	1.83
8							7	1.25
9							7	1.08
10							-	-
11							1	1.01
12							2	1.00
13							1	1.00
	a = 195.6702 b = 1.2035 R^2 = 0.9955		a = 139.2353 b = 1.3002 R^2 = 0.9980		a = 222.4931 b = 1.5941 R^2 = 0.9997		a = 3562 b = 1.1956 R^2 = 0.9966	

	M.Lermontov, *Mtsyri*	
Chain	Freq	Exp
1	293	292.77
2	98	98.21
3	29	32.95
4	17	11.05
5	7	3.71
6	5	1.24
7	4	0.42
8	2	0.14
9	1	0.05
10	1	0.02
11	1	0.01
a = 872.7715, b = 1.0923, R^2 = 0.9988		

As can easily be stated in all cases we tested, the exponential function is sufficient. Needless to say, the power function or other simple functions had brought good results, too. In order to come to a more fixed result, many languages and texts must be analyzed.

We can merely conjecture that the inertia is stronger the smaller the parameter "b**"** and the longer the field of data. In any case, one may conjecture that there is some law behind the length of runs of POS of rhyme words.

Here, we compute Gini's coefficient for parts-of-speech using the above table. The results are presented in Table 10.2.

Table 10.2
Gini's coefficient of POS

Text	***V***	***N***	***G***	σ^2
A.Dante, *Inferno Canto I*	10	92	0.8065	0.00078
A.Dante, *Inferno Canto II*	7	101	0.7412	0.00018
A.Dante, *Infern Canto III*	5	85	0.5741	0.00038
M.Eminescu, *Icoană şi privaz*	14	104	0.8242	0.00010
M.Eminescu, *Scrisoarea I*	13	89	0.8073	0.00016
M.Eminescu, *Mureşanu*	5	144	0.5806	0.00030
M.Eminescu, *Luceafărul*	11	267	0.8240	0.00005
M.Eminescu, *Scrisoarea III*	13	129	0.7370	0.00025
M.Eminescu,*În căutarea Şeherezadei*	8	99	0.7311	0.00026
M.Eminescu, *Împărat şi proletar*	9	139	0.7754	0.00009
M.Eminescu, *Ondina*	7	118	0.6441	0.00026
M.Eminescu, *Ecó*	7	92	0.6770	0.00019
M.Eminescu, *Călin (File de poveste)*	7	138	0.6460	0.00019
M.Eminescu, *Feciorul de împărat fără de stea*	10	568	0.8028	0.00002
M.Eminescu, *Scrisoarea IV*	12	89	0.8062	0.00018
M.Eminescu, *Înger şi demon*	5	66	0.5455	0.00056
M.Eminescu, *Epigonii*	5	64	0.5729	0.00052
M.Eminescu, *Memento mori*	14	706	0.8261	0.00014
M.Eminescu, *Scrisoarea V*	8	66	0.6705	0.00048
M.Eminescu, *Basmul ce i l-aş spune ei*	7	62	0.7281	0.00034
D.Kosztolányi, *Hajnali részegség*	5	100	0.6360	0.00034
J.Attila, *Eszmélet*	7	57	0.6617	0.00066
F.v.Schiller, *Der Taucher*	5	99	0.5455	0.00042
P.O.Hviezdoslav, *Krvavé sonety*	12	257	0.7928	0.00049
A.Sládkovič, *Marína*	13	1662	0,8088	7.2786E-06
A.Sládkovič, *Ctibor*	8	77	0.7062	0.00030
S.Chalupka, *Turčín Poničan*	6	51	0.5392	0.00106
S.Chalupka, *Mor ho*	8	104	0.7163	0.00021
M.Lermontov, *Mtsyri*	11	458	0.7801	0.000136

Preliminarily, we obtained *G* values in the interval <0.5392, 0.8261>.
For Gini's coefficient concerning the POS the same holds as for rhyme word lengths: a new field of investigation opens and any conjectures must be tested using a much greater number of texts in every language.

11. Semantic Word Classes

This is, perhaps, the most complex and most nonuniform chapter of linguistics. In each language the speakers see the world differently and the theoretical linguists create different classes (even in one language). The differences may be seen especially in translations. Also the style dictates different words for the same concept. The problems arose especially in domains where one tries to express the degree of "things", e.g. *love* vs. *admire.* The physical space is oriented differently in individual languages. The linguistic schools follow old prescriptions or make a "scientific revolution" and perform a new classification. There are a number of semantic classifications of nouns or adjectives or verbs, etc. This is a quite normal way of science in which "great unifications" come after centuries. Unfortunately, language changes quickly and the possible "classes" may change not only with linguists but also with speakers. There may be even idiolectal differences evoking discussions among the theoreticians.

We would like to propose a semantic analysis of individual rhyme words but we do not believe that a logical procedure could be found which would hold true for all languages. Besides, we would be forced to develop a unique classification and evaluation procedure but this would not function even in the circle of the authors of this book who have different mother languages. Nevertheless, we recommend setting up such classifications at least for European languages. Perhaps the study of the history of poetry would at least show the ways of development. Development in language is a self-regulating process and we are persuaded that some laws, i.e. processes valid for all languages can be found. We postpone this task.

12. Conclusions

Rhyme is a very restricted phenomenon, and we restricted it still more taking into account only the phonetic identity and parts-of-speech at the end of the line. Nevertheless, even such a restricted phenomenon can be quantified, measured, tested and modeled. The authors of poems do not even know that there may be certain tendencies; they care for euphony and the expressivity of rhyme words. But subconsciously they submit the writing to fully unknown laws. And even if the rhyming changes in the course of years, the laws remain.The questions of theoretical linguists are: (1) what are the laws? (2) how did the parameters change in the evolution? (3) what are the differences between text types and languages? The literary scientist can use the data and explicate the results in his own way.

The languages we touched are, of course, merely a very modest choice of all possibilities. But the result is, again, a convincing, though not final, demonstration of a way that must be followed in the future if one wants to perform the given discipline scientifically. We are not interested in statements about "what the poet wanted to say" but in the formal features of what was the said. And the form obeys conscious (prescribed) forms or unconscious laws which may be joined in a theory. However, at the present state of research, it would be premature to try to give some "final" responses, to substantiate the exceptions, to find subsidiary conditions, to correlate the results with the developmental state of poetry in individual languages, to construct Köhlerian circuits, etc. We merely show a possible way of further research.

We recommend to analyze longer texts but not mixtures of texts, e.g. a corpus as a whole. The above methods are adequate to show the differences between text types, even between languages. It is recommended to analyze translations of the same text but to avoid religious texts in which no spontaneity remained.

Appendix

Sequence of rhyme word lengths in *Marína* by A.Sládkovič

[2,3,3,3,2,2,3,3,3,3,2,3,2,3,3,3,2,3,2,2,3,3,3,3,3,3,3,4,3,2,3,2,3,2,3,2,3,4,3,3,3,3,3,2,2,
2,4,2,2,4,3,2,3,3,3,3,2,3,3,3,2,4,3,2,2,3,3,4,3,2,1,2,1,2,2,1,3,3,2,3,2,4,2,3,3,3,3,3,2,3,2,
2,1,2,3,3,2, 3,2,3,2,3,4,2,4,2,3,2,2,3,3,3,3,2,3,3,2,2,3,3,3,3,3,2,3,3,2,3,2,2,2,2,2,3,2,4,3,
2,4,2,2,2,3,4,2,2,4,2,2,4,2,2,3,2,2,3,2,2,2,3,3,3,2,3,2,3,3,3,3,3,3,2,2,2,4,3,3,2,3,3,3,5,3,
2,3,3,3,5,3,2,1,1,1,2,3,2,2,2,2,2,3,2,3,2,2,2,2,2,2,2,1,2,2,2,2,3,3,2,2,2,3,2,2,2,2,3,3,4,3,
2,3,2,4,2,3,3,3,2,3,3,3,2,2,2,2 2,2,2,3,2,2,2,2,2,2,3,3,2,2,2,3,3,3,3,4,3,3,2,3,3,2,3,3,2,2,
3,2,2,3,2,3,3,2,3,3,2,2,2,2,3,3,2,3,3,2,2,3,3,3,3,3,3,2,2,3,2,2,3,3,3,4,2,3,2,3,4,3,3,3,1,
3,2,2,2,3,3,2,4,3,2,2,2,2,4,3,2,3,3,3,1,4,1,2,3,3,2,2,4,3,2,2,4,2,4,1,4,3,2,2,3,2,2,2,1,3,2,
2,1,2,1,4,1,3,2,1,2,2,2,1,2,1,2,2,3,2,1,4,1,3,3,3,2,3,3,3,3,2,3,2,3,2,2,3,3,3,2,3,2,3,2,3,2,
2,3,2,3,2,3,3,2,3,2,2,3,3,2,5,3,2,3,2,3,2,3,2,2,3,3,4,3,3,3,3,2,2,2,3,3,4,3,3,3,2,2,3,2,3,3,
2,3,3,3,3,3,2,2,5,2,2,2,2,3,3,3,3,3,2,2,2,3,2,3,4,3,3,2,4,3,3,3,3,3,3,4,5,3,3,3,2,3,2,2,3,3,
3,2,3,3,3,3,3,3,2,5,2,2,3,3,3,2,3,2,2,2,3,3,3,3,4,3,3,4,2,2,3,2,3,3,3,2,3,3,2,2,3,2,2,3,3,4,
3,2,2,3,3,4,2,3,2,3,3,3,2,3,3,2,3,3,3,3,3,2,2,2,3,3,3,3,2,3,5,3,3,3,2,2,3,2,3,3,2,3,2,2,3,2,
3,3,2,2,3,3,2,2,2,2,2,3,3,2,3,3,2,3,3,4,3,3,3,3,3,3,3,3,3,2,2,2,2,2,4,2,4,4,1,2,3,2,4,2,3,2,
4,2,3,2,2,2,2,2,2,3,4,4,1,2,2,2,4,2,2,3,2,3,2,2,2,2,2,2,4,3,4,4,2,3,2,2,3,1,3,1,2,2,3,4,3,2,
4,2,2,2,2,2,3,3,3,2,2,2,2,3,2,3,3,2,2,3,3,1,3,3,3,2,3,3,3,3,2,2,2,2,2,2,3,3,3,2,2,4,2,3,3,3,
3,3,2,2,3,3,3,2,2,2,3,3,2,3,2,1,2,1,3,3,3,3,3,3,3,2,3,2,4,3,3,4,3,2,2,2,2,4,2,2,3,3,3,2,2,2,
4,3,3,3,3,3,3,1,3,3,3,3,2,2,2,2,2,1,2,3,3,2,2,3,2,3,2,2,1,2,1,2,2,2,3,2,3,2,3,2,3,2,2,2,1,2,
2,1,3,5,2,3,3,4,2,3,3,3,3,3,2,3,3,3,3,3,3,2,2,3,2,3,2,2,3,2,4,3,3,3,3,2,3,3,4,4,3,3,3,3,3,2,
2,2,3,2,3,3,2,3,2,3,3,2,3,3,2,3,3, 3,2,3,2,3,2,2,3,3,2,3,3,3,2,3,3,3,3,2,2,2,3,3,3,2,3,2,2,3,
2,3,2,3,3,3,2,3,2,3,2,3,3,3,3,3,2,2,3,3,3,3,4,3,2,3,3,2,3,1,3,3,4,3,3,3,3,2,3,3,2,3,2,2,4,2,
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2,4,2,3,3,3,2,2,2,3,2,3,2,2,3,3,3,3,4,2,3,4,4,3,2,2,3,3,3,3,2,3,3,3,2,3,3,4,3,2,4,2,4,2,4,2,
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3,2,2,3,3,4,3,2,3,3, 3,3,2,3,3,4,3,2,2,2,2,4,2,3,3,3,3,3,2,3,2,2,3,2,3,2,3,2,2,2,3,3,2,2,2,2,
3,2,2,3,2,3,2,2,2,2,2,3,3,2,2,3,3,3,3,3,3,4,3,3,3,3,3,2,3,2,3,3,3,2,2,3,2,2,1,2,4,2,2,4,2,2,
2,3,3,2,2,2,3,3,2,3,4,3,3,2,2,2,2,3,3,3,1,3,1,2,3,1,2,3,2,3,2,3,2,2,2,3,2,2,3,2,2,3,3,3,2,1,
2,2,2,3,2,3,3,2,3,2,3,3,2,2,1,2,1,2,4,3,3,3,3,2,3,3,3,2,3,3,3,3,2,3,2,3,2,3,3,3,2,3,3,2,3,3,
3,2,3,3,3,3,3,3,2,2,2,3,3,2,2,3,3,3,2,3,2,2,2,3,3,3,2,3,1,3,2,3,2,3,2,4,2,2,1,2,3,3,4,2,4,2,
2,2,1,3,1,2,3,3,3,3,2,2,2,3,2,3,2,2,2,4,1,3,2,3,4,4,4,2,3,4,2,3,2,2,4,2,4,2,2,3,3,4,2,2,3,2,
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3,2,3,4,4,2,2,2,3,2,3,3,3,3,3,2,2,3,3,3,3,3,2,2,2,3,3,2,3,2,3,3,2,2,2,2,2,2,3,3,2,3,3,2,2,3,
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3,1,3,2,2,3,3,3,2,4,3,3,3,2,2,2,3,2,2,3,3,4,4,3,3,3,3,3,3,3,3,2,3,3,3,3,3,4,2,2,2,3,2,2,3,3,
2,3,3,2,2,2,2,2,2,2,2,2,2,2,3,2,2,2,2,2,2,3,4,3,2,2,2,2,2,3,2,2,2,2,3,2,3,2,2,3,3,3,3,3,2,2,
3,3,2,2,2,2,3,3,2,2,3,3,3,2,2,3,3,3,3,2,3,3,2,2,3,3,3,3,3,2,2,3,2,3,2,3,3,3,2,2,3,3,3,3,3,2,
3,3,2,3,2,3,3,3,2,2,3,2,3,4,3,3,5,4,2,2,3,2,3,2,3,2,2,3,3,2,3,3,3,2,2,3,2,3,3,2,1,3,3,2,3,3,

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2,5,4,2,3,2,2,4,1,4,2,2,3,4,2,2,2,2,1,2,2,2,3,2,2,2,3,2,2,2,2,2,2,4,3,2,3,2,2,2,2,2,3,2,2,3,
4,3,1,3,1,3,2,2,2,5,2,2,2,3,2,3,4,2,2,2,2,3,3,2,2,3,2,2,3,2,2,3,1,3,2,2,2,2,2,2,4,3,2,5,2,3,
3,2,2,3,2,2,3,2,4,3,1,1,2,3,1,2,3,3,3,4,4,2,2,2,2,2,2,3,2,2,4,1,2,3,3,2,1,2,1,3,3,1,2,2,2,3,
4,2,3,2,2,3,2,2,2,2,3,3,2,3,4,2,2,3,2,3,2,3,2,3,2,4,4,3,3,3,2,2,3,2,3,2,2,4,3,2,2,4,2,3,3,1,
1,3,1,3,2,2,4,3,2,2,3,3,2,3,4,2,4,2,2,1,2,3,1,3,1,3,2,2,4,1,3,2,2,3,2,2,2,3,2,1,2,3,2,2,1,1,
1,2,2,3,2,2,2,2,1,2,2,2,2,2,2,2,2,2,1,2,1,2,3,3,2,2,4,2,3,3,2,2,3,3,3,2,2,2,2,2,1,2,3,1,3,2,
2,3, 3,3,3,3,2,2,3,2,1,2,3,2,2,3,2,1,2,3,1,2,2,2,4,3,4,2,2,2,2,3,2,3,2,3,2,2,5,2,1,3,1,3,2,3,
2,2,2,2,3,2,2,2,2,3,2,2,3,2,2,3,2,3,2,2,2,2,3,2,2,2,4,2,4,2,2,2,2,3,4,2,2,2,2,2,2,2,2,3,3,3,
3,2,3,2,2,3,3,3,4,4,2,2,2,4,2,4,2,2,2,2,2,3,3,2,2,3,3,3,4,2,2,2,2,2,4,3,4,3,3,3,2,2,2,3,3,2,
2,3,3,2,3,3,2,2,3,3,2,2,4,2,2,2,3,3,3,2,3,3,3,2,2,3,2,2,2,3,3,3,3,2,3,3,2,3,4,3,2,4,2,2,2,3,
3,3,3,3,4,3,3,2,3,2,2,2,3,2,3,2,3,2,2,3,4,3,3,3,3,3,3,2,2,2,2,3,2,3,2,2,3,2,3,3,3,2,3,3,2,3,
3,3,4,2,3,3,3,2,3,3,2,2,2,3,1,3,3,1,3,2,1,2,3,3,3,2,3,3,3,4,2,3,3,3,3,2,3,3,2,3,2,3,3,2,3,2,
3,3,3,3,3,2,2,2,3,3,3,1,3,3,1,3,2,2,3,2,3,2,4,2,1,3,2,3,1,3,2,2,3,2,2,3,3,3,3,3,3,2,2,4,3,2,
3,3,3,2,3,3,3,2,3,2,3,2,2,4,3,2,2,3,3,2,3,2,2,3,3,2,2,2,3,2,3,4,3,2,2,3,3,3,2,3,3,3,2,3,3,3,
3,3,3,3,3,3,3,3,3,3,3,2,2,3,3,2,3,2,3,3,3,3,3,3,3,3,2,4,3,3,3,3,2,2,3,3,4,2,3,3,2,3,3,4,3,2,
2,2,1,2,3,2,2,3,3,3,2,3,3,2,3,2,3,3,3,3,3,2,3,3,2,2,3,3,3,2,2,2,3,2,2,3,3,3,3,3,3,2,3,2,4,2,
4,3,3,3, 2,3,3,4,3,3,3,2,2,2,3,3,3,2,3,3,2,1,3,1,2,2,2,3,2,1,2,2,2,2,2,2,3,3,3,2,2,3,3,3,2,3,
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3,2,2,3,3,3,2,2,2,1,3,1,2,4,3,3,2,3,3,2,2,2,2,3,3,3,3,2,3,3,3,2,2,2,3,3,2,2,2,3,3,3,4,5,2,3,
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