

Rhyme in European Verse: A Case for Quantitative Historical Poetics

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The past decade has witnessed an unprecedented rise of interest in objectivist, data-driven approaches to literary history, often grouped together under the heading of digital humanities. The rapid multiplication of software designed to map and chart literature, often on a massive scale, has engendered an anxious (and often unpublicized) reaction. A concern for the future of literary studies, traditionally committed to the study of individual texts accessed through “close reading” of individual passages, is exacerbated in the wake of the emergence of a version of “world literature” that normalizes the study of literary works in translation, effectively jettisoning the philological techniques of *explication du texte*. This article seeks to bypass these antagonisms by proposing an alternative approach to literary history which, while being rooted in data analysis and employing quantitative methods some of which have been part of a century-old scholarly tradition, retains a twofold focus on the workings of poetic form and on the interaction between national literary traditions—the two topics that have dominated theoretical poetics and comparative literature ever since the inception of these disciplines in the late nineteenth-early twentieth centuries. While close reading is admittedly of limited value in the study of

versification, a more rigorous type of statistical testing used in this study allows for reliable assessment of tendencies observed in relatively small corpora, while also making it possible to verify the significance of highly nuanced quantitative differences. Our principal goal is to contribute a quantitative element to the ongoing effort to conceive of a Historical Poetics that would combine a broadly comparative approach, attention to the history of poetic devices, and theoretical reflection on literary history (Kliger and Maslov; Calahan and Hanson; Kliger, “Historical Poetics”; Maslov, “How to Murder”; Merrill).

Our study of rhyme in European literatures proceeds in several steps, which correspond to the paper’s six sections: (1) a typological argument on the function of rhyme within different systems of versification, (2) the discussion of corroborating evidence coming from the formal analysis of particular poetic texts, (3) a juxtaposition of the use of rhyme in one genre in several national traditions that have been in cultural contact, (4) a closer look at one particularly consequential episode of such an interaction, (5) a summary discussion of the history of rhyme in a single tradition that resulted from multiple interlocking influences, and (6) a conclusion that outlines some theoretical implications of the study’s findings.

Rhyme and rhythm in European verse: a basic typology

It so happens that the first poem in the Western tradition known to employ systematic repetition of similar sounds at the end of the line was composed by St. Augustine. His *Psalm against the Donatists* (393 CE) addresses that non-orthodox Christian community in a rather conciliatory spirit:

Audite, fratres, quod dico, et | mihi irasci nolite:

Quia non sunt falsa quae auditis, | potestis [et] considerare.

Quid, si ipsa nunc Ecclesia | vos alloquatur cum pace,

Et dicat: O filii mei, | quid querimini de matre?

Quare me deseruistis | iam volo a vobis audire.

Accusatis fratres vestros, | et ego laceror valde. (Migne 31)

Brethren, hear what I am saying and please have no anger, for you can observe that what you hear are not falsehoods. What if Church would now in person address you in peace, saying: O my sons, why do you complain about your mother? I wish to hear from you why you have deserted me. You are accusing your brothers, and it is me who is greatly hurt.

As the psalm's objective was to influence those whom Augustine saw as schismatics, it had to be written in a way that was maximally exoteric. In this respect, Augustine's orientation (*ustanovka*, in the language of the Russian Formalists) was the opposite of that of the greatest Greek Christian poet of that epoch, Gregory of Nazianzus, who adhered to classical prosody in writing poems in diverse genres meant for circulation among a highly educated Christian elite; that community had to be reassured – particularly following Julian's reign – that Christians could lay claim to all the fruits of the traditional *paideia*. By contrast, the direct rhetoric and simple language of Augustine's poem found a correlate in a new kind of prosody, which must have appeared scandalously indecorous to anyone trained in classical versification. As Augustine

himself stated, he made the decision not to observe “any verse form,” perhaps implying a closer alliance with the unmetrical language of the Book of Psalms (cf. Gasparov, *A History* 90).

Specifically, this formulation indicated a rejection of the chief principle of classical prosody, the patterning of heavy and light syllables. At the end of the fourth century, that principle had already lost its foundation in the phonology of Greek and Latin, yet refined poetry in both languages, from then on the province of the *literati*, would continue to be composed in this fashion quite energetically for over a millennium.

It is not the case, however, that Augustine’s psalm is unmetrical. It is, in fact, rigidly structured, with each line broken into two hemistiches by a caesura, and each hemistich containing exactly eight syllables. The new system of versification, known as syllable-counting or syllabic, would eventually come to dominate poetic traditions in Romance languages, such as French, Italian, and Spanish. In sum, the *Psalm against the Donatists* abandons the pattern of alternation between strong and weak positions. In lieu of rhythm, Augustine puts to work not only the caesura and the strict syllable count, but also one more novel principle of organization: rhyme. All 282 lines of Augustine’s poem end with the sound *e*, an incipient monosyllabic rhyme.

As Mikhail Gasparov notes in his seminal account of the history of European versification, the rise of rhyme in Latin verse would only occur in the 8th and 9th centuries, making the *Psalm* an odd outlier (*A History* 101–102). Nevertheless, Gasparov’s general conclusion also applies to Augustine’s experiment: “The transition from Classical feet metrics to the less constrained medieval syllabic rhythmic requires some additional compensation to consolidate the unity of verse lines. Such compensation was found in rhyme” (96). The mechanism of compensation, whereby the weakening of one element in verse structure is

accompanied by the increased prominence of another, will be considered in a different historical context, in which meter and rhyme coexisted within a single poetic tradition, as has been the case in English, German, and Russian for much of the modern period.

The development of a new kind of verse in European vernaculars did not end with the rise of syllable counting and end-rhyme. Within syllabic meters, in some national traditions a new kind of rhythmic organization emerged, based not on the length (weight) of the syllable but on lexical stress. It is customary to refer to such systems of versification as syllabo-accentual, or syllabo-tonic. Poetic traditions that developed syllabo-accentual prosody also retained the end-rhyme, resulting in a highly structured verse form regimented by three principles of organization: syllable count, alternation of strong and weak positions based on lexical stress, and rhyme. This type of verse lost its monopoly in the late 18th and 19th centuries with the spread of unrhymed imitations of various kinds of Classical verse, the rise of folklore-derived *dolniks* (which loosened the syllabic constraint), as well as influential individual experiments such as, in Anglophone poetry, Whitman's quasi-psalmodic free verse and Hopkins's *sprung* rhythm. With the collapse of rhymed syllabo-accentual verse in the 20th century, Germanic traditions abandoned all three elements of the system. In Russian verse, the end-rhyme proved the most resilient of the three, with syllable-counting being the weakest.¹

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While the scope of this paper only permits a very cursory comparison of different European traditions of rhymed syllabo-accentual verse, they can be shown to exhibit an already familiar pattern: the rigidity of one principle of organization goes along with the laxity of others. Before turning to the analysis of data, however, a note is due on the criteria that can be used to assess this relative rigidity. As regards rhythm, the alternation between stressed and unstressed positions has been well researched within the Russian school of metrics, beginning with the work of Andrei Bely and the Russian Formalists.² Their major discovery, which turned out to be foundational also for later generativist work on meter, was that the metrical template is often incompletely realized within a given line, resulting in different stress configurations, whereby some metrically strong positions (where stress is expected) are not occupied by stressed syllables. Moreover, it was discovered that different realizations of meter can be investigated from a literary-historical perspective. For example, in an iambic pentameter line as it is used by different poets, preferences tend to develop as to which of the five expected stresses are omitted. Various “rhythm profiles” of the same meter can be shown to come to the fore and recede within a single literary tradition, often unbeknownst to the poets yet suggestive of far-reaching thematic and literary-historical affinities.³

¹ Comparative works on rhyme in European literature include Zhirmunskii, *Rifma*; Eekman; Abondolo 202–56. For quantitative histories of rhyme in Russian verse, see Gasparov, “Evoliutsiia”; Shepeleva.

² For applications of the Russian statistical method to English verse, see Bailey; Tarlinskaya.

³ For example, the distinctive rhythm of Russian iambic tetrameter associated with Pushkin’s verse, in which the third strong position (ictus) tends to be unstressed, was challenged in the modernist period, when an alternative rhythmic profile was put forward in which the second

Statistical counts also reveal that some national traditions of verse realize stress more consistently than others. For example, German poets kept much closer to the metrical template of the iambic tetrameter, as compared to Russian poets. According to calculations made by Kirill Taranovsky, in German syllabo-accentual verse on average 75% of iambic tetrameter lines fully conform to the metrical template in having four stresses; by contrast, in Russian poetry, which borrowed syllabo-accentual versification from Germany, only 25% of lines are of this type.⁴ This rather straightforward parameter suffices for a basic assessment of rhythmic rigidity of verse forms produced within different linguistic traditions.

To address rigidity vs. weakness of rhyme, an altogether different criterion is necessary. In syllabo-accentual versification, rhyme is linked to stress, and what rhymes is, strictly speaking, the stressed vowel. (Note that this is not the case in the syllabic prosody of Augustine's *Psalm*.) That stressed vowel is surrounded by consonants which may or may not be identical. In the period with which we are primarily concerned, the late 17th and the early 18th century, the consonants following the stressed vowel in a rhyme were generally expected to coincide. By contrast, the consonants that *preceded* the vowel, which we will refer to as supporting consonants, could either coincide or not. Based on this criterion, in French verse, it is customary to distinguish between *rimes riches* (rich rhymes) and *rimes pauvres* (poor or impoverished rhymes). The same distinction has been applied to Russian verse; and we will also apply it to German verse.

position tended to be unstressed (Gasparov, *Ocherk* 233–37). On similar alternation in the history of German iambic verse, see Kazartsev, “Quantitative” 57–68.

⁴ Taranovskii 31–32; cf. Kazartsev, “K istorii” 381–82.

This study focuses on one genre, the Pindaric ode and one type of ten-line stanza, which was used by poets writing in French, German, and Russian. We annotated and analyzed stanzas of three poets: François de Malherbe (1555–1628), Johann Christian Günther (1695–1723), and Mikhail Lomonosov (1711–1765). The meter used in French is the syllabic octosyllable, in German and Russian it is iambic tetrameter. An initial juxtaposition of the three corpora demonstrates how the quality of rhyme – i.e. whether it is rich or poor – relates to the rigidity of rhythm. Particularly striking is the poverty of rhymes in the German corpus, compared to the French (see Table 1).⁵

Table 1. Rich vs. poor rhymes in J. C. Günther and F. de Malherbe

	rich	poor	total
Günther	27 (6%)	433	460 (100%)
Malherbe	356 (68%)	169	525 (100%)

Chi-Square p-value < 0.0001

⁵ These figures should be viewed as indications of general tendencies only, as there is plenty of variation within the French and German traditions of versification. For example, the proportion of rich rhymes in Racine's *Phèdre* is lower than in Malherbe, yet still much higher than in German or English:

	rich	poor	total
Racine	382 (46%)	445	827 (100%).

Some discussion of rich rhymes in different French poets can be found in Guiraud 115–118.

A likely explanation is that the strong preference for rich rhyme in French is due to the weakness of organization within the verse (French versification is syllabic). German, by contrast, uses rich rhymes quite infrequently, with a proportion comparable to that of English verse. The latter has not been systematically researched from this point of view; in Table 2, as a token of verse roughly contemporaneous with the development of a prescriptive aversion to rich rhyme in English poetry (cf. Small 141; Brogan), we provide the counts for Shakespeare's sonnets.

Table 2. Rich vs. poor rhymes in Shakespeare's sonnets (excl. 99, 126)

	rich	(identical rich)	poor	total
Shakespeare	29 (3%)	11 (1%)	1035	1064 (100%).

Shakespeare's 154 sonnets contain 7 rhyme pairs, that is 1078 rhyme instances, out of which only 29 are rich (one consonant preceding the rhyming vowel coincides); it is 2.7 % of the total number of rhymes. It has been pointed out that English is particularly resistant to "identical rhymes", in which the entire group of consonants preceding the vowel coincides (*write/right* or *retire/attire*), whereas rhymes in which just one consonant closest to the vowel is the same (*write/bright* or *rolling/controlling*) are more frequent.⁶ The evidence of Shakespeare's corpus

⁶ Wagner and McCurdy; Levý 242–43. Wagner and McCurdy offer a complex phonological explanation for the dislike for identical rhymes in contemporary English, particularly in comparison with French. We suspect that the inculcation of literary taste through practices of reading poets from particular periods, a factor unaccounted for in the study in question, may have contributed to such patterns of perception. In any case, such tendencies are not absolute;

does not suggest outright avoidance of identical rhymes; admittedly, they are quite few, but so are rich rhymes in general.⁷

What is at issue is the general neglect of the quality of rhyme in English, as well as in German verse. In fact, Günther, similarly to later German poets, not uncommonly takes the liberty of rhyming vowels that do not coincide, but are phonologically close (words with stressed *ie* and *ü*, as well as words with stressed *e* and *ö*). This relative deficiency of rhyme is made up for by strict regulations of rhythm, which are absent in French.

While the compensatory mechanism can often be shown to be at work, it is by no means a strict law of comparative metrics. Period preferences can dictate a more tightly controlled or loosely organized prosodic structure. Moreover, individual national traditions behave in ways that do not always match our expectations. Differences between French and Russian verse are a case in point. While introducing the accentual principle on top of syllable counting, Russian verse is also rather scrupulous about the quality of rhyme, with the proportion of rich rhyme ranging from 15% to 55%, depending on the period (see Table 3). This structural prominence of rhyme in Russian verse is the conundrum that this study will seek to solve.

Emily Dickinson is known to have used plenty of rich and even identical rhymes (Small 140–173).

⁷ Cf. *aspect–respect* (Sonnet 26), *receives–deceives* (40), *offense–defense* (89); slight difference in the consonants is possible in the case of *mend–commend* (69) and *arrest–interest* (74).

Shakespeare also relied on secondary stress to produce identical rhymes, as in *unprovident–evident* (10), *enmity–posterity* (55), *antiquity–iniquity* (62), *authority–simplicity* (66), *constancy–things they see* (152).

The compensatory mechanism in the structure of verse: the evidence of formal analysis

The question central to this study is how rhyme interacted with rhythm in Russian verse in the 1730s and 1740s, a transitional period in which a shift from syllabic to syllabo-accentual versification took place. Synergies between rhyme and rhythm remain largely unexplored, yet some existing evidence may be cited. In an earlier work, we investigated Pushkin's *Eugene Onegin* and two other works by later Russian poets that employ the Onegin stanza, and discovered two types of statistically significant correlation between the quality of rhyme and the rigidity of rhythm (Nikitina and Maslov):

1. The position of the line in the rhyming pair has an effect on the rhythm, in particular on whether or not the metrical template is fully realized. The Onegin stanza consists of 7 pairs of rhymed verses. The members of each pair differ in the degree of their integration into the stanza: the rhyming relation is realized on the second member of the rhyming pair, imposing additional constraints on the line's ending, while the first member is only expected to adhere to the metrical template. The two positions in the rhyming pair are thus inherently asymmetric. Confirming the hypothesis that meter and rhyme represent related principles of organization, the first lines in a rhyming pair, which have no rhyming expectations to fulfill, are more likely to be fully stressed than the second ones.
2. The hypothesis of functional relatedness of meter and rhyme makes another prediction: we would expect the quality of rhyme to be correlated with the line's degree of faithfulness to the metrical template. Indeed, the proportion of fully stressed

lines is higher in the case of lines ending in a poor rhyme than in the case of lines ending in a rich rhyme.⁸

There are thus strong reasons to believe that rhymed syllabo-accentual verse is a site of nuanced calibration of two principles of organization: rhyme and rhythm. Moreover, this calibration, while it can be revealed through statistical investigation, is, at least in some cases, unlikely to be subject to conscious manipulation by the poet. The micro-history of poetic form, undertaken with reference to the Onegin stanza, corroborates the general compensatory tendencies that manifest themselves in the *longue durée* of the history of European verse. In both cases, what is at issue is not the genius of a particular poet crafting (individual instances of) verse but structural elements of a poetic medium that has its own life and its own logic.

This article addresses a question that, both in its scope and in the nature of data investigated, lies in the middle ground between broad comparison of various systems of versification and the history of a particular stanza. We propose to inquire whether the interaction between rhythm and rhyme can shed light on the emergence of the modern system of Russian versification.

The attitude to rich rhymes is known to undergo dramatic change in the course of the history of Russian verse. In Table 3, based on Mikhail Gasparov's data, a high point falls on 1745–1780, the period of the strongest influence of French poetry. In the later period, the numbers decrease until rich rhyme's comeback in modernist poetry. In that period, poets began

⁸ Another key finding of the study is that lines with the same stress configuration are more likely than lines with different stress configurations to be linked by a rich rhyme (Nikitina and Maslov 457–460). Rhyming is thus not restricted to the phonological proximity of the lines' endings; it can extend to the identity of their rhythm.

experimenting with inexact rhymes (in which the sounds following the rhyming vowel do not coincide) and compensated for it by using identical supporting consonants. In Soviet verse, rich rhymes further gained in popularity.

Table 3. The coefficient of “richness” of rhyme in Russian verse (use of identical supporting syllables), according to M. L. Gasparov (“Evoliutsiia” 321)

1745–1780	37,2	1860–1890	18,4
1780–1800	28,2	1890–1905	20,7
1800–1815	20,0	1905–1913	27,6
1815–1830	15,1	1913–1920	38,4
1830–1845	14,2	1920–1930	49,8
1845–1860	15,4	1930–1935	56,5

We focus on a slightly earlier, formative moment in the history of Russian verse, between 1739 and 1745, when syllabo-accentual versification was introduced and supplanted syllabic verse. The crucial figure for this transition is Mikhail Lomonosov.

Lomonosov’s rhymes in a comparative perspective

There are two major reasons why Lomonosov and his prosodic experiments should claim our attention. First, they attest to the very origins of a tradition of versification. Some of the

correlations between elements of poetic structure observed in Pushkin's verse turn out not yet to be in place. These differences attest to an unexpected diachronic dimension of compensatory effects in verse, some of which appear to presuppose lengthy gestation of poetic forms. Second, Lomonosov's reliance on and departures from his German models have a lot to tell about the interaction between traditions of versification that evolve in different languages.

Both Lomonosov's and Pushkin's prosody show a correlation between the quality of rhyme and faithfulness to the metrical template: the proportion of fully-stressed lines is higher for poor rhymes (Table 4). Pending further research, this basic relation of compensation between rhythm and rhyme can be viewed as endemic to Russian versification throughout its history, and possibly to other traditions of syllabo-accentual verse.

Table 4. Rhyme and stress in Lomonosov

	rich rhyme	poor rhyme	total
fully stressed lines	148 (16 %)	792	940 (100%)
lines w. missing stress	294 (21%)	1100	1394 (100%)

Chi-Square p-value < 0.001

The other type of compensatory relationship that we observed in Pushkin, whereby the first lines in a rhyming pair, which have no rhyming expectations to fulfill, are more likely to be fully stressed than the second ones, is not detectable in Lomonosov.⁹ This lack of correlation most likely has to do with the fact that Lomonosov had no predecessors in Russian as far as the

⁹ The distribution is 922 (out of 1862) to 1412 (out of 2806), which is exactly 50% to 50%.

Likewise, there is no effect of "rhyming" stress configurations in Lomonosov (cf. fn. 8).

composition in the particular type of ten-line odic stanzas goes. This poetic form had not generated expectations that would allow for this kind of compensatory effect.

There is another aspect of the morphology of Lomonosov's stanza that attests to a similar compensatory logic: it is the more superficial correlation between the *type* of rhyming within the stanza and the quality of rhyme. There are three types of rhyming relation within the ten-line odic stanza, which was first developed in French, then borrowed by German poets and, based on Günther's precedent, imported by Lomonosov into Russian. Examples of the stanza in these three languages, accompanied by unrhymed English renditions, are given in Table 5:

Table 5. Ten-line odic stanza in French, German, and Russian

	F. Malherbe, Sur l'attentat... (1605)	J.C. Günther, Eugen-Ode (1718)	M. Lomonosov, Khotin ode (1739)
a	O bienheureuse intelligence,	Zurück, ihr Musen, in das Feld!	Корабль как ярых волн среди,
b	Puissance, quiconque tu sois,	Dort sproßt der Ölzweig aus den Lanzen,	Которые хотят покрыти,
a	Dont la fatale diligence	Irene flicht ein Zauberzelt,	Бежит, срывая с них верьхи,
b	Préside à l'empire françois;	Geht, springt mit ihr auf Wall und Schanzen!	Претит с пути себя склонити;
c	Toutes ces visibles merveilles,	Die Schwerdter werden sichelkrumm,	Седая пена вокруг шумит,
c	De soins, de peines, et de veilles,	Das Glücke schmilzt die Kugel um,	В пучине след его горит,
d	Qui jamais ne t'ont pu lasser,	Und gießt den Helden Ehrensäulen.	К российской силе так стремятся,
e	N'ont-elles pas fait une histoire,	Die Freudenglut frißt Kraut und Loth,	Кругом объехав, тьмы татар;
e	Qu'en la plus ingrate mémoire	Das Stücke wirft mehr Lust als Tod,	Скрывает небо конский пар!
d	L'oubli ne sauroit effacer?	Und darf nicht mehr gefährlich heulen.	Что ж в том? Стремглав без душ валятся.
	O blessed intelligence, Power – whoever you are whose fateful diligence	Now back, o Muses, to the battlefield! There the olive branch sprouts from the lances, Irene weaves a magic pavilion,	As a ship among raging waves That yearn to overwhelm it Hurls forward, tearing down their crests,

<p>presides over the French empire.</p> <p>All these visible wonders –</p> <p>the cares, the pains, and the vigils,</p> <p>which never could have wearied you,</p> <p>have they not created a history</p> <p>which oblivion cannot efface</p> <p>even from a memory most ungrateful?</p>	<p>Go, leap with her on the wall and the entrenchments!</p> <p>The swords grow crooked like sickles.</p> <p>Happiness melts the cannonballs and molds columns in the heroes' honor.</p> <p>The heat of joy consumes powder and lead,</p> <p>The field offers more of delight than of death and is no longer allowed to howl with enmity.</p>	<p>Forbidding them to deflect it from its course –</p> <p>the hoary foam is roaring all around,</p> <p>the ship's trace ablaze in the billows –</p> <p>thus the Tatar myriads, taking a detour, are pushing toward the Russian might.</p> <p>The skies are hidden by the steam of the horses!</p> <p>What's the use? Headlong, they collapse, lifeless.</p>
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The first type is the *parallel rhyme* between two neighboring lines (*aabb*). In the most familiar, alternating type of rhyme, lines rhyme according to the *abab* schema. Finally, in the envelope rhyme (*abba*), two intervening lines intrude between the rhyming verses. The ten-line odic stanza allows for variation in how these types of rhyme are applied, but they all occur in some combination.

A closer look at the types of rhyming relation in Lomonosov reveals that rich rhymes are more likely to occur in the envelope type, where the rhyming lines are most distant. Alternating rhyme has a lower, and parallel rhyme the lowest proportion of rich rhymes. Clearly, the quality of the rhyme becomes more important as the distance between the rhyming lines increases.

Table 6. Rhyme quality by type of rhyme in Lomonosov

	rich	poor	total
parallel	138 (14%)	826	964 (100%)
alternating	196 (20%)	766	962 (100%)
envelope	108 (26%)	301	409 (100%)

Chi-Square Test p-value < 0.02¹⁰

This data suggests that in Lomonosov's odes rhyme is already well integrated into the overall prosodic structure of the stanza. Seeing that Lomonosov stands at the very beginning of Russian

¹⁰ Two lines in later Lomonosov deviate from the metrical pattern. They are not included in stress counts but do appear in rhyme counts, hence the difference in the total numbers between the counts of rhymes and the counts of lines deviating from the metrical template.

syllabo-accentual verse, this is a striking conclusion; we will return to it in the last section of our study.

Interestingly, data from our (far smaller) corpora of French and German odes, presented in Tables 7 and 8, suggests similar tendencies in those languages, at least with respect to the envelope rhyme, where distance between rhyming lines appears to call for a more pronounced phonetic parallelism.

Table 7. Rhyme quality by type of rhyme in Malherbe

	rich	poor	total	
parallel	135 (64%)	75	210	(100%)
alternating	138 (66%)	72	210	(100%)
envelope	83 (79%)	22	105	(100%)

Table 8. Rhyme quality by type of rhyme in Günther

	rich	poor	total	
parallel	10 (6%)	162	172	(100%)
alternating	11 (6.5%)	158	169	(100%)
envelope	6 (8%)	67	73	(100%)

The emergence of Russian syllabo-accentual verse

Lomonosov's poetic output bears witness to an extraordinary rhythmic experiment, in that he rapidly jettisoned his own theoretical demand for pure iambs (stated in his 1739 *Letter on the Rules of Russian Versification*) as well as the prosodic expectations of his original German model, Johann Christian Günther's odes. As noted above (see Section 1), German iambic tetrameter, in comparison to its counterpart in Russian classical verse, is remarkably strict in adhering to the metrical template: on average about three-fourths of the lines are fully-stressed in German poets (including Günther), whereas only one fourth is fully-stressed in Russian verse. In his first odes that inaugurate Russian syllabo-accentual versification, Lomonosov followed or even exceeded the German model, keeping close to the metrical template, but in just a few years he moved from the heavily-stressed iambic tetrameter to one that is as loose in its rhythm as Russian 19th century verse.

Table 9. Stress in Lomonosov

	fully stressed lines	lines w. missing stress	total
1739–1745	1100 (67%)	540	1640 (100%)
1746 and after	762 (25%)	2266	3028 (100%)

Chi-Square Test p-value < 0.0001

There is no agreement in the scholarship on what inspired Lomonosov to make that momentous transition. The mainstream account refers to the average length of words in Russian, which is over two syllables (a factor that necessitates the introduction of unstressed positions), as well as to a rapprochement between Lomonosov's program for modern Russian verse and those advanced by his fellow poets and contemporaries Trediakovsky and Sumarokov (Gasparov,

Ocherk 80).¹¹ Furthermore, as Kirill Taranovskii and later Evgenii Kazarcev have demonstrated, Lomonosov closely copied the rhythm of German odes by Jakob von Stählin and G. F. W. Juncker which he translated into Russian in late 1741 and early 1742; the initial departure from the strict iambs of 1741 may thus have been due to the realization that some German poets were far more liberal with pyrrhic feet (allowing up to 50% non-fully-stressed lines) than the abstract metrical template of iamb – or Günther’s example – might suggest.¹² This opened up the path toward even greater relaxation of the iambic rhythm in later Lomonosov.

¹¹ On the former factor, Kazartcev (“K istorii”), however, points out that, although the average length of words is approximately the same in Dutch and German, the Dutch iambic tetrameter is much looser than the German one (on the problem of the relationship between language and type of verse used by its speakers cf. McCully 10–12). In a more adventurous spirit, Maksim Shapir (78–79) argued that the name of the imperial addressee of most of Lomonosov’s odes, Elizabeth, included a pyrrhic (unstressed) foot, inviting further departures from the metrical template.

¹² See Taranovskii; Kazartsev, ““Die gekrönte Hoffnung...””; Kazartcev, “K istorii” 389–390. Kazartcev also argues that the loose rhythm of the 1739 Khotin ode, composed while Lomonosov was still in Germany, was determined by the language rhythm of German (calculated from the prose corpus of early 18th c. German). Other scholars (Zhirmunskii, Taranovskii) hold that the relative rhythmic looseness of this text, whose original version does not survive, is due to Lomonosov’s revisions for the 1751 edition. In this study, we do not dwell on the vexed problem of possible changes to the rhythm of the odes introduced by Lomonosov, since it is not directly relevant to our argument. The poems dating to 1741, which survive in their original version, attest to Lomonosov’s determination, at least at the time, to adhere to a strict version of iambic meter (see Chart 1).

We propose to approach Lomonosov's rhythmic revolution from the perspective of the internal organization of verse, addressing the structural question of what other formal developments might have enabled it.

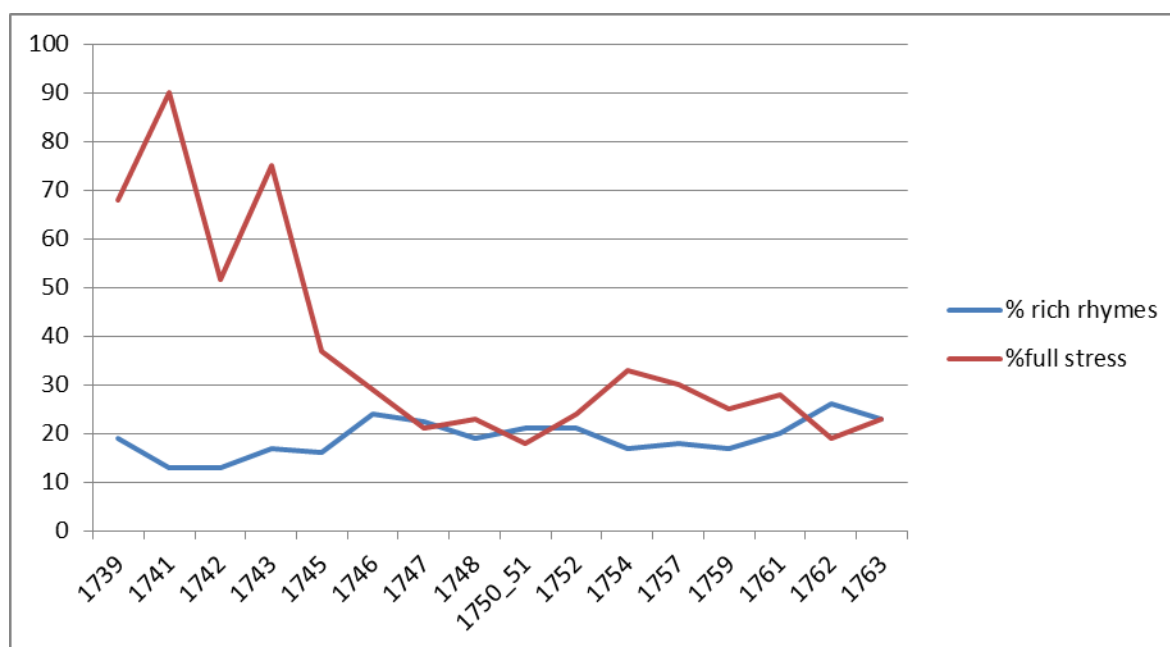
As discussed in Section 1, German verse has strict rhythm, but very few rich rhymes. When Lomonosov began composing Pindaric odes, he first used a rather low proportion of rich rhymes, yet as his rhythm became looser that proportion increased (see Table 7 and Chart 1).

Table 10. Rhyme in Lomonosov

	rich	poor	total
1739–1745	122 (15%)	698	820 (100%)
1746 and after	320 (21%)	1195	1515 (100%)

Chi-Square Test p-value < 0.0005

Figure 1. Correlation between rhyme and stress in individual poems.



While the tendency to loosen the meter continued until 1751, a particularly sharp transition can be observed in the three odes written in 1745 and 1746. In the same years we see a notable change in the quality of rhyme. While no poems written in 1744 survive, the difference between 1743 and 1745 is particularly striking. The loosening of rhythm went along with stricter rhyming.

A closer look at the three odes written in 1745 and 1746, however, reveals a number of intriguing complications. First, the enrichment of rhyme only takes place in so-called *masculine* rhymes (in which the last syllable rhymes), while the proportion of rich *feminine* rhymes (in which the penultimate syllable rhymes) remains virtually unchanged.

Table 11. The odes dating to 1745 and 1746

	Feminine		Masculine		Proportion of fully stressed lines
	Rich	Poor	Rich	Poor	
Ode 1743 (1751 version)	8 (19%)	34	4 (14%)	24	75%
Ode 1745 (July–August)	11 (18%)	49	5 (12.5%)	35	37%
Ode on the Day of Ascension to the Throne 1746	11 (17%)	52	15 (36%)	27	35%
Ode on the Day	9 (18%)	42	10 (29%)	24	21%

of Birth of Her Majesty 1746					
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The data in Table 11 suggests one way of telling the story of the evolving relationship between rhythm and rhyme, driven by Lomonosov's ongoing, yet perhaps not fully conscious experiments with verse structure. In 1745, Lomonosov radically lowers the proportion of fully stressed lines from 75% to 39%. The resulting structure must have appeared unbalanced, so Lomonosov explores an additional possibility for making verse hold together. In the first of the two odes written in 1746, he increases the number of rich masculine rhymes, making it almost three times its previous proportion. The solution must have proven viable and effective. Empowered by the strategy of rhyme enrichment, Lomonosov then lowers the number of stressed lines further to 21%, an all-time low for him. The search for a compromise would continue, with the eventual establishment of the following parameters: ca. 25% of fully-stressed lines, and 30% of rich masculine rhymes. Lomonosov's highly original contribution to the molding of Russian syllabo-accentual verse is beyond doubt; what enabled it, however, is his attunement to the compensatory logic immanent in the prosodic resources of rhythm and rhyme.

Polish and French influence on Russian rhyme?

While the loosening of rhythm in Lomonosov, as we saw, was accompanied by general enrichment of rhyme, we need to turn to the evidence of comparative literary history to explain the particular outcome that the compensatory logic had in this case. One detail holds a key to

understanding Lomonosov’s prosodic experiments: based on a closer analysis of the odes written in 1745 and 1746, we observed that rhyme enrichment only impacted masculine rhymes, while the proportion of rich and poor feminine rhymes in the odic stanza remained stable. As the data in Table 12 demonstrates, this observation can be generalized to the prosody of Lomonosov’s entire corpus of Pindaric (*torzhestvennye* ‘solemn’) odes:

Table 12. Rich vs. poor rhymes (masculine and feminine) in Lomonosov’s solemn odes

	Masculine		Feminine		Total
	Rich	Poor	Rich	Poor	
1739–1745	62 (16%)	317	60 (14%)	381	820 (100%)
1746 and after	188 (30%)	441	131 (15%)	755	1515 (100%)

Chi-Square Test p -value < 0.0001 for masculine rhymes, no significant effect for feminine rhymes

The constant proportion of rich feminine rhymes is an interesting phenomenon in itself. We believe that it represents a legacy of Russian syllabic verse, the rich tradition of versification based on the Polish model that thrived in the 17th and early 18th centuries, which Lomonosov putatively turned his back on when he introduced the “German” syllabo-accentual alternative. Syllabic verse only uses disyllabic rhymes, which are almost always equivalent to feminine ones in the syllabo-accentual system (in syllabic verse, stress does not have to fall on the rhyming syllable, but most often it does). Indeed, as the counts in Table 13 show, the proportion of rich feminine rhymes in Lomonosov falls within the same range as the proportion of rich disyllabic rhymes in Russian syllabic verse. The table encompasses the work of Simeon Polotsky (1629–

1680), the greatest representative of Russian syllabic verse; Feofan Prokopovich (1681–1736), the major intellectual of the Petrine era mostly known for his prose works; Antiokh Kantemir (1708–1744), Lomonosov’s older contemporary who chose not to make a transition to the syllabo-accentual medium; and two of Lomonosov’s fellow innovators, who began with syllabic verse and then quickly switched to the new system, Vasily Trediakovsky (1703–1769) and Alexander Sumarokov (1717–1777).

Table 13. Rich disyllabic (feminine) rhymes in Russian syllabic verse

	rich	poor	total
Polotsky	43 (12%)	315	358 (100%)
Prokopovich	39 (11%)	307	346 (100%)
Kantemir	35 (12%)	250	285 (100%)
Trediakovsky	17 (15%)	96	113 (100%)
Sumarokov	6 (9%)	62	68 (100%)

It is worth noting that the proportion of rich rhymes in Russian syllabic verse is much lower than in Malherbe, who also, of course, wrote in syllabic verse. A possible reason for this is that the main principle of organization in Russian syllabic verse is strong syntactic parallelism, which may override other prosodic features. We believe, moreover, that this proportion of rich disyllabic rhymes was likely inherited by Russian verse from its Polish forebear.¹³

¹³ Notably, for the self-translation of Prokopovich’s “Epinikion” into Polish approximately the same figures hold as for Prokopovich’s Russian-language verse:

rich	poor	total
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The comparison demonstrates that Lomonosov's rhymes, on the whole, accord with the preexisting conventions of rhyming in Russian (the difference between Polotsky and Lomonosov is not significant, $p > 0.1$) better than with Günther's rhyming (see Table 14). Moreover, the proportion would remain the same in later Russian verse, as comparison with Pushkin's *Eugene Onegin* demonstrates.

Table 14. Rich feminine (disyllabic) rhymes in Günther and three Russian corpora

	rich	poor	total
Günther	12 (6.5%)	172	184 (100%)
vs.			
Polotsky	39 (11%)	308	347 (100%)
Lomonosov	188 (14%)	1139	1327 (100%)
Pushkin's <i>Eugene Onegin</i>	45 (12%)	320	365 (100%)
<hr/>			
Epinikion, Polish	11 (12%)	79	90 (100%)

The proportion of rich rhymes in the first book of the epic poem *Wojna chocimska* (*War of Chocim*, 1670) by Waclaw Potocki (1621–96), a major 17th c. Polish poet, falls within the same range:

	rich	poor	total
Potocki	47 (9%)	488	535 (100%)

It bears emphasizing that this proportion is not due to structural properties of the Russian language. In a peripheral author of syllabic verse (Petr Buslaev, fl. 1730s) and in a corpus of anonymous syllabic verse the proportion of rich rhyme is significantly higher.¹⁴ Modernist experimentation can lead to similar deviations from the mainstream tradition; thus, Viacheslav Ivanov's long poem *Infancy*, although written in Onegin stanzas, uses a high proportion of rich feminine rhymes (35%). One has to conclude that the stable proportion of rich rhymes is a phenomenon of literary-historical continuity, which cross-cuts the divide between syllabic and syllabo-accentual versification, bringing together Polotsky and Pushkin.

Seeing that Lomonosov adheres to the standard of feminine rhyming established in the syllabic tradition, his radical enrichment of masculine rhymes becomes all the more striking. As Gasparov argues, Lomonosov's rhyming practice changes around 1743 when he begins avoiding poor "open" masculine rhymes, in a departure from the German norm (where rhymes like *Weh-See* are permitted; *Ocherk* 92–94). According to Gasparov, that change could be due to the influence of Trediakovsky and Sumarokov, who were following the French in rejecting such rhymes as *privé-parlé*.¹⁵ This hypothesis can now be confirmed by statistical data: the major shift

¹⁴ For Petr Buslaev, the counts are 79 out of 189 (42%), for a corpus of anonymous syllabic verse (edited by A. M. Panchenko) it is 205 out of 804 (25%). Possible reasons include the influence of Russian "spoken verse" (*govornoi stikh*) and the presence of inexact rhymes.

¹⁵ Both Trediakovsky and Sumarokov employed a relatively high proportion of rich rhymes. In the period ending in 1752, Trediakovsky uses 26 rich masculine rhymes out of 66 total masculine rhymes (39%); these counts exclude poems that only use feminine rhymes. For Sumarokov, rich masculine rhymes in his syllabo-accentual verse written before 1744 are 23 out of 70 (33%); rich feminine rhymes are 24 out of 173 (14%).

in the quality of rhyme in Lomonosov is indeed due to the treatment of open masculine rhymes.¹⁶ The tendency to enrich rhymes, however, was not an isolated decision, but was linked to Lomonosov's loosening of iambic rhythm in the course of 1745 and 1746.

Had the French attitude to rhyme not been suggested to Lomonosov by the poetic practice of his contemporaries, he might have looked for a different means to maintain *metricality* of his loosely stressed verse, or perhaps dared not depart from the German rhythmic standard. In contrast to the generative tradition (e.g., Kiparsky 194), by "metricality" we mean not a basic conformance to the metrical template, but a functional and culturally variable coefficient guaranteeing that the verse is perceived as "metered", in contradistinction to non-verse. Rhyme and rhythm, as well as phonetic (alliteration), syntactic (parallelism) and even typographic (line division) features all contribute to this coefficient (cf. Maslov, "Lyric").

Continuity in verse form and in literary history

Formal continuities in literature are perhaps all too often taken for granted, particularly by scholars who celebrate cultural homogeneity that the very existence of a literary tradition appears

¹⁶ In 1739–1745, Lomonosov, in his panegyric output, used 21 poor open masculine rhymes and 19 rich ones, whereas after 1746, 10 poor ones and as many as 114 rich ones. The difference is highly significant (p-value is less than 0.0001). By contrast, there was no statistically significant change in the use of closed masculine rhymes: for 1739–1745 we find 296 poor ones, and 43 rich ones, whereas after 1746, 430 poor ones and 75 rich ones.

to imply.¹⁷ A different vision of persistence of forms was put forward by theorists such as Alexander Veselovsky and Mikhail Bakhtin, who regarded literature as a phenomenon of “great time” that transcends individual national traditions.¹⁸ Both these instantiations of the continualist position emphasize some aspects of literature’s historical quality, while paying less attention to others. The prevailing scholarly ethos of the past two decades, however, has favored rupture over tradition, constructing a historical narrative comprised of isolated “births”, “inventions”, and “discoveries” – a narrative that all too often gives priority to epochal changes that occur outside literature or privileges the innovating genius of a single poet.

We do not seek to adjudicate between these two approaches, as both succeed in capturing some aspects of literature and of literary form (which the continualist position approaches via categories such as genre or allusion and the anti-continualist position seeks to access through appreciative close reading). The question is rather how their insights can be combined with a view toward constructing a rigorous methodology for writing literary history. We believe that a return to more attentive analysis of the linguistic *material* employed in literary *form* can give us a better grasp of those intrinsic properties of the literary that have a diachronic dimension. From this perspective, the application of statistical methods to the study of verse – applicable even to

¹⁷ Auerbach’s *Mimesis*, an exercise in selective, style-oriented close reading aimed at constructing a grand narrative of Western realism, and Curtius’s work, with its emphasis on *topoi*, still stand as important monuments of such a notion of cultural continuity; for an example of a recent study that operates with a simplistic model of the Western literary tradition see Culler.

¹⁸ For a discussion of Alexander Veselovsky’s theory of absolute persistence, see Somoff; on genre memory in Bakhtin, see Klinger.

relatively small poetic corpora – may well offer a solid platform from which we could renegotiate broader theoretical quandaries.

First and foremost, verse structure bears witness to tendencies that cross-cut historical variation in literary cultures, such as the compensatory mechanism that balances different prosodic elements (rhyme and lexical stress) to mark verse as distinct from non-verse. Seeing that the opposition between these two different kinds of language appears to be a cultural universal, such tendencies may be grounded in human cognition (cf. the principle of least effort); the variety of resources that are subject to such mutual calibration, however, is probably related to the parameter of “interest” of the resulting verse form.¹⁹ Ostensibly at odds with the Russian Formalist view of poetic form as “made difficult” (*zatrudnennaia*), this conclusion suggests that there are perceptual limits to the listener’s or the reader’s labor of detecting metricality in syllabo-accentual verse. While the principle of compensation may well be anchored in universals of cognition, the continuous recalibration that it implies is precisely what enables the writing of the particular kind of literary history we are advocating, one that aspires to rigor by foregrounding the relatively autonomous development of literary forms.

Such a history of literary forms, on the other hand, can lay no claim to “organicism” by denying the role of individual poets. The rise of loosely stressed iambic verse in Russia resulted from a reform initiated by Mikhail Lomonosov. Yet, while the impetus came from an individual author, the processes of crystallization and transformation of literary form that it set into motion could not have been fully controlled or anticipated by their originator. As Lomonosov was easing the metrical restrictions by allowing for more non-fully-stressed lines, enriched masculine

¹⁹ As defined in Hanson and Kiparsky 295: “The parameters are set so as to maximize the esthetic interest of the verse”.

rhymes aided in buttressing the structure of verse. Superficially, the development is not unlike the apparent invention of rhyme along with syllable counting in Augustine's *Psalm Against the Donatists*. In the case of first Russian syllabo-accentual poets, that transformation amounts to a different kind of transition: from a strict iambic model to a different one, still syllabo-accentual, yet strongly influenced by French rhyming practices and much looser in rhythm. The rapidity with which Lomonosov shed the initial expectations for rigid rhythm, derived from German poets, was not due to the intrinsic demands of the Russian language, but to the availability – mediated by Trediakovsky and Sumarokov – of another foreign model. Moreover, whereas with respect to rhythm Lomonosov was an innovator, in rhyming he relied on a century-old tradition of syllabic verse imported into Moscovy from Poland. Although the resources of the language allow for rich feminine rhymes, Lomonosov left them in the form in which he inherited them from the previous system of versification. In short, Russian classical verse can be seen as an aggregate of Polish-derived syllabic verse (whose long-term impact is visible in feminine rhymes), French preference for rich masculine rhymes, and the Germanic patterning of stressed and unstressed syllables.

Whereas individual poets often initiate major overhauls of the poetic language, the resulting forms accrue meanings and generate expectations that their originators could not have anticipated. As we saw, while some kinds of correlation between rhythm and rhyme are observed in Lomonosov's corpus, others arose later, as a result of a continuous tradition of writing and reading rhymed iambic tetrameters.

Lomonosov's reforms were both more far-reaching (as far as his attention to rhyme is concerned) and less radical (in view of a hitherto unsuspected continuity with syllabic verse) than previously thought. Russian classical verse arises out of a complex, diachronically multi-

layered synthesis of influences coming from three modern poetic cultures: Polish, German, and French.²⁰ It is this synthetic poetic form that later, in the 19th and 20th centuries, had a defining influence on numerous other literatures in Slavic countries and throughout Eurasia. What this study offers is but one chapter from the long and continuing history of the global spread and intermingling of European poetic forms. The challenge of writing a comparative history of verse based on quantitative methods calls not only for a major collaborative effort between linguists and literary scholars, as well as between specialists in different national traditions, but also, no less urgently, for a reconsideration of the foundations on which the study of poetry and poetics in Anglophone academy currently rests.

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²⁰ We set aside the problem of the ancient precedents to both iambic verse (tragic iambic trimeter whose rhythm was only very vaguely understood by Lomonosov was far from strict) and to the form of the ode in Russia; on the latter see Alekseeva; Maslov, "Why Republics" 35–46.

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