

Exploring inexact rhyme in Russian verse

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Plotting Poetry: On Mechanically-Enhanced Reading
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Outline

- Traditions in studying Russian rhyme
- The meaning of “inexact”
- Methods and directions
 - Inexact rhyme ~ non-rhyme
- Challenges

Studies in Russian inexact rhyme

How does the repertoire of possible rhyme pairs grow?

- Viktor Žirmunskij (*Rhyme, its history and theory*, 1923):
 - The standard for rhyme becomes less exact over time, from exact match of all post-final stressed vowel sounds to just matching single consonant phoneme bounding the final stressed vowel.
- Valerij Brjusov (“On rhyme,” 1923):
 - Standard for rhyme becomes more expansive, including similarities in sounds before final stressed vowel (“deep rhyme”) as well as after (“juicy rhyme”).
- Mixail Gasparov (“Evolution of Russian rhyme,” 1984):
 - The lexicon of Russian rhyme has, nearly from its beginning, contained both phonetically “exact” and “contingent” rhymes, the latter of which is a fairly limited set of structures that are deployed in different ratios in different periods.

Degrees of rhyme

- Paired words end with same sounds
 - (19th-century standard for “exact” rhyme)
- Paired words end with sounds within short substitution edit distance
 - *ljublju ~ moju*
- Paired words end with sounds within short edit distance of another kind
 - *prosak ~ prostak*
 - *goroda ~ morda* (different syllabicity)
- Paired words have longer edit distance
 - *čerdak ~ čexarda*
- Paired words have consonance before final stressed vowel
 - *skol'ko im ~ kokain*
- Dissonance
 - *Rajner ~ umer*

What can mechanical reading add?

- Better characterize periods of transition
 - Shifts in tendencies (probabilities) over time
 - Rates of expansion in rhyme vocabulary
- Identify rules by which “inexactness” progresses
 - Cultural influences on variation (regional, institutional, foreign [Žirmunskij])
 - Range of consonance (before as well as after final stressed vowel [Brjusov])
 - Phonetic changes sound “close enough”, while still enriching vocabulary or texture of poem (distinctive feature decomposition)

Methodology

- Phonetic rendering
 1. Dictionary to find place of stress
 2. Rules-based rendering from orthographic to broad phonetic representation
- Heuristic for rhyme detection and analysis
 1. Exact string match
 2. Extrapolation of rhyme scheme from exact matches
 3. Extrapolation of non-exact pairs from rhyme scheme
 4. Characterize differences in strings by distinctive features
 5. Build dictionary of pairs, hierarchies of features

Dictionary lookup and stress

мог	дядя	самых	честных	правил
когда	не	в	шутку	занемог
он	уважать	себя	заставил	
и	лучше	выдумать	не	мог

- Not all stresses are found (dictionary is incomplete)
- Some stresses are wrong (lexical ambiguity, no linguistic context analysis)

Correct the stress

мой дядя самых честных правил
 когда не в шутку занемог
 он уважать себя заставил
 и лучше выдумать не мог

- Infer ambient meter from unambiguous stresses
- Correct dictionary stresses according to ambient meter

Phonetic rendering

```
<!-- djbr.romanize: Romanize now that all information is encoded in the segment -->
<!-- ===== -->
<xsl:when test="self::djbr.romanize">
<xsl:sequence
select="replace(translate($input,
'абвгджклмнопрстуфхцщызэАБВГДЖЗЙКЛМНОПРСТУФХЦЩЩЫЭ',
'abvgdzklmnoprstufxcshieABVGDZZIKLMNOPRSTUFXCŠQIE'), 'Q', 'ŠC')"/>
</xsl:when>
```

Given orthography and place of stress, a phonetic rendering of each word is created by merger of proclitics and enclitics with the base word, normalizing jot, devoicing final consonants, regressive devoicing of consonant clusters, etc.

Perfect rhyme

```
<line letter="A" position="1" rhymeString="AVil" vowelBitString="11011"
bitString="110110010101100111000111001110">
"Мой д<stress>я</stress>дядя <stress>а</stress>самых <stress>ч</stress>естных
п<stress>а</stress>вил,
```

Feature matrix (partial)

Segment	Syllabic	Sonorant	Anterior	Coronal	Palatalized	Nasal	Voiced	Continuant	Lateral	Delayed release
p	0	0	1	0	0	0	0	0	0	0
P	0	0	1	0	1	0	0	0	0	0
b	0	0	1	0	0	0	1	0	0	0
B	0	0	1	0	1	0	1	0	0	0
t	0	0	1	1	0	0	0	0	0	0
T	0	0	1	1	1	0	0	0	0	0
d	0	0	1	1	0	0	1	0	0	0
D	0	0	1	1	1	0	1	0	0	0
k	0	0	0	0	0	0	0	0	0	0
K	0	0	0	0	1	0	0	0	0	0
g	0	0	0	0	0	0	1	0	0	0
G	0	0	0	0	1	0	1	0	0	0
c	0	0	1	1	0	0	0	0	0	1
ç	0	0	1	1	0	0	1	0	0	1
Č	0	0	0	1	1	0	0	1	0	1
Č̣	0	0	0	1	1	0	1	0	0	1

Imperfect rhyme

```
<line letter="g" position="13" rhymeString="JA"
vowelBitString="11011"
bitString="011110110011011">
Там <stress>не</stress>когда гул<stress>я</stress>л
и <stress>я</stress>:
</line>
<line letter="g" position="14" rhymeString="NA"
vowelBitString="11011"
bitString="01111100011011">
Но вр<stress>е</stress>ден с<stress>е</stress>веп
для мен<stress>я</stress>.
</line>
```

Feature matrix

Segment	Syllabic	Sonorant	Anterior	Coronal	Palatalized	Nasal	Voiced	Continuant	Lateral	Delayed release
n	0	1	1	1	0	1	1	0	0	0
N	0	1	1	1	1	1	1	0	0	0
J	0	1	1	1	1	0	1	1	0	0

- Palatalized N and palatal J differ in only two features: nasal and continuant
- The difference between J and any palatalized consonant can be neutralized

Identifying rhyme scheme

- ABAB ~ ACBC
 - Whether this is imperfect rhyme or non-rhyme may not be a meaningful question without more context
- Ambient rhyme scheme
 - AbAbCCddEffEg**g**
- Deviant rhyme scheme
 - AbAbCCddEffEg**h**

Exploring inexact rhyme

- Approximate rhyme vs. non-rhyme depends on expectations (context)
- Some distinctive features are neutralized easily without disrupting rhyme
- Hypothesis: There may be variation in what can be neutralized depending on poet, period, and other social features

Challenges

- Identify domain of rhyme
 - Stanza (but not all long verse is stanzaic)
 - Four lines (Sozinova)
 - Maximum known domain for specific poet (Gasparov)
- Heterosyllabic rhyme
 - Majakovskij: *goroda* / *morda*
- Dissonance in stressed vowel
 - Cvetaeva: *Rajner* / *umer*

Thank you!

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