

Prose Rhythm and Antimetricality

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LSA 2022, “Literary Linguistic Forms”

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1. Outline

- (1) Metrics is usually concerned with verse. Does prose have meter? Is meter even relevant? Or does prose have anti-meter? (*Saintsbury 1912*)
- (2) Proposal: Prose assumes the role of anti-verse in historical periods where metrical verse is the **DOMINANT** (*Jakobson 1935*) literary form. This is our **ANTIMETRICALITY HYPOTHESIS**.
- (3) **PROSODIC** (*Heuser, Falk, and Anttila 2010–*) is freely available software that analyzes text phonologically and metrically and can be applied to any type of text on a large scale. You can access it at prosodic.stanford.edu.
- (4) Prosodic implements a **THEORY OF SCANSION** that draws upon Optimality Theory (*Prince and Smolensky 1993/2004*) and generative metrics (*Hanson and Kiparsky 1996*= *H&K*).

2. A theory of metrical scansion

(5) A theoretical assumption: Scansion is a correspondence relation between verse patterns (“templates”) and their instantiations (“texts”).

(6) Here we follow, e.g., Halle and Keyser 1966, 1971; Kiparsky 1977; Prince 1989; H&K; Hayes, Wilson and Shisko 2012; Blumenfeld 2015; Kiparsky 2020.

(7) Alternatives: Golston 1998; Golston and Riad 2000, 2005; Fabb and Halle 2008.

(8) The following five CONSTRAINTS (H&K) play a central role in English verse:

- (a) ***W/PEAK** (“**THE SHAKESPEARE CONSTRAINT**”)
 - ‘A weak position must not contain the main stress of a polysyllable.’
- (b) ***S/UNSTRESSED** (“**THE HOPKINS CONSTRAINT**”)
 - ‘A strong position must not contain an unstressed syllable.’
- (c) ***W/STRESSED**
 - ‘A weak position must not contain a stressed syllable.’
- (d) **W-RESOLUTION**
 - ‘For disyllabic positions within a word, the first position must be light and stressed as in *stéady* and *cíty*.’
- (e) **F-RESOLUTION**
 - ‘A disyllabic position crossing a word boundary must be weak and its two words must be function words, e.g., *if it*.’

(9) Prosodic takes a line of text and performs the following steps:

- (a) Phonological analysis (stress, syllabification) building on the CMU Dictionary (*Weide 1998*) and ESPEAK (<http://espeak.sourceforge.net/>).
- (b) Start with all logically possible scansions.
- (c) Discard all UNVIABLE* (in OT, “harmonically bounded”) scansions.
 - unviable = incurs a proper superset of violations of another scansion
- (d) Use the five constraints to evaluate the remaining scansions.

(10) What is “evaluate”? Experienced readers can distinguish metrical lines from unmetrical lines, but also less complex from more complex lines (*Halle and Keyser 1971: 142*).

(11) For example:

LINE	MTS	MU	SOURCE
and spends his mighty wits in bootless rhyme	0	1	construct
once upon a midnight dreary	1	1	The Raven
I wandered lonely as a cloud	1	1	Daffodils
and spends his prodigal wits in bootless rhyme	2	2	LLL 5.2.64
and spends his whimsical wits in bootless rhyme	15	4	construct
rocks caves lakes fens bogs dens and shades of death	22	7	Paradise Lost
the whole structure of a basilica	172	34	Stones of Ven.

(12) Two measures of metrical complexity. The bigger the number, the more complex the line.

- (a) **METRICAL TENSION SUM (MTS)** = the sum of violations across all viable scansions
- (b) **METRICAL UNCERTAINTY (MU)** = the number of viable scansions

(13) Calculating MTS and MU. Constraint violations are marked in red by Prosodic.

		F-R	W-R	SHA	HOP	*W/S
1a	and SPENDS his MIGH.ty WITS in BOOT.less RHYME					
2a	and SPENDS his PRO.di.gal WITS in BOOT.less RHYME		1			
2b	and SPENDS his PRO.DI.gal WITS in BOOT.less RHYME				1	
3a	and SPENDS his WHIM.si.cal WITS in BOOT.less RHYME		1			
3b	and SPENDS his WHIM.si.CAL WITS in BOOT.less RHYME	1			1	
3c	AND spends HIS whim.SI.cal WITS in BOOT.less RHYME			1	3	2
3d	and SPENDS his WHIM.si.CAL wits in boot.LESS RHYME			1	2	3

(14) The function word problem. The question whether function words (e.g., a, in, is, that) are lexically stressed or not is difficult in both phonology and metrics. Function word stress can even depend on scansion itself (*Jespersen 1933*). Whatever we decide the decision is momentous as it impacts violation counts in virtually every line.

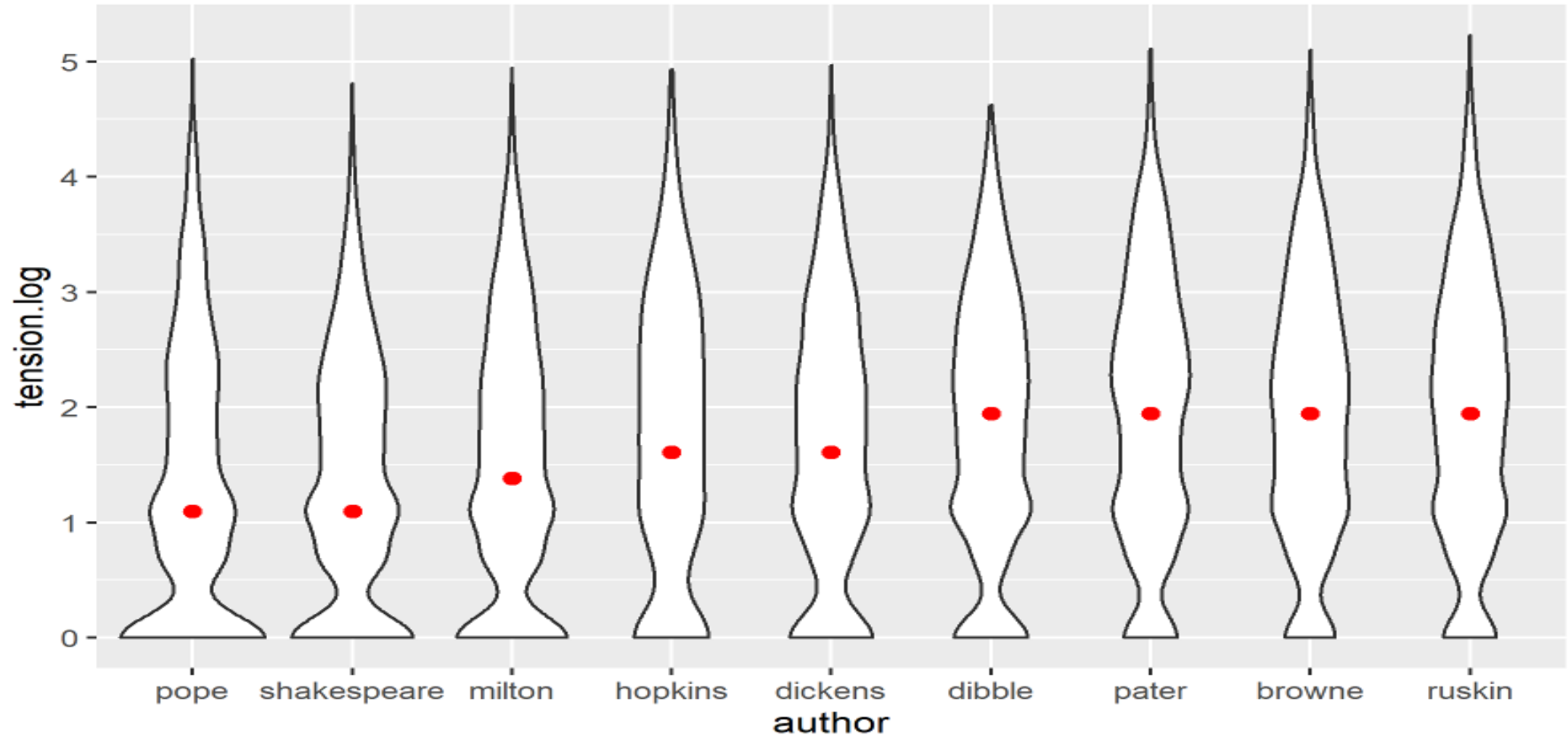
(15) Our solution: METRICAL CHARITY. Some monosyllables are stress-ambiguous (stressed or unstressed). Prosodic resolves the ambiguity as part of optimizing the scansion.

3. Small metrics

- (16) We sampled thirteen canonical authors: Shakespeare, Milton, Browne, Pope, Wordsworth, Shelley, Keats, Dickens, Ruskin, Whitman, Pater, Hopkins, and Yeats.
- (17) For comparison, we also included Samuel Dibble, author of *Elements of Plumbing* (1918), our baseline text that represents utility prose by an author with no metrical agenda.
- (18) The following plots show that MTS as defined by H&K's five constraints separates authors and genres in an intuitively correct way.

(19) Comparing MTS across nine authors represented by 10-syllable pseudo-lines ($N = 29,020$).

- Verse: Pope, Shakespeare, Milton, Hopkins.
- Prose: Dickens, Dibble, Pater Browne, Ruskin. The red dot is the median.

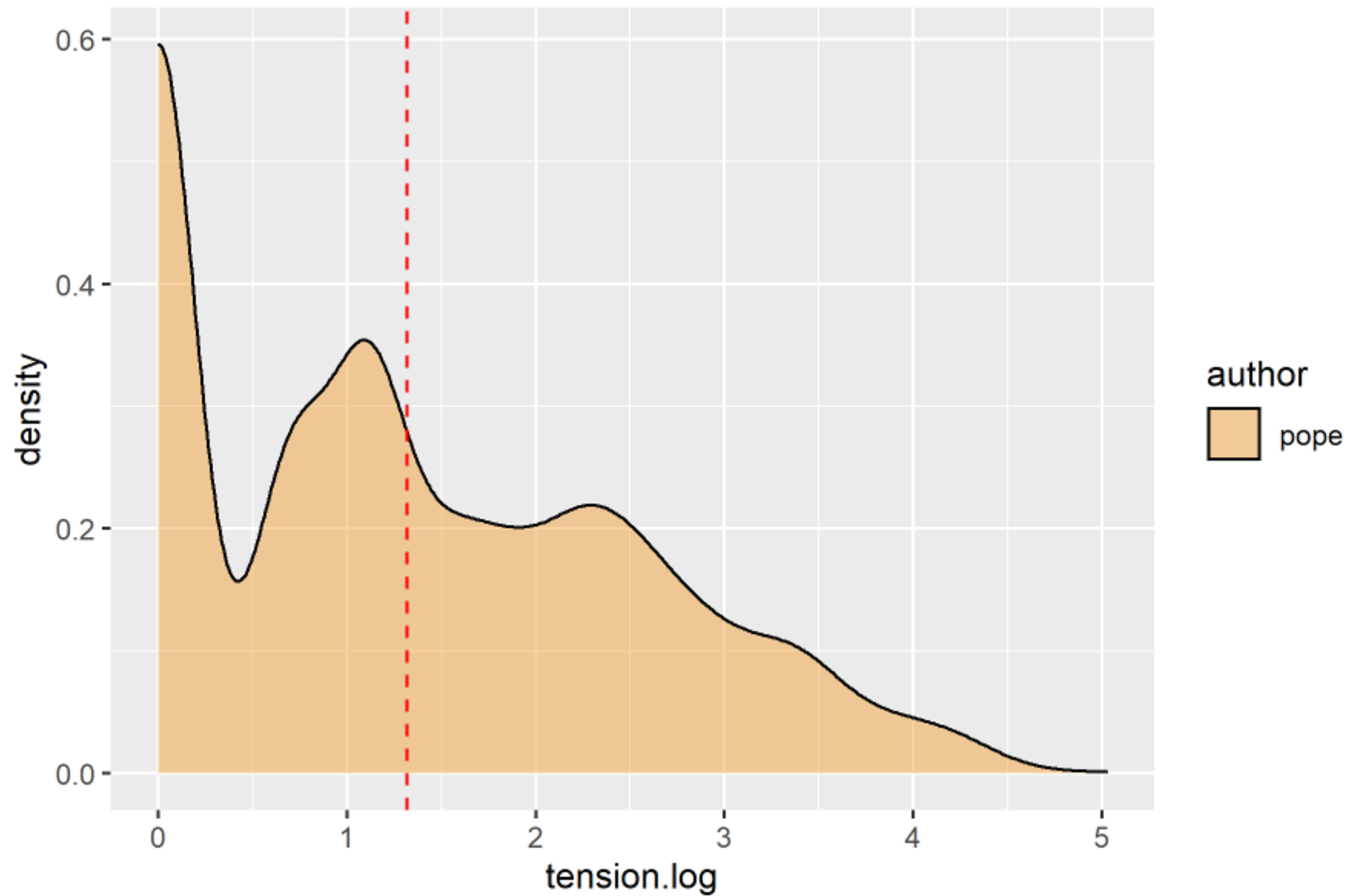


(20) There are two ways to think about antimetricality, both visible in the violin plots:

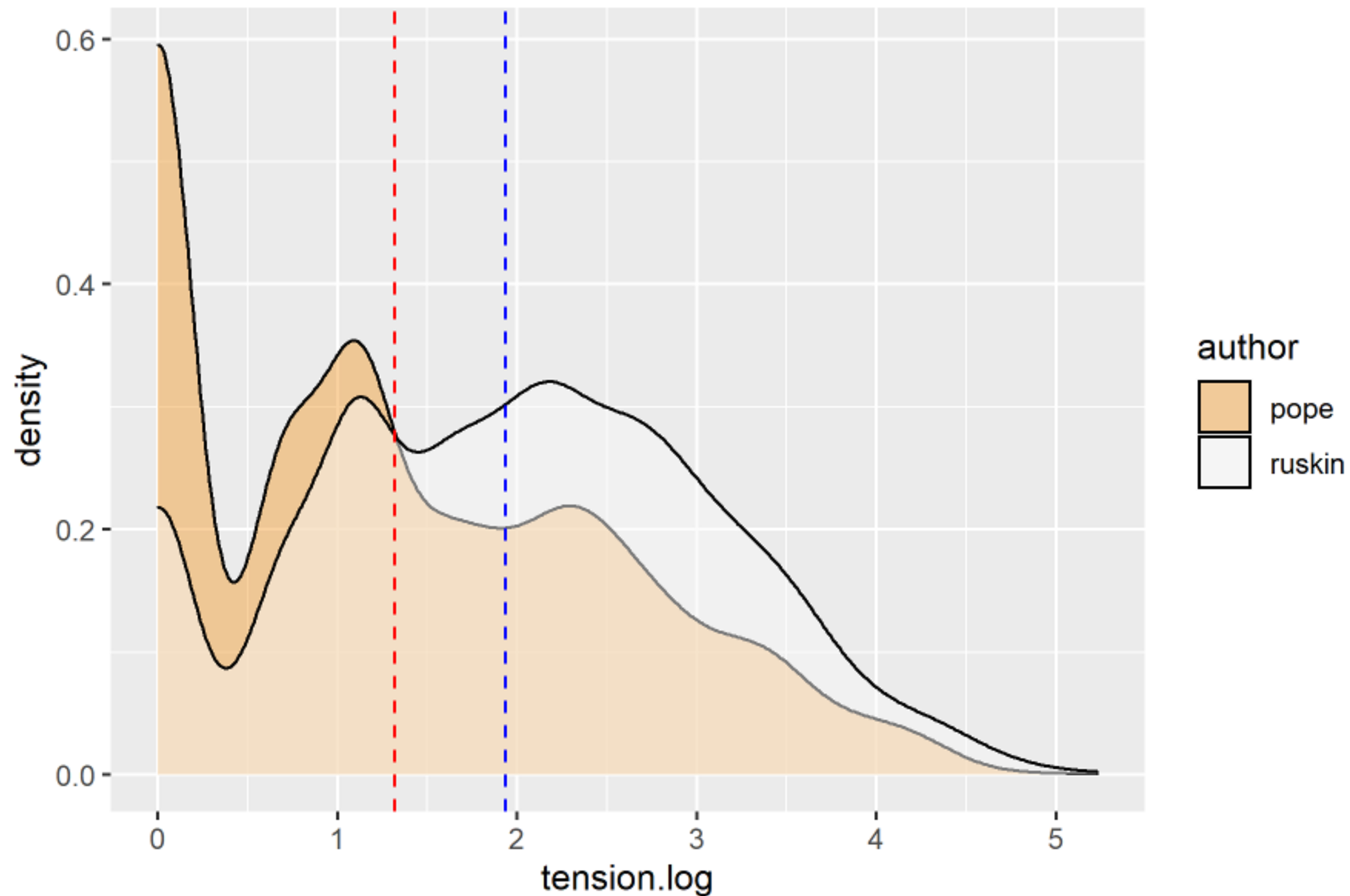
- (a) **WEAK ANTIMETRICALITY**: Avoid perfect lines (binary: perfect or not).
 - In terms of the plot: Minimize the width of the base of the violin.
- (b) **STRONG ANTIMETRICALITY** : Seek high metrical tension (scalar: more or less perfect).
 - In terms of the plot: Make the violin as top-heavy as possible.

(21) It is Strong Antimetricality that is captured by both MTS and MU.

(22) Metrical Tension Sums: Pope (verse) represented by 10-syllable pseudo-lines (Pope, N = 4,376). The dotted vertical line is the mean.



(23) Metrical Tension Sums: Pope (verse) vs. Ruskin (prose) represented by 10-syllable pseudo-lines (Pope, $N = 4,376$, Ruskin $N = 3,184$). The dotted vertical line is the mean.



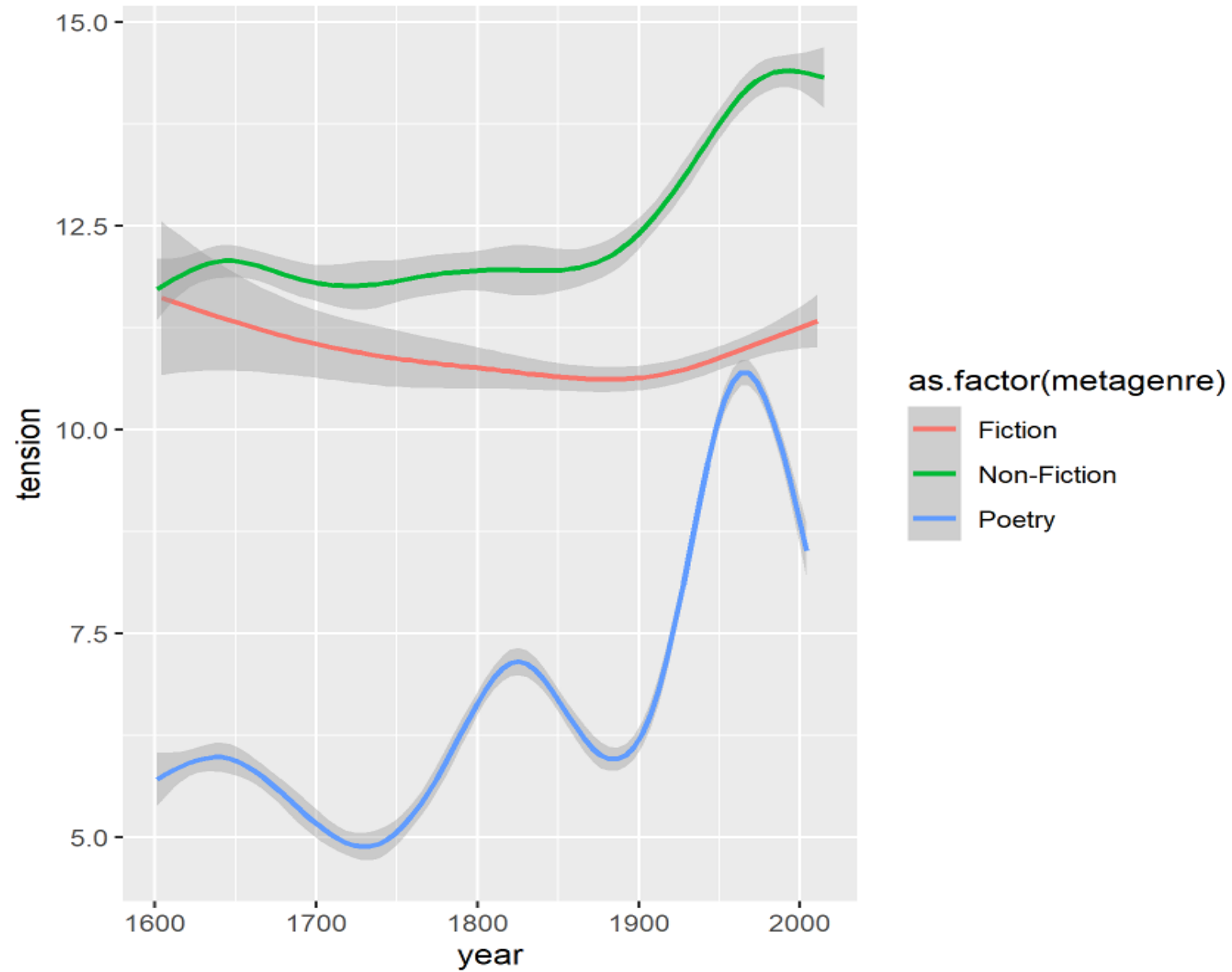
(24) The following text types differ systematically in metrical tension (MTS) as suggested by our preliminary regression models. “<” = ‘has a smaller MTS than’

- (a) verse < prose
- (b) original text < randomized text < scrambled text
- (c) verse, Dickens < Dibble < Pater, Browne, Ruskin

4. Big metrics

(25) We experimented with a sample of 468,066 10-syllable pseudo lines by 5,874 different authors, averaging about 80 lines per author, and calculated MTS for three “metagenres”: poetry, fiction, and non-fiction. This yields a visual literary history of prose rhythm.

(26) Metrical Tension Sums across centuries



(27) In the 19th century, fiction loses metrical tension as verse loses its dominance (the rise of the novel, free verse).

(28) This is consistent with the **ANTIMETRICALITY HYPOTHESIS**.

- Prose becomes less antimetrical as verse becomes less dominant.

5. Non-metrical differences

(29) Authors and genres also differ in terms of word length and phonology.

- Word length. Verse has shorter words than prose, but word length alone does not explain Saintsbury's intuition that Dickens "flirts with meter".
 - For example, a genuine metrical difference remains between Dickens and Browne even when we control for word length.
- (30) Phonological markedness. Verse is phonologically less marked than prose except for the phonological constraint ***CLASH** ('No adjacent stressed syllables across words.') The same holds true of Finnish verse (*Anttila and Heuser 2016*).

6. Summary

(31) Summary

- (a) A methodology for studying prose rhythm.
- (b) Preliminary support for the Antimetricality Hypothesis: Prose is not neutral (Saintsbury, Jakobson).
- (c) Preliminary evidence for a literary dynamic that maximizes the prose-verse distance such that the two avoid crossing into each other's metrical territory.

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