Metrical Uncertainty

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- **Halle & Keyser 1966, 1971:** An experienced reader can distinguish between a more metrical line and a less metrical line.
- **Goals:**
  - describe a quantitative measure of metricality that correlates with human judgments and reliably distinguishes different types of text
  - report on a preliminary test where we applied the measure to both verse and prose using automatic scansion software
- **Automatic scansion methodology:** PROSODIC **(Heuser et al. 2010–) built on OT (Prince and Smolensky 1993/2004)**

Term Definitions:

Candidate scansion: A logically possible correspondence relation between meter (e.g., w s w s w s w s w s) and syllables in a phonologically analyzed text.

Resolution: In this study, we allowed a maximum of two syllables per metrical position (s or w).

Viable scansion: A candidate scansion not harmonically bounded by the constraint set (see right column).

Metrical Uncertainty (*MU*): The number of viable scansions computed by PROSODIC divided by the number of syllables in the line.

Constraint Set (Hanson & Kiparsky 1996):

*W/PEAK: A weak position must not contain a strong syllable (= stressed syllable of a polysyllabic word).

*S/UNSTRESSED: A strong position must not contain an unstressed syllable.

*W/STRESSED: A weak position must not contain a stressed syllable.

W-RESOLUTION: For disyllabic positions within a word, the first position must be light and stressed (*many*/**although*).

F-RESOLUTION: A disyllabic position across a word boundary must be weak with two function words (*as the*/**light's flame*).

The Intuition

The more viable scansions, the more metrically complex the line, and the higher metrical uncertainty.
Prose has too many viable scansions, making the optimal scansion cognitively challenging to find.

Mine eye and heart are at a mortal war
(1 viable scansion, $MU = 0.1$)
Lascivious metres to whose venom sound
(4 viable scansions, $MU = 0.4$)
Under that bond that him as fast doth bind
(5 viable scansions, $MU = 0.5$)
Small showers last long but sudden storms are short
(6 Viable Scansions, $MU = 0.54$)
And in it are the Lords of York Berkeley and Seymour
(7 viable scansions, $MU = 0.54$)
Slandring creation with a false esteem
(9 viable scansion, $MU = 0.9$)
Harsh featureless and rude barrenly perish
(14 viable scansions, $MU = 1.27$)
That metal that selfmould that fashiond thee
(29 viable scansions, $MU = 2.9$)

LYRIC VS. DRAMATIC STYLES

Shakespeare Case study

The *Sonnets* and *Richard II* differ in metrical styles (Hanson 2006).

Metrical Uncertainty is a significant predictor of style.
(logit difference = 0.38, $SE = 0.11$, $z = 3.41$, $p < 0.001$).

An Example Line:

Richard II 2.3 29

He was not so resolv'd when last we spake together.

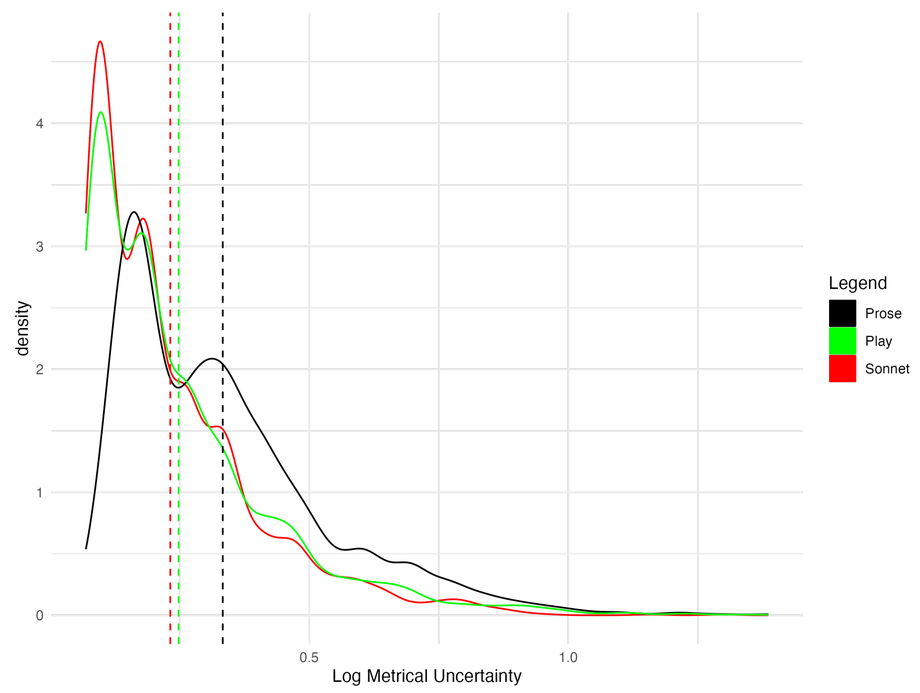
Candidate Parse	*W/PEAK	*S/UNSTR	*W/STR	W-RES	F-RES
HE|was|NOT|so.re|SOLV'D|when|LAST|we|SPAKE|to|GET|her					*
HE|was.not|SO|re|SOLV'D|when|LAST|we|SPAKE|to|GET|her		*			
he.was|NOT|so.re|SOLV'D|when|LAST|we|SPAKE|to|GET|her					*
he|WAS|not|SO|re|SOLV'D|when |LAST|we|SPAKE|to|GET|her		**			

VERSE VS. PROSE

Shakespeare vs. Prose Case Study

Metrical Uncertainty is a quasi-continuum for all text.

The more possible scansions, the more likely that the line is prose.
(logit difference -1.39, $SE = 0.10$, $z =$ -14.44, $p <$ 2e-16)



FUTURE WORK: ALTERNATIVE MEASURES OF METRICALITY

1. The (normalized) number of viable scansions (= this poster). This contextless measure can be complemented by calculating the VARIANCE of metrical uncertainty across lines.

2. The sum of violations across viable scansions. An alternative version of metrical uncertainty that can be tested in similar ways (Anttila, Heuser, and Kiparsky 2022).

3. A weighted sum of violations across viable scansions. Yet another version of the same. Problem: How to learn weights given that prose has no gold standard scansion?