The Repetition/Recurrence Analyses Function

Armin Hoenen
Text Technology Lab
Goethe University Frankfurt
Aim and Source of the ReAF Visualization

Object of Visualization: Verse Text

- Classification of Degree of Orality
- Investigation about Repetitive Structures that interact with Memorization
History of Verse Text Visualization

1. Script
2. Spaces, Capitalization, Color, Punctuation
3. Line Breaks
4. Lord/Parry – Scientific
5. Foley – Creative
6. ReAF
History of Verse Text Visualization

Script

Gilgamesh, 7th century B.C., Neo-Assyrian
History of Verse Text Visualization

Periods

Beowulf, 10th century, West-Saxon

- Epics
- Avestan
- Language

Summary
Alcaeus of Mytilene, 2nd century, Ancient Greek
History of Verse Text Visualization


Underlining of Repeated Sequences, Analyses, Degree of Orality

Ἀνδρά μοι ἔννεπε, Μοῦσα, πολύτροπον, ὃς μάλα πολλὰ πλάγχῃ, ἔπει Τροίης ἱερὸν πτολεύθρον ἕπερσε· πολλῶν δὲ ἀνθρώπων ἰδεν ἄστεα καὶ νόον ἔγνω, πολλὰ δὲ ὕ γ' ἐν πάντω πάθει ἄλγεα ἄν κατὰ θυμόν, ἄρνυμένος ἦν τε ψυχήν καὶ νόστον ἐταίρων.

ἀλλ' οὐδ' ὡς ἔταρος ἐρρύσατο ἱέμενός περ' αὐτῶν γὰρ σφετέρησιν ἀτασθαλίησιν ὅλοντο, νήπιοι, οἳ κατὰ βοῦς Ἰπερίονος Ἱηλίου ἡσυχίον. αὐτάρ ὁ τοῖς ἀφείλετο νόστημαν ἦμαρ. τῶν ἁμόθεν γε, ἥεα, Θύγατερ Διός, εἰπὲ καὶ ἡμῖν.
History of Verse Text Visualization

Foley (2002)

Poets Individual Renderings

Tis **nothing more** but **just** a test,
Though **poets illusTRAtion** say.
**Important just is reading best,**
Where **bold face, size and color** play.
Oral Formulaic Theory

Slide Compass

- Aim
- History
- **OFT**
  - General Descr.
  - Visual Cues
  - Techn. Backend
- Examples
  - Epics
  - Avestan
  - Language
- Summary

**Time, Audience, Goals, Motivation**

- Formula
- Context
- Performance
- Recurrence
- Event skeleton

Meta Language (Epithets)

Narrative Elements and Patterns

Memorization Pressure
Measuring Recurrence

1. Type-Token Ratio (TTR): \( ttr = \frac{\text{number of types}}{\text{number of tokens}} \)

2. Versetype–Verse Ratio (VVR): \( vvr = \frac{\text{number of diff. verses}}{\text{number of verses}} \)

3. Positional Faithfulness (PF): \( pf = \frac{\text{number of faithful words}}{\text{number of repeated words}} \)

\( ttr, vvr, pf \leq 1 \)

*Compression Ratio*
Recurrence (Repetition) Analyses Function

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### Objects
- Verse Text (Epics)
- Recurring Elements

### Type
- Dynamic Heatmap with Details
- Browser

### Users
- Verse text scholars
- Classicists, Anthropologists
Recurrence (Repetition) Analyses Function

- **Close Reading ➡️ Overview**
  - Lord (1960) for 40,000 lines: *no overview*
  - Heatmap on Text: *no close reading*

- **Mazza (2009)**
  
  "It is necessary for a picture to give the reader as much data as can be processed quickly, using as little space as possible."

- **Shneiderman (1996)**
  
  "…overview first, zoom and filter, then details on demand…"

- **Heatmap is Overview  🌟 Close Reading is Detail**
Recurrence (Repetition) Analyses Function

**HTML**
- Table with **one cell** representing **one verse**

**JavaScript**
- Enabling **expansion of cells for close reading**
- Parametricized dynamic coloring

**Browser**
- Platform-independent

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**Slide Compass**
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Examples

<table>
<thead>
<tr>
<th>Class</th>
<th>Texts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Already classified as oral*</td>
<td>Odyssey, Iliad, Beowulf, Kalevala, Chanson de Roland, Psalms, Rigveda</td>
</tr>
<tr>
<td>disputed</td>
<td>Shahname, Parzival, Heliand</td>
</tr>
<tr>
<td>Born-written</td>
<td>Faust, MacBeth, Knight With Tiger Skin, Divina Comedia</td>
</tr>
</tbody>
</table>

*no such classification is completely uncontroversial (lest anthropological primary records)

- For Illustration, Odyssey, text from TITUS website:

file:///C:/Users/Armin/workspace/ReAF/outputParamIterII/ReAFOdysseeTitusPr.html
### Examples

<table>
<thead>
<tr>
<th>Rgveda</th>
<th>Kalevala</th>
<th>Heliand</th>
<th>Vepkhistqaosani</th>
<th>Divina Comedia</th>
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<tbody>
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</tr>
</tbody>
</table>

**VVR**

0.85 0.95 0.97 1 1
• **Individualisation by use of *different visual mapping***:

  - Display cells with **Prayers**
  - Display **Gaps in Manuscript**
  - Spell out **Abbreviated Text** („to be repeated 3 times“)
  - Display cells with **Middle Persian Insertions**
  - Display ReAF based on **Lemmatic Repetition** (Lexicon Plug-in)
    - Cells with **Complete Lemmatical but no Verbatim Repetition**
  - Display **Alliteration/Rhyme**
  - Display **Word Length Repetition**, ...
This is the **prototype** of the repetition analyses function manuscript J2.

- **black** = material loss of manuscript J2
- **grey** = text which has to be altered but is abbreviated in the manuscript e.g. to be spoken two times
- **white** = unique (not repeated) verses
- **red** = exactly repeated verses
- **green** = Middle Persian insertions
- **blue** = Anacephalous

Numbers on the fields denote the strophes.

Upon **doubleclick** the cells content will expand and reveal the text as well as the places where this verse line is repeated (cf. A subsequent doubleclick closes the cell again.

Upon **rightclick** all verses resp. cells, which read the same are highlighted in blue.

You can zoom in and zoom out and return to the base colors by reload.
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**Cell = Sentence**

**Counts**

**Summing up**
Summary (Oral Style)

O my dearest audience, gathered from far and wide. O my dear learned women and men, intelligent and wise.

- Pre-memorized chunk
- Possible presentations
- One-cell one verse
- Ominous oral influence
- History
- Design Choice
- VVR
- Examples
- Accompanying Instrument
- Narrative Skeleton

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THANK YOU VERY MUCH FOR YOUR ATTENTION!