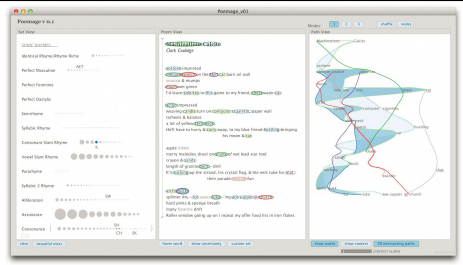


# Poemage: Visualizing the Sonic Topology of a Poem

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Domain  
Data Abstraction  
Visualization System  
Design Process

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## Distant Reading      Close Reading

- Bag of Words
  - Sentiment Analysis
  - Word Cloud
  - Ngram
- Literary Criticism
  - Rhetorical Analysis
  - Poetry Exegesis

Value of computation to close reading is still an open question

## Unproven Computational Value

*You don't know what you're looking for and why you're looking for it, how then do you proceed?*  
-Stanley Fish

Is it possible to visualize poetry with a level of complexity that would allow for new and interesting observations?

## Visualization Space: Sonic Patterns

**Sonic Turbulence:** Locations of increased intensity, intersection, activity  
Conceptual metaphor of "flow" of sound moving through poem

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## Rhyme Sets

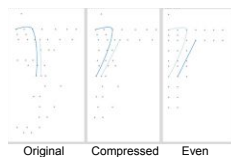
- **RhymeDesign:** System to automatically sonify a poem
- Developed formalism for detecting sonic devices
- Ordered based on location in poemspace
- Each word can belong to none, one, or many rhyme sets
- User-defined, custom, or system-defined

## Rhyme Sets

Rhyme type	Description	Example
Metrical rhyme	match in all sounds; includes repeated words and homographs	parrot/parrot/parrot
Perfect rhyme	matching stressed vowels sound and all preceding sounds	psychic/psychic
Perfect masculine rhyme	stress on the final syllable	psychic/psychic
Perfect feminine rhyme	stress on the second to last syllable	psychic/psychic
Perfect masculine rhyme	stress on the final to last syllable	psychic/psychic
Semirhyme	perfect rhyme with additional syllable on one word	crystal/crystal
Syllabic rhyme	perfect rhyme between stressed and unstressed syllables	crystal/crystal
Consonant final rhyme	matching trailing consonant of stressed syllables	crystal/crystal
Vowel final rhyme	matching vowel sound of stressed syllables	crystal/crystal
Familyrhyme	matching leading and trailing consonant of stressed syllables	crystal/crystal
Stylabic rhyme	rhyme between stressed syllables	crystal/crystal
Oblique	matching leading consonant of stressed syllables	crystal/crystal
Assonance	matching vowel sound (independent of stress)	crystal/crystal
Consonance	matching leading and/or trailing consonant sound (independent of stress)	crystal/crystal
Forced rhyme	perfect rhyme with imperfect match in final consonant sounds	crystal/crystal
Eye rhyme	spelling indicates perfect rhyme but sounds do not match	crystal/crystal
Character classes	matching substring involving 1-4 characters	crystal/crystal
Word character classes	match character strings of characters	crystal/crystal
Anagram	words formed out of the same set of characters	crystal/crystal
Phonetic alternation	leading consonant of stressed syllable match in mouth placement	crystal/crystal
Phonetic assonance	vowel of stressed syllables match in mouth placement	crystal/crystal

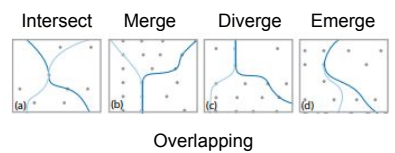
## Poemspace

2D space of the poem as printed on page



## Sonic Topology

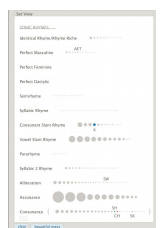
Distribution of rhyme sets across the poem



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## Set View

- Circles represents individual rhyme sets
- Radius encodes # of words
- Collapse and expand
- Set description on hover



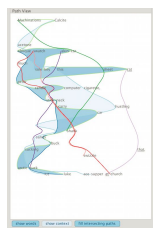
## Poem View

- View poetic devices in original form
- Annotation-style enclosure
- Select word will identify all associated sets
- Build custom set



## Path View

- Represents words as nodes in poemspace
- Highlights path of selected set
- "Show Context" slider
- Fill to show regions enclosed by intersecting sets
- Show ambiguous pronunciations



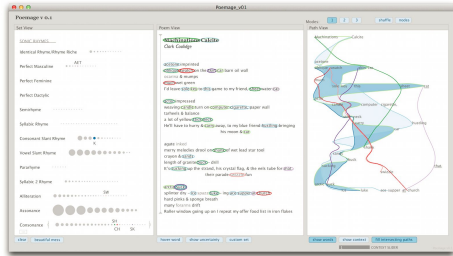
### Path View - Routing

- Shortest path preserving spatial location
- Routed to avoid occluding words and ambiguous set membership
- Identify closest whitespace to edge
- Interpolating cubic bezier curve



### Consistency across views

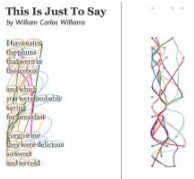
- Linked highlighting
- Consistent color to identify sets
- "Beautiful mess" to show everything



System	Poemage
What: Data	Text in 'poemage'
What: Derived	rhyme sets, sonic topology
Why: Tasks	Identify and compare sets and set interactions
How: Encode	Connection link marks, ellipse enclosure
How: Facet	Linked coloring and highlighting
How: Reduce	Collapse/expand filter
How: Manipulate	Navigate with scroll

### Validation

- Insight-based evaluation
- Collaborators given tutorial and a week to explore:
  - o Close Reading
  - o Erasure Poetry
  - o Cento Making
  - o Disruptive Technology



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### Design Study collaboration

- Skeptical Enthusiasm → Broad, open-ended conversation  
Observation of practice
- Uncertain Computational Value → Experimentation  
Presentation of interesting features and devices
- Open Design Space → Focus on untapped interpretive approach

### "Screwmenutics"

- Embrace concepts that visualization conventions resist → **Ambiguity** as fundamental source of insight  
**Visual clutter** as Chaos reflects what users seek to understand
- Encourage playfulness and creativity → Pleasure and enjoyment as productive research outcomes  
Encourages exploration and increased efficacy of tool

