

A complex network diagram with various sized nodes (black, blue, and grey) connected by thin grey lines. Some nodes are highlighted with larger circles. The background is light grey with faint circular patterns.

Fundamentals of Computational Text Analysis with Voyant

Dr. Wendy Perla Kurtz
Lecturer and Project Scientist
UCLA Program in Digital Humanities
wpkurtz@ucla.edu

TODAY'S WORKSHOP

- Introduction to computational text analysis (30 min)
 - What is it?
 - What can you do with it?
 - How you do it?
- Explore the Voyant dashboard (20 min)
 - default tools (aka “skins”) & customization options
- Hands-on exploration with Voyant Tools (<https://voyant-tools.org/>) (remaining time)

THIS WORKSHOP HAS BEEN INFORMED BY...

- My work in the digital humanities
- Input from colleagues and students of digital humanities
- Scholarly articles and literature
- Work of other digital humanists
- Participation in numerous workshops (Digital Humanities Summer Institute, conferences day-long symposia, hour-long workshops)
- Product development and user experience research

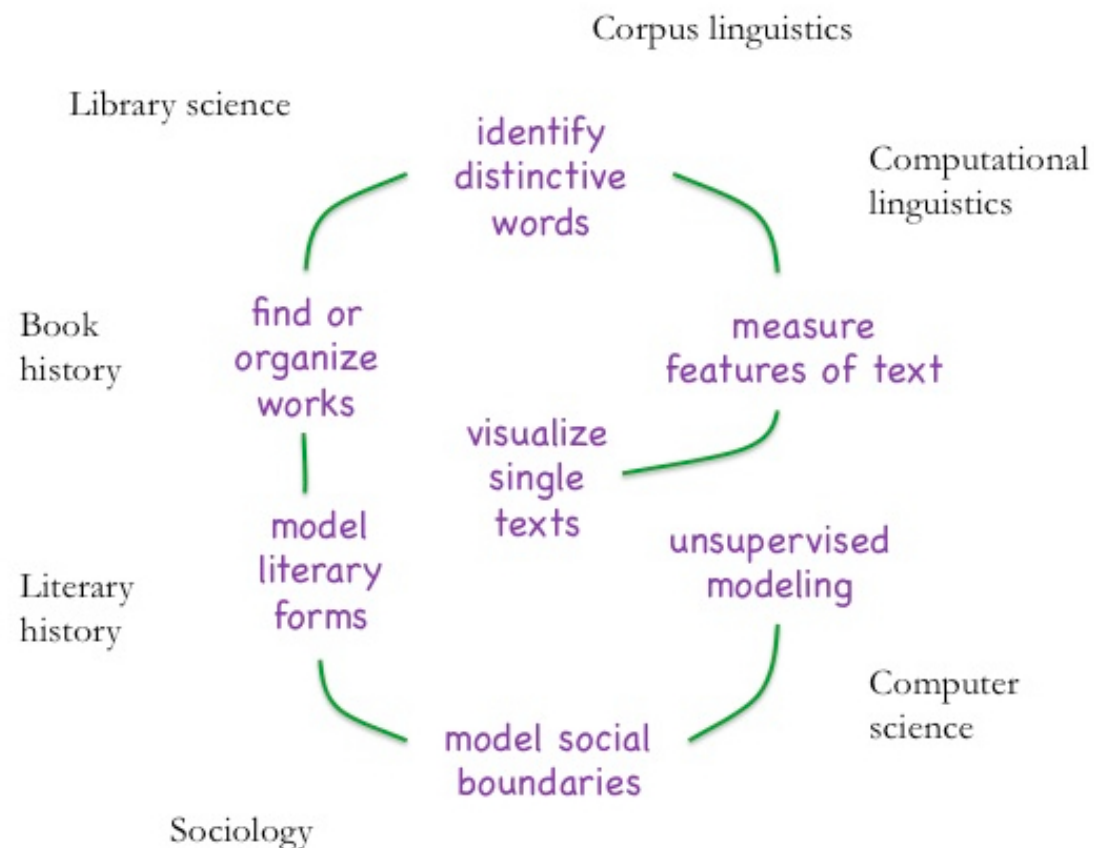


WHAT IS COMPUTATIONAL TEXT ANALYSIS?

Text mining is a research practice that involves using **computational analysis** to discover information from **vast quantities** of digital, free-form, natural language, **unstructured text**.

COMPUTATIONAL TEXT ANALYSIS IS INTERDISCIPLINARY

“Text mining is an **interdisciplinary** endeavor that also borrows freely from **corpus linguistics** and **computational linguistics**, as well as **social-scientific traditions** like social network analysis...Humanistic text mining seeks to frame questions that contribute meaningfully to existing traditions of humanistic inquiry.”



“Text-Mining the Humanities”
Matthew L. Jockers & Ted Underwood

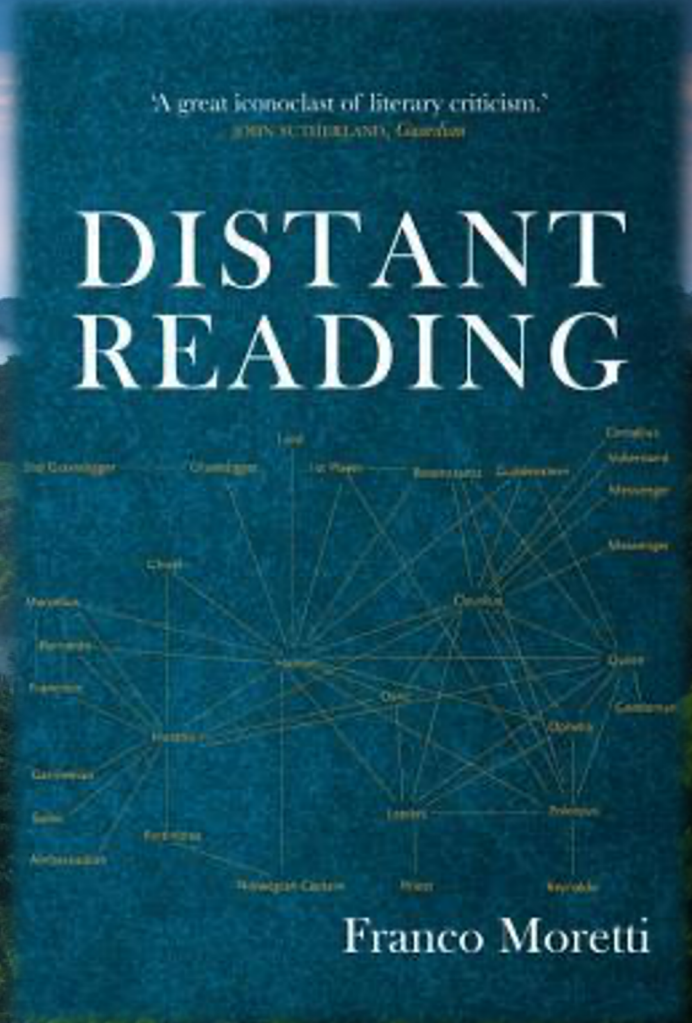
“Seven ways humanists are using computers to understand text”
Ted Underwood

SYNONYMS?

- Quantitative study of literature (many)
- Algorithmic criticism (Ramsay)
- Digital literary studies (Siemens/Schreibman et al)
- Computer-assisted reading / literary analysis / interpretation (Rockwell/Sinclair)
- Distant reading (Moretti)
- Macroanalysis (Jockers)
- CLS (Computational Literary Studies) (Da)
- ...

Slide adapted from:

DHSI 2019 Intro to Comp for Lit Crit @randaelka @DJWrisley



DISTANT READING VS. CLOSE READING

FRANCO MORETTI - *STANFORD LITERARY LAB*



WHAT CAN YOU DO WITH
COMPUTATIONAL TEXT
ANALYSIS?

YOU CAN...

- **Summarize** topics of interest in a group of texts
Analysis method: Topic modeling & Clustering
- **Connect** common keywords among a group of texts
Analysis method: Network analysis
- **Track** sentiment over topic, text source, time period
Analysis method: Sentiment Analysis
- **Identify** names, locations, entities
Analysis method: Natural Language Processing
- **Distinguish** texts in a corpus by a given author (i.e. who authored which federalist paper)
Analysis method: Stylometry
- **Differentiate** poetry from prose
Analysis method: Text Classification
- **Contrast** the vocabulary of different corpora
Analysis method: Keyword/feature extraction
- **Categorize** documents
Analysis method: Document/term clustering

APPLICATION FOR COMPUTATIONAL TEXT ANALYSIS

SAMPLE USE CASES

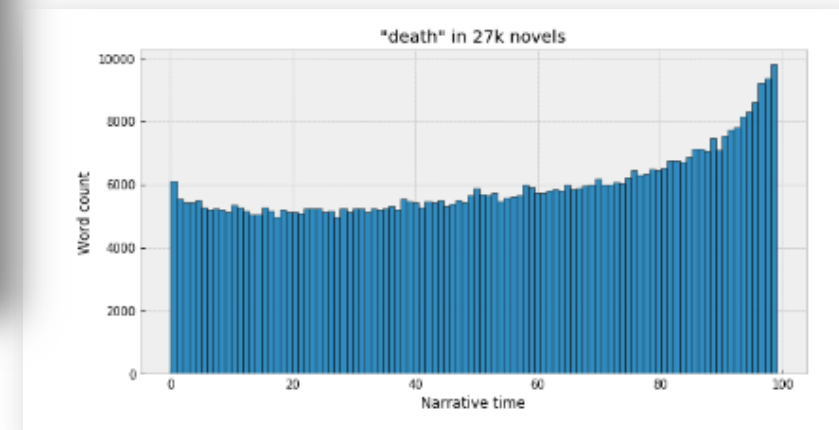
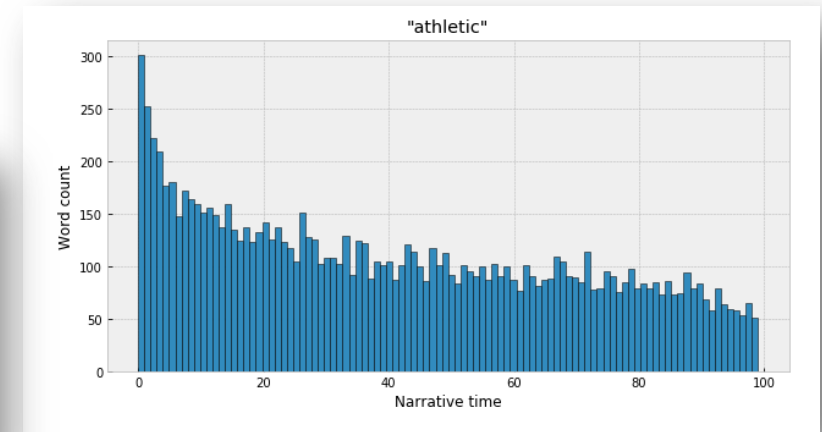
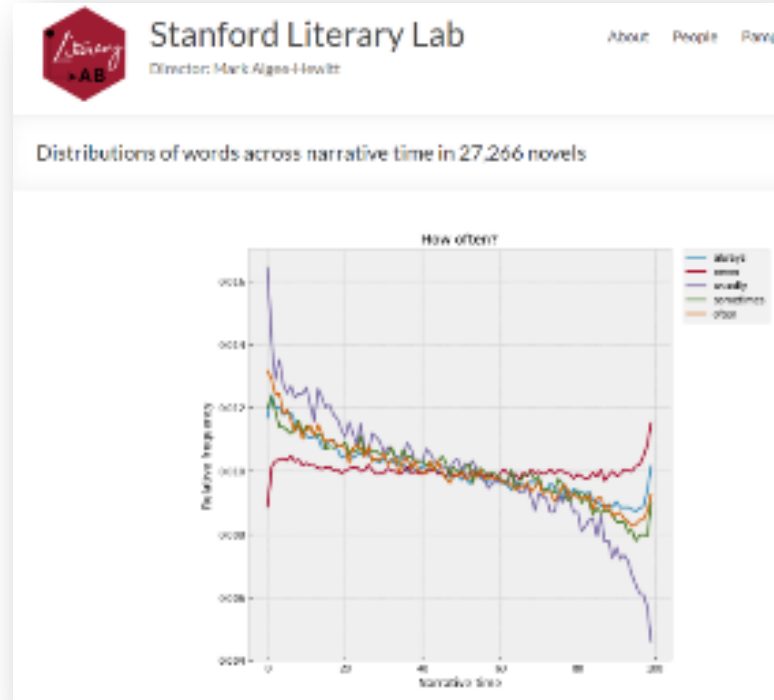


TEXT ANALYSIS: LITERARY STUDIES

AMERICAN FICTION 1774 - 1920

Positive adjectives and terms about family tend to dominate at the start of novels, and then tail off. Terms relating to death peak at the end of novels. There are some words (they've identified 200) that have a particular narrative "charge" (i.e. they dominate certain stages of a novel more than you'd expect).

David McClure
Stanford Literary Lab



TEXT ANALYSIS: LITERARY STUDIES

“TEXTUAL REUSE IN THE
EIGHTEENTH CENTURY: MINING
ELIZA HAYWOOD’S
QUOTATIONS”

Douglas Ernest Duhaime, University of Notre
Dame

Digital Humanities Quarterly, Volume 10 Number 1,
2016.

Change is Fate, and not Design ;
Loye, like us, muſt Fate obey :
Since 'tis Nature's Law to change,
Conſtancy alone is ſtrange.

Inconſtancy's the Plague that firſt or laſt
Taints the whole Sex, the catching Court-Diſeaſe.

INFIRMARY.

Immediately a Place

Before his Eyes appear'd; ſick, noiſom, dark :
A Lazar-Houſe it ſeem'd, wherein were laid
Numbers of all Diſeaſ'd, all Maladies.

Dire was the roſſing, deep the Groans : Deſpair
Tended the Sick, buſy from Couch to Couch ;
And over them triumphant Death his Dart
Shook, but delay'd to ſtrike, tho' oft invoc'd
With Vows, as their chief Good and final Hope.

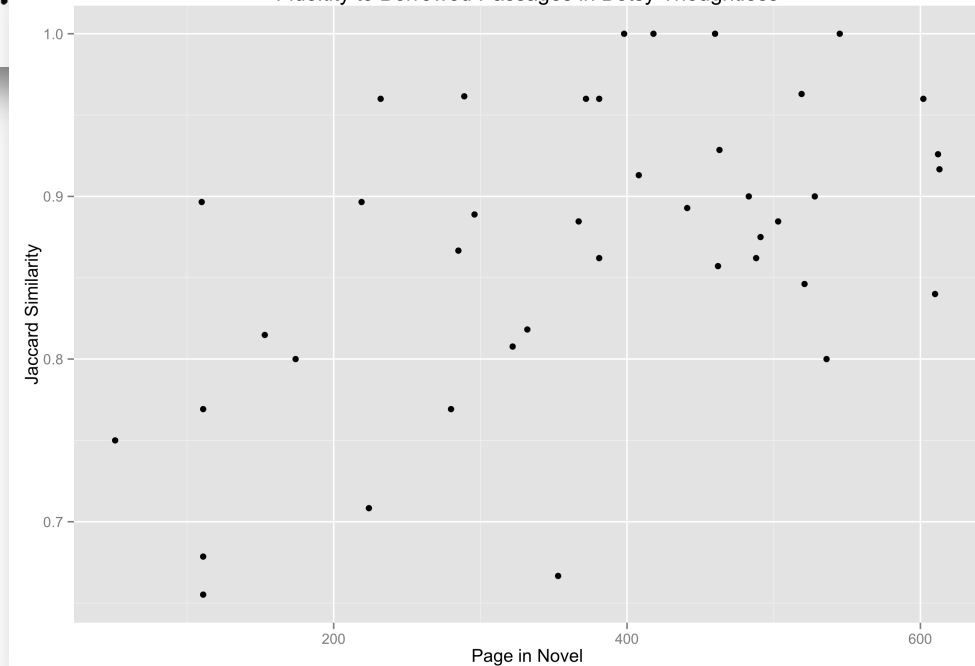
INGRATITUDE.

Ingratitude's the Growth of every Clime.

*Reb.
(Ibrid.
Lee Mi-*

Milt.

Fidelity to Borrowed Passages in *Betsy Thoughtless*



TEXT ANALYSIS: HISTORICAL NEWSPAPERS

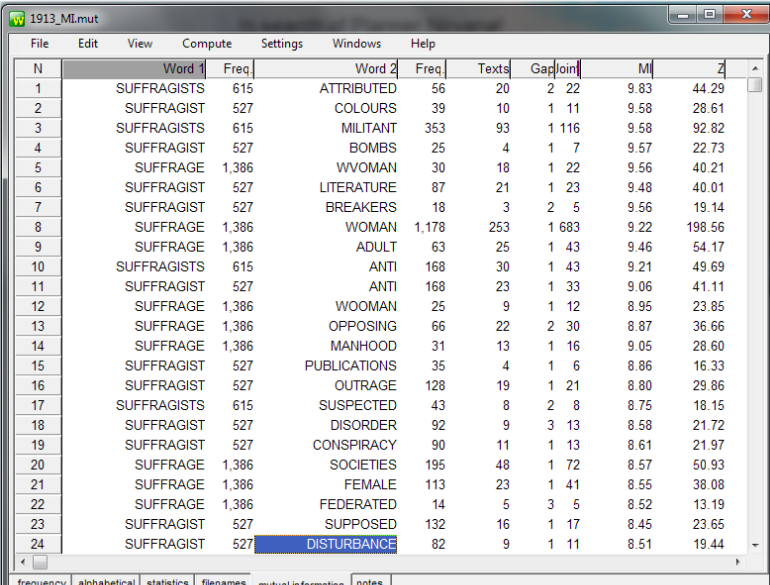
THE LANGUAGE OF BRITISH SUFFRAGE IN THE PRESS

Dr Kat Gupta
University of Nottingham

TO THE EDITOR OF THE TIMES.

Sir,—May I express my entire agreement with the letter of Miss Milner in your issue of this morning? If the recent scenes of rowdyism associated with women's franchise only served to bring ridicule on the self-appointed champions of that cause other women might be well content to let the matter rest there. Unfortunately, such behaviour can only have the most mischievous effect in prejudicing the influence of women in those branches of public life where the beneficial character of their work is universally recognized.

It is often said of women that neither logic nor humour counts among their strongest points. The recent behaviour of the **suffragettes** would appear to support this contention. Mrs. Fenwick Miller's letter in *The Times* this morning is in every way a remarkable document. It opens up an attractive vista of the public results we might expect to follow from the establishment of feminine rule marked by such a judicious and temperate spirit, say, at the Board of Trade or India Office. As an onlooker nothing strikes me as more curious in this controversy than the unreasonable but most feminine desire of the **suffragettes** both to eat and to keep their political and domestic cake. Women cannot expect to have it both ways. They cannot at one and the same time



1913_ML.mut

N	Word 1	Freq	Word 2	Freq	Texts	Gap/Join	MJ	Z
1	SUFFRAGISTS	615	ATTRIBUTED	56	20	2 22	9.83	44.29
2	SUFFRAGIST	527	COLOURS	39	10	1 11	9.58	28.61
3	SUFFRAGISTS	615	MILITANT	353	93	1 116	9.58	92.82
4	SUFFRAGIST	527	BOMBS	25	4	1 7	9.57	22.73
5	SUFFRAGE	1,386	WVOMAN	30	18	1 22	9.56	40.21
6	SUFFRAGIST	527	LITERATURE	87	21	1 23	9.48	40.01
7	SUFFRAGIST	527	BREAKERS	18	3	2 5	9.56	19.14
8	SUFFRAGE	1,386	WOMAN	1,178	253	1 683	9.22	198.56
9	SUFFRAGE	1,386	ADULT	63	25	1 43	9.46	54.17
10	SUFFRAGISTS	615	ANTI	168	30	1 43	9.21	49.69
11	SUFFRAGIST	527	ANTI	168	23	1 33	9.06	41.11
12	SUFFRAGE	1,386	WUOMAN	25	9	1 12	8.95	23.85
13	SUFFRAGE	1,386	OPPOSING	66	22	2 30	8.87	36.66
14	SUFFRAGE	1,386	MANHOOD	31	13	1 16	9.05	28.60
15	SUFFRAGIST	527	PUBLICATIONS	35	4	1 6	8.86	16.33
16	SUFFRAGIST	527	OUTRAGE	128	19	1 21	8.80	29.86
17	SUFFRAGISTS	615	SUSPECTED	43	8	2 8	8.75	18.15
18	SUFFRAGIST	527	DISORDER	92	9	3 13	8.58	21.72
19	SUFFRAGIST	527	CONSPIRACY	90	11	1 13	8.61	21.97
20	SUFFRAGE	1,386	SOCIETIES	195	48	1 72	8.57	50.93
21	SUFFRAGE	1,386	FEMALE	113	23	1 41	8.55	38.08
22	SUFFRAGE	1,386	FEDERATED	14	5	3 5	8.52	13.19
23	SUFFRAGIST	527	SUPPOSED	132	16	1 17	8.45	23.65
24	SUFFRAGIST	527	DISTURBANCE	82	9	1 11	8.51	19.44

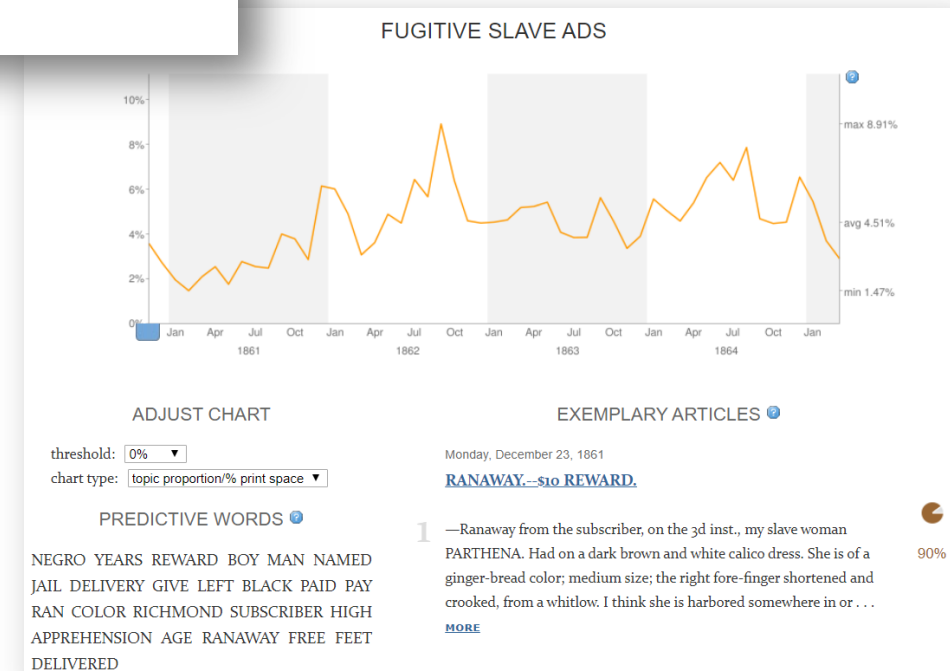
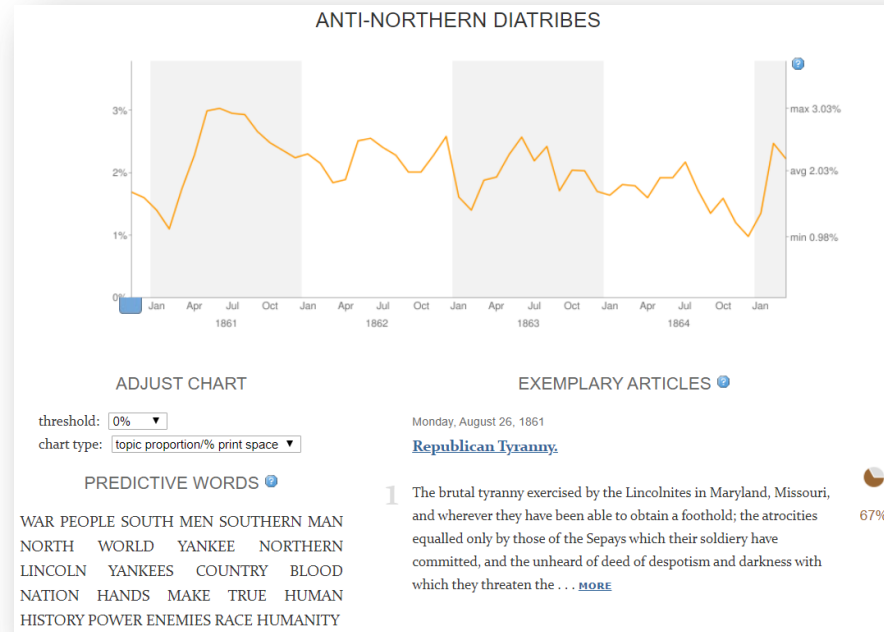
frequency | alphabetical | statistics | filenames | mutual information | notes

TEXT ANALYSIS: HISTORICAL NEWSPAPERS

“MINING THE *DISPATCH*”

Robert K. Nelson, Director of the Digital
Scholarship Lab at the University of Richmond

[http://dsl.richmond.edu/dispatch
/pages/home](http://dsl.richmond.edu/dispatch/pages/home)



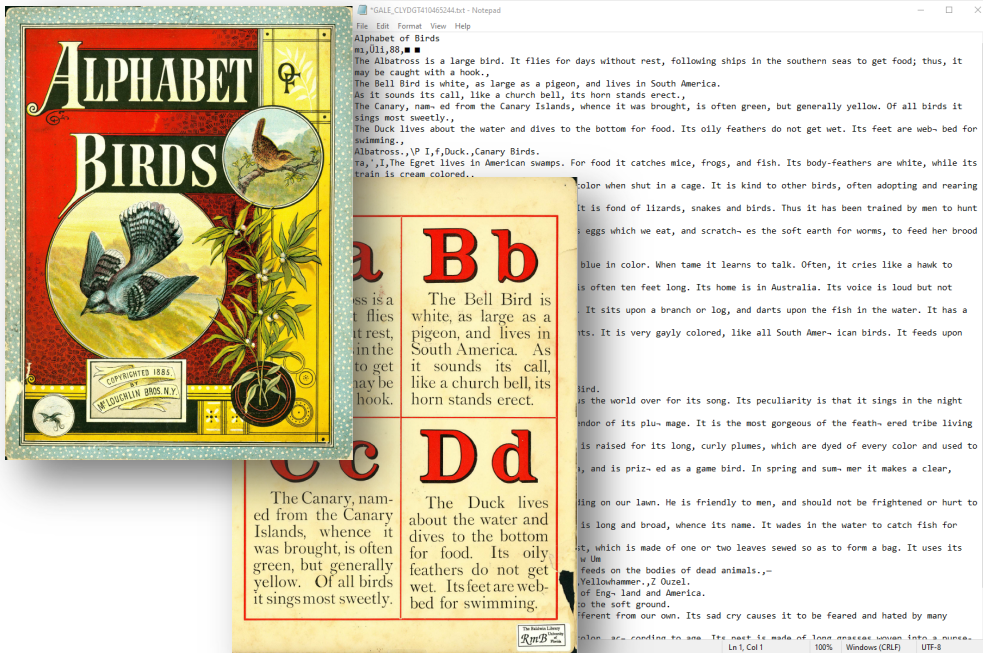


SO...HOW DO WE DO IT?

TYPES OF TEXT YOU CAN MINE

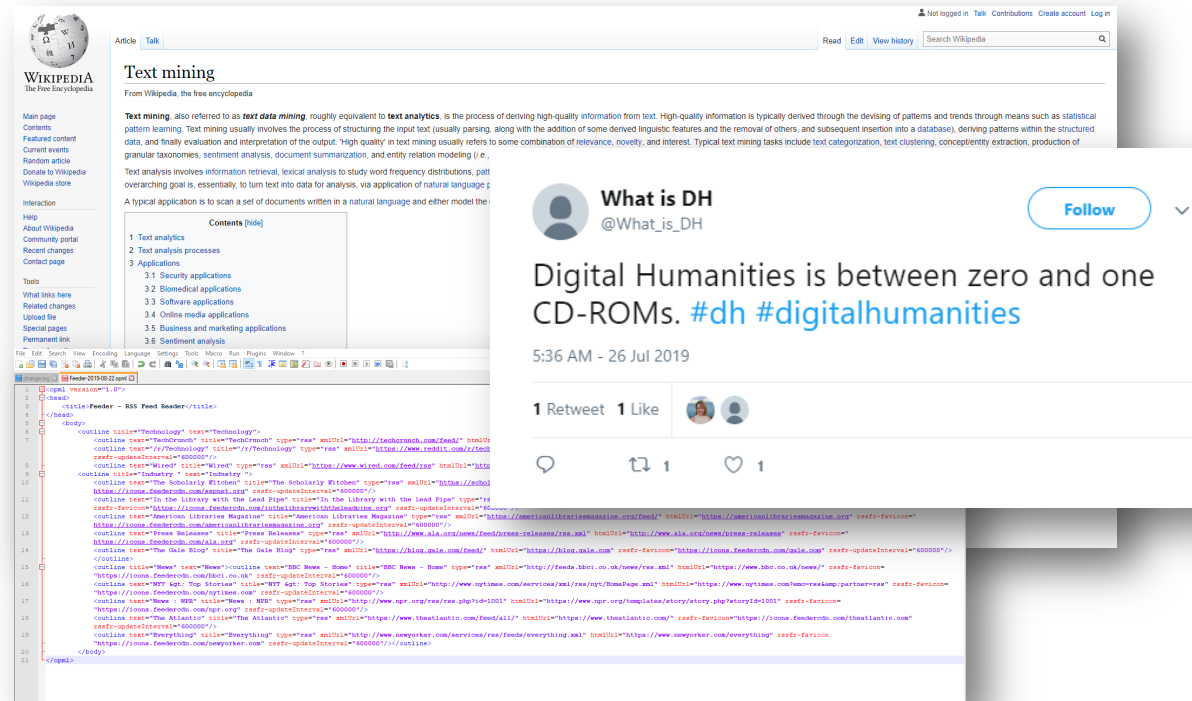
Digitized Texts

Physical documents that are digitized and processed using optical character recognition or manually keyed to create a digital facsimile.



Native Digital Texts

Texts created in a digital format for the purpose of being accessed on an electronic device.



GETTING MACHINE-READY TEXT

- Machine-ready = machine-readable = capable of being processed by a computer
- Text must be OCR'd = optical character recognition
 - ABBYY Finereader is the standard for OCR (but not free)
 - Free options available but results will likely be noisy
- Not all things can be (easily) OCR'd
 - Handwriting, images, some older print fonts

PLACES TO GET TEXT

Digitized Texts

- [Internet Archive](#)
- [Project Gutenberg](#)
- [Google Books](#)
- [Hathi Trust](#)
- [JSTOR Data for Research](#)
- [PubMed Open Access Subset](#)
- [Open American National Corpus](#)

Native Digital Texts

- Email
- HTML
- RSS Feeds
- [Twitter](#)
- Wikipedia
- Data Liberation Front
- [New York Times API](#)

Dataset Repositories

- [Kaggle](#)
- [English-corpora.org](#) (BYU)
- [Data is Plural](#) (Jeremy Singer-Vine)
- [DH Toychest](#) (Alan Liu)

PLACES TO ANALYZE TEXTS

Programming Languages

- [Python](#) (Text Cleaning & Statistical Analysis)
- [R](#) (Statistical Analysis & Visualization)
- Javascript (Visualization)
- GeoJSON (Geo-mapping)

Other helpful links:

- [TAPor](#)

Software Libraries

- [MALLET](#) (Topic Modeling)
- [spaCy](#) (Natural Language Processing)
- [Scrapy](#) (extracting the data from websites)
- [Transkribus](#)

Out-Of-The-Box

- [Voyant](#)
- [Lexos](#)
- [Juxta](#)
- [AntWord Profiler](#)
- [Textometrie \(TXM\)](#)
- [Textal](#)
- [Gephi](#)
- [Palladio](#)

[HTTPS://VOYANT-TOOLS.ORG/](https://voyant-tools.org/)

VOYANT

see through your text

Add Texts



Type in one or more URLs on separate lines or paste in a full text.

Open

Upload

Reveal

Voyant Tools is a web-based reading and analysis environment for digital texts.

VOYANT TOOLS OVERVIEW

- **What it does:** computationally processes large amounts of text (**corpus/corpora**) to produce a series of customizable visualizations for text analysis
- **What you need:** a corpus - single plain text doc or many docs combined (e.g. an author's entire works or mix-and-match works from different authors)
- **How it works:** upload your text and then start to explore!

ADDING A TEXT(S) FOR ANALYSIS

1. Upload documents (.txt, .doc, .csv, .html, .xml, .pdf, .zip, .json...)
2. Paste URLs (must link to a readable file format)
3. Paste plain text
4. Choose from existing

The Wonderful Wizard of Oz

Chapter I

The Cyclone

Dorothy lived in the midst of the great Kansas prairies, with Uncle Henry, who was a farmer, and Aunt Em, who was the farmer's wife. Their house was small, for the lumber to build it had to be carried by wagon many miles. There were four walls, a floor and a roof, which made one room; and this room contained a rusty looking cookstove, a cupboard for the dishes, a table, three or four chairs, and the beds. Uncle Henry and Aunt Em had a big bed in one corner, and Dorothy a little bed in another corner. There was no garret at all, and no cellar—except a small hole dug in the ground, called a cyclone cellar, where the family could go in case one of those great whirlwinds arose, mighty enough to crush any building in its path. It was reached by a trap door in the middle of the floor, from which a ladder led down into the small, dark hole.

When Dorothy stood in the doorway and looked around, she could see nothing but the great gray prairie on every side. Not a tree nor a house broke the broad sweep of flat country that reached to the edge of the sky in all directions. The sun had baked the plowed land into a gray mass, with little cracks running through it. Even the grass was not green, for the sun had burned the tops of the long blades until they were the same gray color to be seen everywhere. Once the house had been painted, but the sun blistered the paint and the rains washed it away, and now the house was as dull and gray as everything else.

When Aunt Em came there to live she was a young, pretty wife. The sun and wind had changed her, too. They had taken the sparkle from her eyes and left them a sober gray; they had taken the red from her cheeks and lips, and they were gray also. She was thin and gaunt, and never smiled now. When Dorothy, who was an orphan, first came to her, Aunt Em had been so startled by the child's laughter that she would scream and press her hand upon her heart whenever Dorothy's merry voice reached her ears; and she still looked at the little girl with wonder that she could find anything to laugh at.

Uncle Henry never laughed. He worked hard from morning till night and did not know what joy was. He was gray also, from his long beard to his rough boots, and he looked stern and solemn, and rarely spoke.

It was Toto that made Dorothy laugh, and saved her from growing as gray as her other surroundings. Toto was not gray; he was a little black dog, with long silky hair and small black eyes that twinkled merrily on either side of his funny, wee nose. Toto played all day long, and Dorothy played with him, and loved him dearly.

Today, however, they were not playing. Uncle Henry sat upon the doorstep and looked anxiously at the sky, which was even grayer than usual. Dorothy stood in the door with Toto in her arms, and looked at the sky too. Aunt Em was washing the dishes.

From the far north they heard a low wail of the wind, and Uncle Henry and Dorothy could see where the long grass bowed in waves before the coming storm. There now came a sharp whistling in the air from the south, and as they turned their eyes that way they saw ripples in the grass coming from that direction also.

Suddenly Uncle Henry stood up.

"There's a cyclone coming, Em," he called to his wife. "I'll go look after the stock." Then he ran toward the sheds where the cows and horses were kept.

Aunt Em dropped her work and came to the door. One glance told her of the danger close at hand.

"Quick, Dorothy!" she screamed. "Run for the cellar!"

Toto jumped out of Dorothy's arms and hid under the bed, and the girl started to get him. Aunt Em, badly frightened, threw open the trap door in the floor and climbed down the ladder into the small, dark hole. Dorothy caught Toto at last and started to follow her aunt. When she was halfway across the room there came a great shriek from the wind, and the house shook so hard that she lost her footing and sat down suddenly upon the floor.

Then a strange thing happened.

The house whirled around two or three times and rose slowly through the air. Dorothy felt as if she were going up in a balloon.

The north and south winds met where the house stood, and made it the exact center of the cyclone. In the middle of a cyclone the air is generally still, but the great pressure of the wind on every side of the house raised it up higher and higher, until it was at the very top of the cyclone; and there it remained and was carried miles and miles away as easily as you could carry a feather.

PRE-PROCESSING YOUR DATA

After uploading your corpus, Voyant will:

- guess the file format
- ignore punctuation and symbols
- parse & index corpus text based on specified delimiters, or tokenize text
- apply stopwords dictionary to omit common terms unlikely to be significant (e.g. “the,” “and,” etc.)

Voyant will not:

- correct misspelled or merged words (via OCR)
- cluster spelling variants
- translate HTML entities or Unicode characters

But errors can be easier to discover in Voyant...

Add Texts

“My darling child!” she cried, folding the little girl in her arms and covering her face with kisses. “Where in the world did you come from?”

“From the Land of Oz,” said Dorothy gravely. “And here is Toto, too. And oh, Aunt Em! I’m so glad to be at home again!”

Open Upload Reveal

Options

Input Format: Auto-Detect (recommended)

For more information on the advanced options below, see the documentation on [creating a corpus](#).

Corpus

Text

XML

HTML

JSON

Tables

Processing

Text Language: Auto-detect

Tokenization: Automatic (highly recommended)

Simple Word Boundaries: Automatic (highly recommended)

Whitespace Only

Access Manager

Slide adapted from: Devon Mordell, McMaster University, “An Introduction to Textual Analysis With Voyant Tools.”

VOYANT DASHBOARD

1. Cirrus: a kind of word cloud showing the most frequent terms
2. Reader: an efficient corpus reader that fetches segments of text as you scroll
3. Trends: a distribution graph showing terms across the corpus (or terms within a document)
4. Summary: a tool that provides a simple, textual overview of the current corpus
5. Contexts: a concordance that shows each occurrence of a keyword with a bit of surrounding context

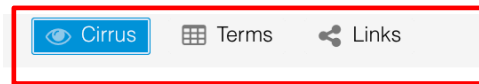
The screenshot displays the Voyant Tools interface with several key components highlighted by green circles:

- 1 (Cirrus):** A word cloud on the left side of the interface, with the most prominent words being "dorothy", "woodman", "scarecrow", "lion", and "oz".
- 2 (Reader):** The central text viewer showing the beginning of Chapter I, "The Wonderful Wizard of Oz", with a vertical scrollbar on the right.
- 3 (Trends):** A line graph on the right side showing the relative frequencies of the terms "dorothy", "lion", "oz", "scarecrow", and "woodman" across 10 document segments.
- 4 (Summary):** A summary panel below the reader providing corpus statistics: "This corpus has 1 document with 39,393 total words and 2,899 unique word forms. Created about 19 hours ago. Vocabulary Density: 0.074. Average Words Per Sentence: 18.0. Most frequent words in the corpus: dorothy (346); scarecrow (218); woodman (175); lion (171); oz (159)." It also includes tabs for Documents and Phrases.
- 5 (Contexts):** A concordance table at the bottom right showing occurrences of the term "witch" with surrounding text from the document.

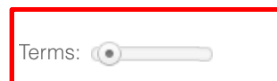
Document	Left	Term	Right
1) The ...	for having killed the Wicked	witch	of the East, and for
1) The ...	she had killed the Wicked	witch	of the East? Dorothy was
1) The ...	Dorothy. "She was the Wicked	witch	of the East, as I
1) The ...	the East where the Wicked	witch	ruled." "Are you a Munchkin
1) The ...	North. When they saw the	witch	of the East was dead
1) The ...	at once. I am the	witch	of the North." "Oh, gracious
1) The ...	Dorothy. "Are you a real	witch	?" "Yes, indeed," answered the little
1) The ...	But I am a good	witch	, and the people love me
1) The ...	as powerful as the Wicked	witch	was who ruled here, or

ANATOMY OF A VOYANT TOOL

Default tools for panel area



Tool details



Tool-specific interactions

CUSTOMIZATION (STOPWORDS & APPEARANCE)

- Click the options in the panel to access
- Edit list to add corpus-specific terms
- Apply globally doesn't always work :-)



Options ⊗

Stopwords:	Auto-detect	▼	Edit List	<input checked="" type="checkbox"/> apply globally
White List:		▼	Edit List	
Categories:	auto	▼	Edit	
Font family:	Palatino ▼			
Palette:	default	▼	Edit List	

↻ Reset ✕ Cancel ✓ Confirm

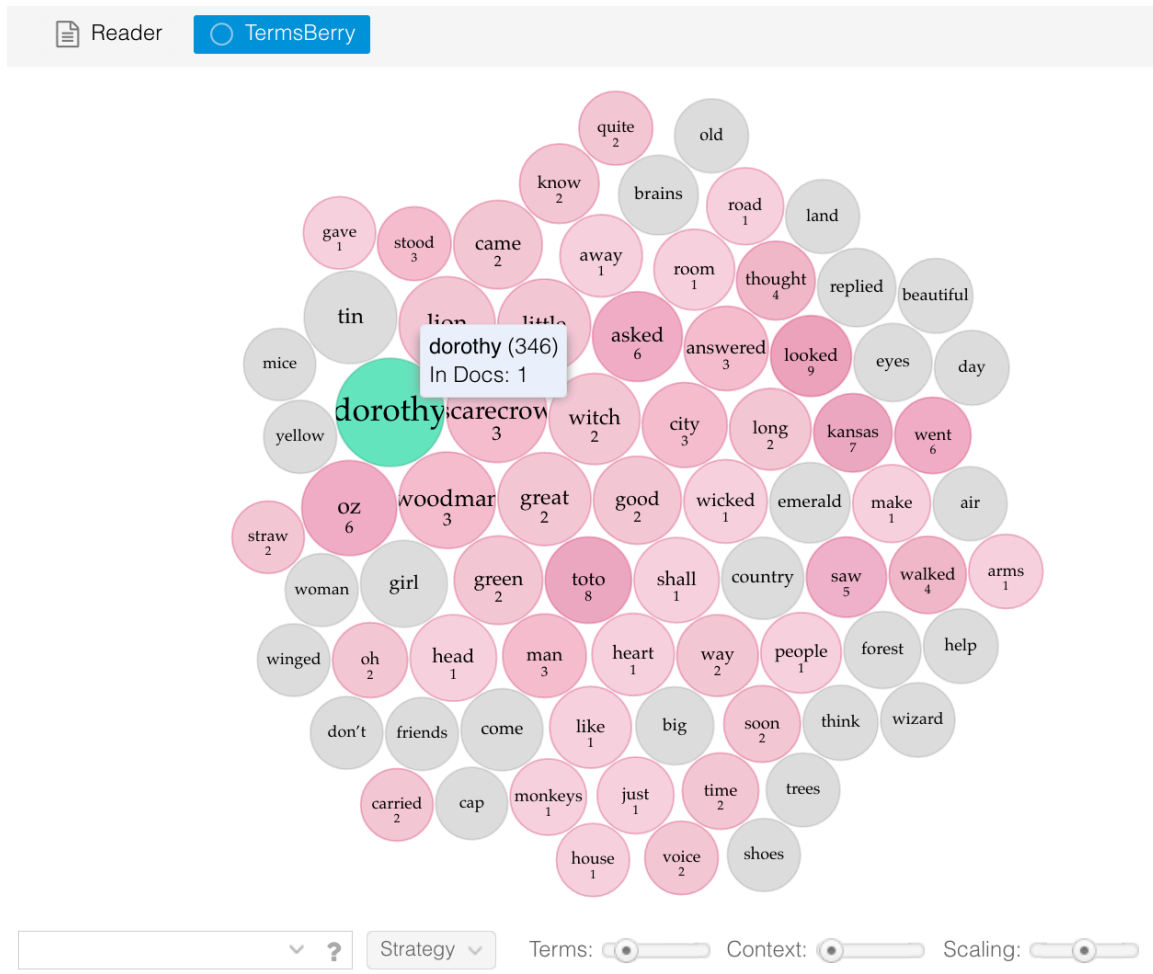
CUSTOMIZING + REFINING RESULTS

Results can be customized/refined in a number of ways:

- Adjust # of terms/items you're seeing (except Reader)
- Stopwords to filter out noisy words
- Stemming + other wildcard queries to zoom in on specific terms/patterns
 - * to truncate or control for variance
 - ^ for exact match (if you only type a word, ^ is implied)
 - term01 | term02 for exact pair

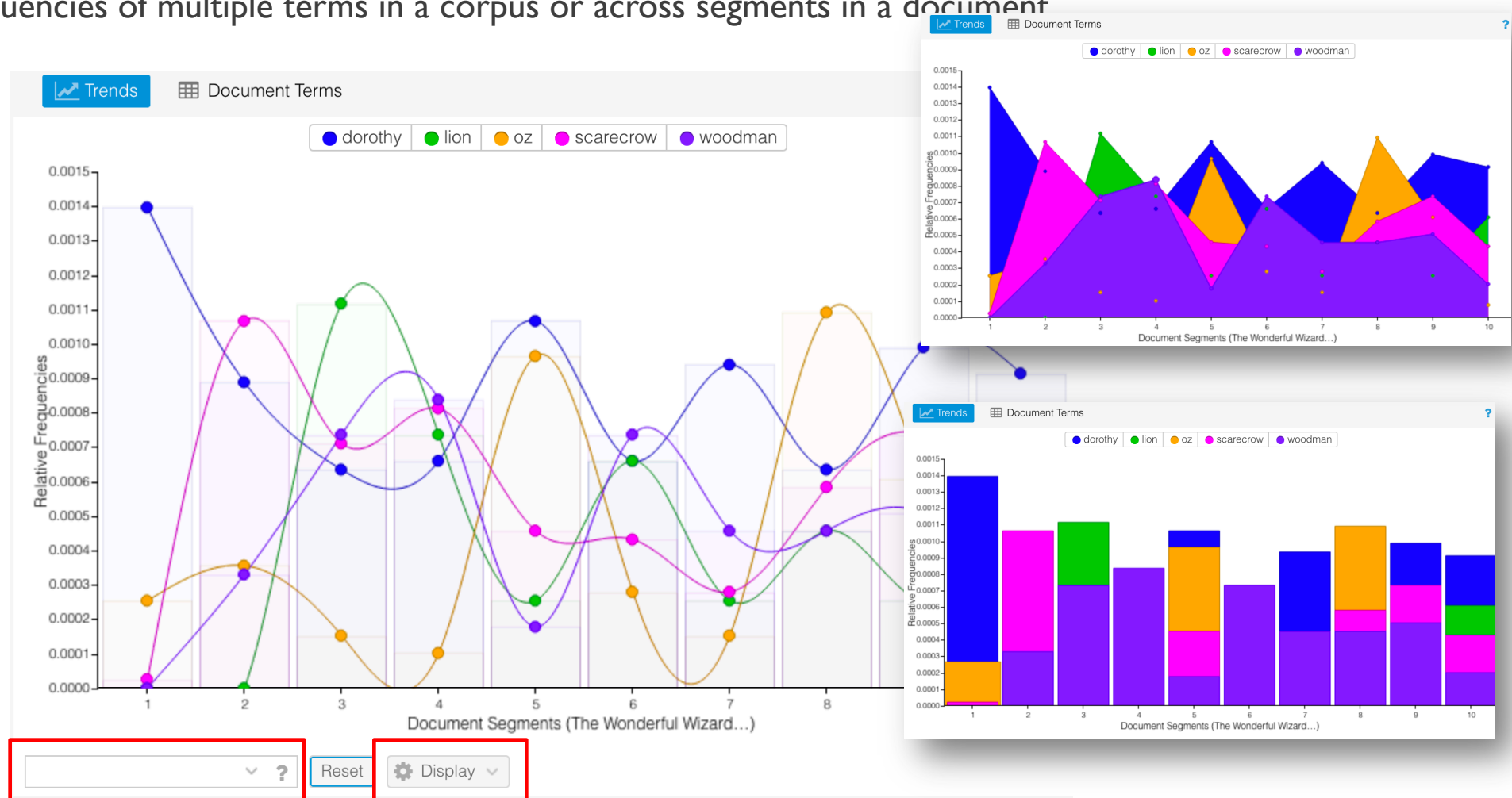
TERMSBERRY

- a way of exploring high frequency terms and their collocates (words that occur in proximity)



TRENDS TOOL

- compare relative frequencies of multiple terms in a corpus or across segments in a document



CONTEXTS TOOL

- active word in the contexts in which it appears (re: sense)

Contexts 👁 Bubblelines 📊 Correlations ?				
	Document	Left	Term	Right
⊕	1) The ...	for having killed the Wicked	witch	of the East, and for
⊕	1) The ...	she had killed the Wicked	witch	of the East? Dorothy was
⊕	1) The ...	Dorothy. "She was the Wicked	witch	of the East, as I
⊕	1) The ...	the East where the Wicked	witch	ruled." "Are you a Munchkin
⊕	1) The ...	North. When they saw the	witch	of the East was dead
⊕	1) The ...	at once. I am the	witch	of the North." "Oh, gracious
⊕	1) The ...	Dorothy. "Are you a real	witch	?" "Yes, indeed," answered the little
⊕	1) The ...	But I am a good	witch	, and the people love me
⊕	1) The ...	as powerful as the Wicked	witch	was who ruled here, or
⊕	1) The ...	frightened at facing a real	witch	. "Oh, no, that is a
⊕	1) The ...	there is but one Wicked	witch	in all the Land of
⊕	1) The ...	where I came from." The	witch	of the North seemed to

witch 123 context expand

EXPORTING



- You can export a URL, an embeddable tool (interactive), data, or a bibliographic reference
- Applies to the entire Voyant project or a single particular tool (“skin”)
- You can return to your corpus and continue to work on it later, but:
 - ensure that you bookmark the URL. It is the **ONLY** way to access your corpus again
- You can also export a static .png of visualizations (a screenshot may have better image quality)

Export

a URL for this view (tools and data)

Export View (Tools and Data)

an HTML snippet for embedding this view in another web page

a bibliographic reference for this view

a new Spyral Notebook from this tool and data

Export Visualization

export a PNG image of this visualization

scaling (1):

export the SVG of this visualization

Export Cancel

CHANGING THE TOOLS (“SKINS”)



All of the panels/tools are resizable + interchangeable

- Tools (“skins”) have baked-in options to switch tools
- i.e. switching from *Reader* to *TermsBerry*
- But you can also change to other tools
- Options are categorized (but overlapping)

*some are beta

- Corpus Tools
- Document Tools
- Visualization Tools
- Grid Tools
- Other Tools

Tools

- Bubblelines**
Bubblelines visualizes the frequency and distribution of terms in a corpus.
- Bubbles**
Bubbles is a playful visualization of term frequencies by document.
- Cirrus**
Cirrus is a word cloud that visualizes the top frequency words of a corpus or document.
- Collocates Graph**
Collocates Graph represents keywords and terms that occur in close proximity as a force directed network graph.
- Corpus Collocates**
Corpus Collocates is a table view of which terms appear more frequently in proximity to keywords across the entire corpus.
- Contexts**
The Contexts (or Keywords in Context) tool shows each occurrence of a keyword with a bit of surrounding text (the context).
- Correlations**
The Correlations tool enables an exploration of the extent to which term frequencies vary in sync (terms whose frequencies rise and fall together or inversely).
- Document Terms**
Document Terms is a table view of document term frequencies.
- Corpus Terms**
Corpus Terms is a table view of term frequencies in the entire corpus.
- Documents**
The Documents tool shows a table of the documents in the corpus and includes functionality for modifying the corpus.
- Reader**
The Reader tool provides a way of reading documents in the corpus, text is fetched on-demand as needed.
- Phrases**
The Phrases tool shows repeating sequences of words organized by frequency of repetition or number of words in each repeated phrase.
- MicroSearch**
MicroSearch visualizes the frequency and distribution of terms in a corpus.
- Terms Radio**
TermsRadio is a visualization that depicts the change of the frequency of words in a corpus (or within a single document).
- Mandala**
Mandala is a conceptual visualization that shows the relationships between terms and documents.
- StreamGraph**
StreamGraph is a visualization that depicts the change of the frequency of words in a corpus (or within a single document).
- Summary**
The Summary provides a simple, textual overview of the current corpus, including information about words and documents.
- TextualArc**
TextualArc is a visualization of the terms in a document that includes a weighted centroid of terms and an arc that follows the terms in document order.
- Topics**
The Topics tool provides a rudimentary way of generating term clusters from a document or corpus and then seeing how each topic (term cluster) is distributed across the document or corpus.
- Trends**
Trends shows a line graph depicting the distribution of a word's occurrence across a corpus or document.
- Veliza**
Veliza is an experimental tool for having a (limited) natural language exchange (in English) based on your corpus.
- Word Tree**
Word Tree is a tool that allows you to explore how words are used in phrases.

HOW TO PICK A VIS TOOL (“SKIN”)?

1. Figure out what you’re trying to do and why
 - a. Does context matter?
 - b. Collocation? Relationship between terms?
2. Determine the type of tool (corpus, document, visualization, grid)
 - a. Do you need to see something visualized?
3. Read about each tool and its intended uses to determine if the use fits your need: voyant-tools.org/docs/#!/guide/skins



LET'S EXPERIMENT!

SOURCES & INSPIRATION (also cited throughout)

- “DHSI 2019 Introduction to Computation for Literary Criticism,” Randa El Khatib and David Joseph Wrisley
- “DHSI 2019 Making Choices About Your Data,” Paige Morgan and Yvonne Lam
- Priscilla Finley and Chelsea Heinbach, University of Nevada, Las Vegas, “Introduction to Text Analysis: Using Voyant to encounter new questions.”
- Pam Lach, San Diego State University, “Voyant for Text Analysis.”
- Devon Mordell, McMaster University, “An Introduction to Textual Analysis With Voyant Tools.”