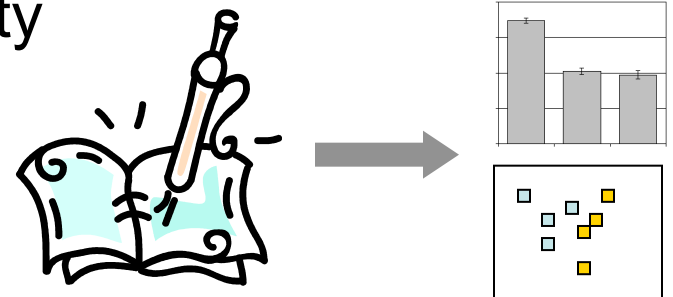


# A Computational Approach to Style in American Poetry

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# Our Mission

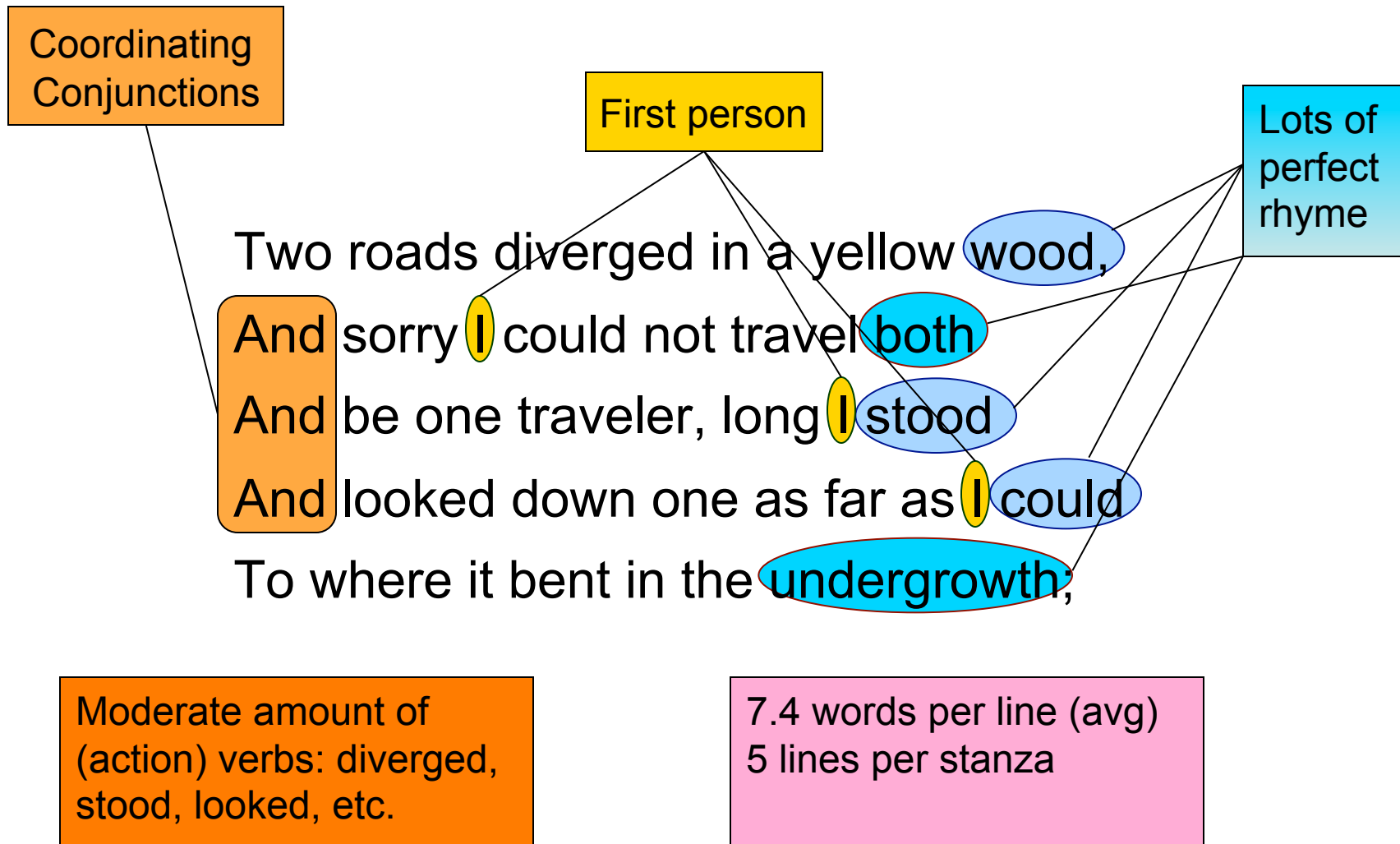
- Text analysis has focused on prose
- We want to analyze poetry
- Important differences

# Prose vs. Poetry

## Computational Text Analysis

	<b>Prose</b>	<b>Poetry</b>
State of the art	Relatively developed	Relatively non-existent!
Focus	Content	Style
Methods	Bag of words	Bag of words?
Applications	Classification, information	Academic, personal

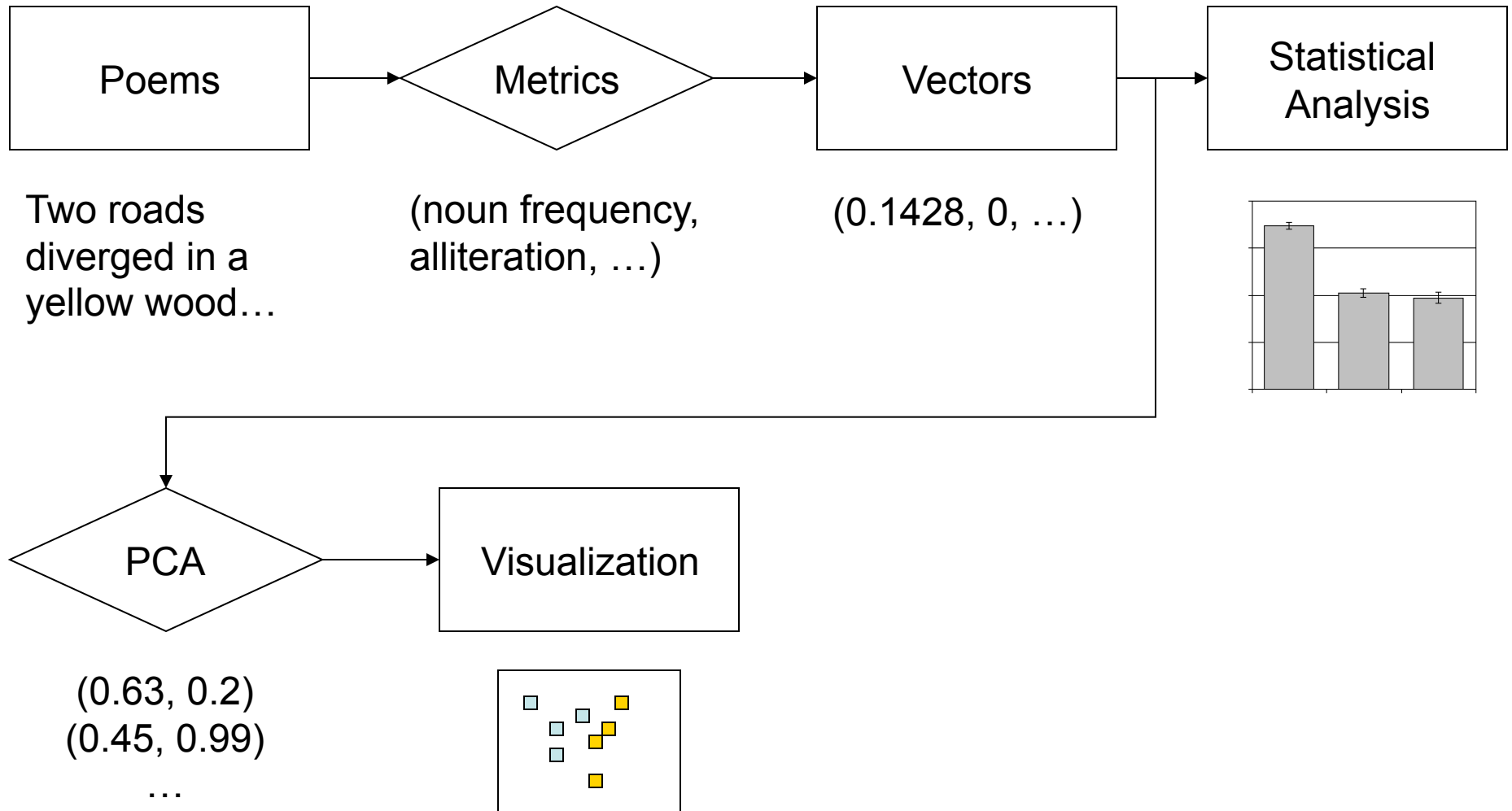
# What is Style?



# Features of Style

- **Orthographic**
  - Word count; # of lines; # of stanzas; avg. line length; avg. word length; avg. # of lines per stanza; most frequent noun / adjective / verb
- **Syntactic**
  - Frequencies of: parts of speech; punctuation; contractions
- **Phonemic**
  - Frequencies of: rhyme (identity, perfect, semi, slant); sound devices (alliteration, assonance, consonance)

# Method Overview

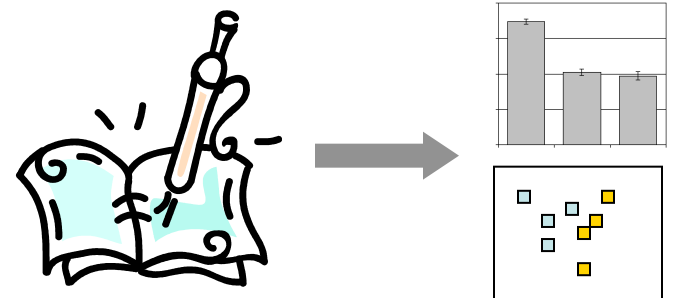


# Frost v. Glück v. Millay: Select Features

Poet	Perfect Rhyme	First person singular pronoun	Coordinating Conjunction
Frost	0.278	0.063	0.063
Glück	0.000	0.000	0.000
Millay	0.139	0.032	0.104

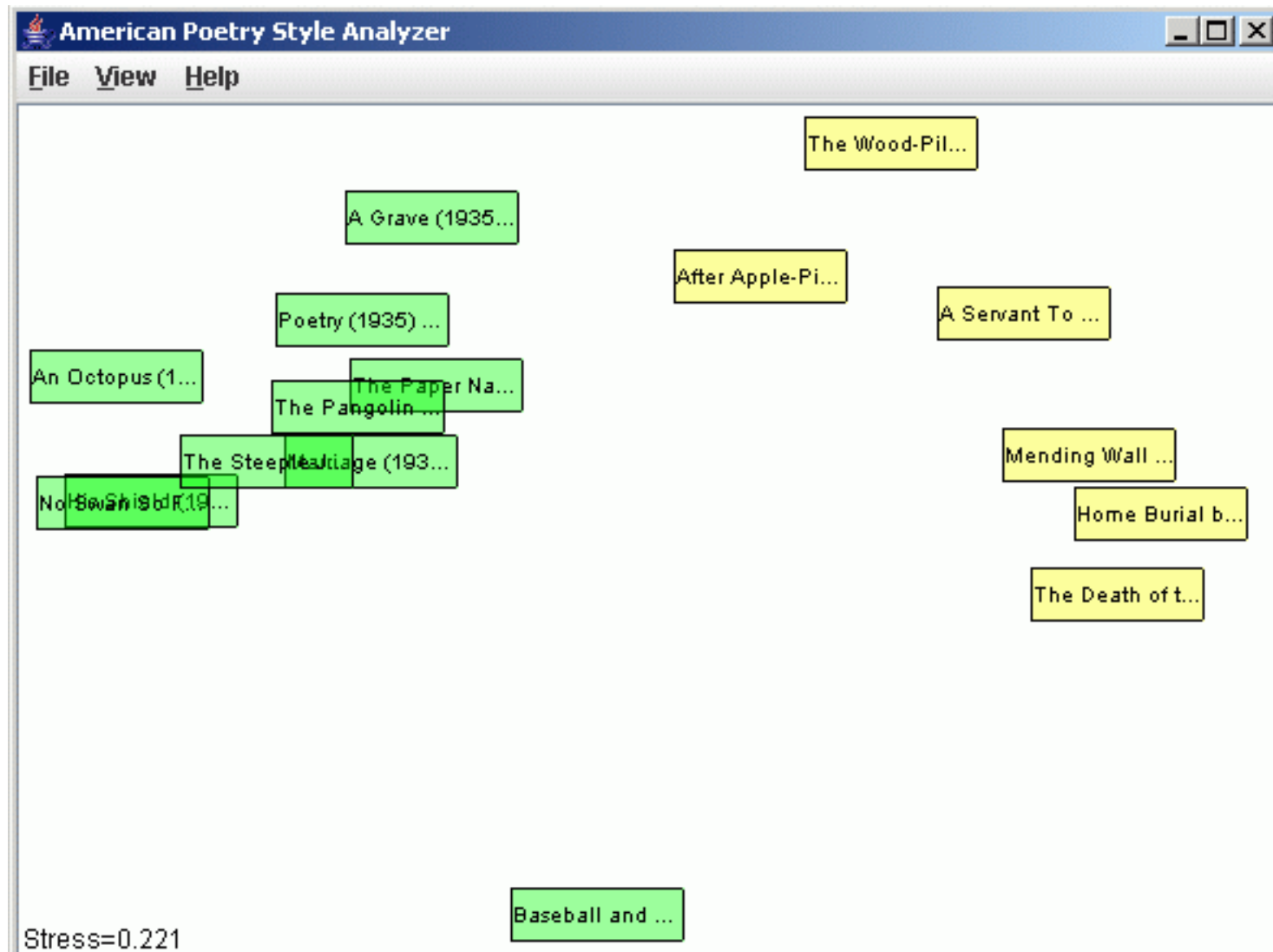
<p>Two roads diverged in a yellow \ wood, And sorry I could not travel both And be one traveler, long I stood And looked down one as far as I \ could To where it bent in the undergrowth;</p>	<p>Now, in twilight, on the palace steps the king asks forgiveness of his \ lady.  He is not duplicitous; he has tried to be true to the moment; is there \ another way of being true to the self?</p>	<p>Or nagged by want past \ resolution's power, I might be driven to sell your love \ for peace, Or trade the memory of this night \ for food. It well may be. I do not think I would.</p>
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# Visualization

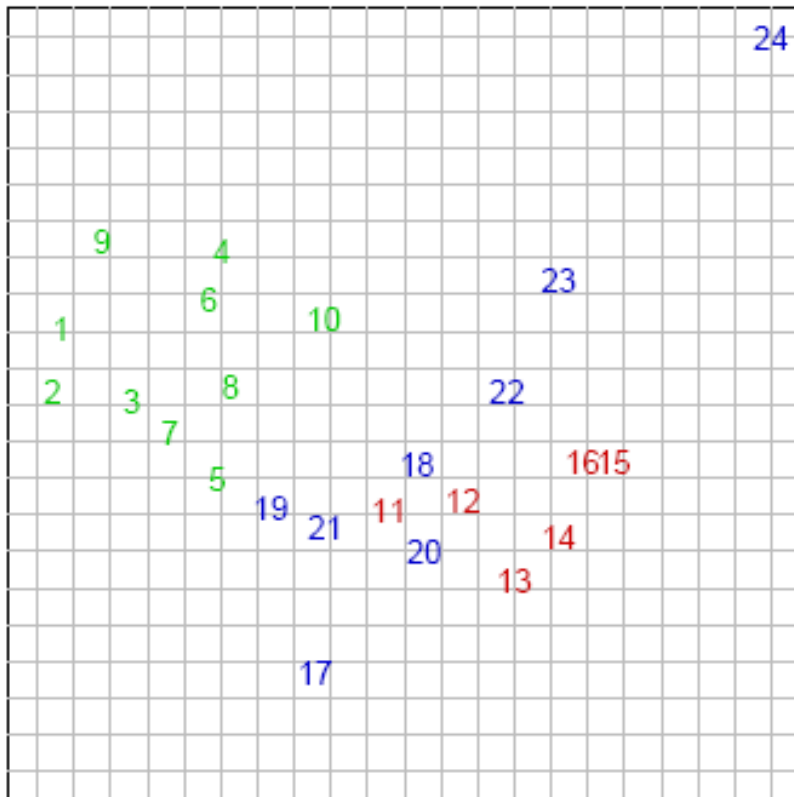




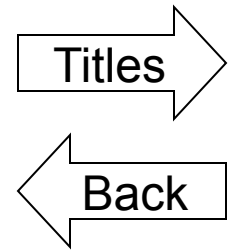
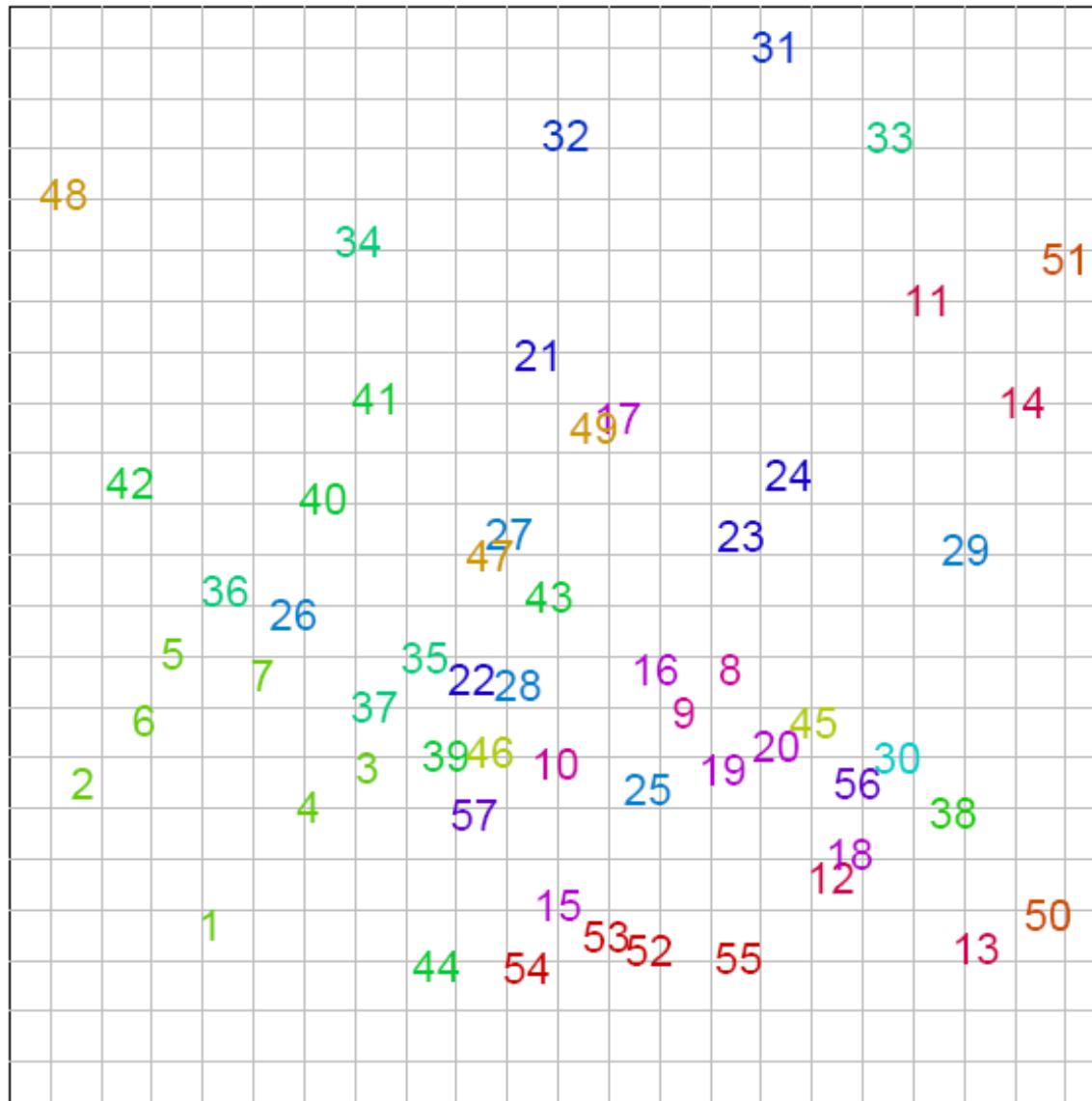
# Moore and Frost



# Moore, Frost, and O'Hara

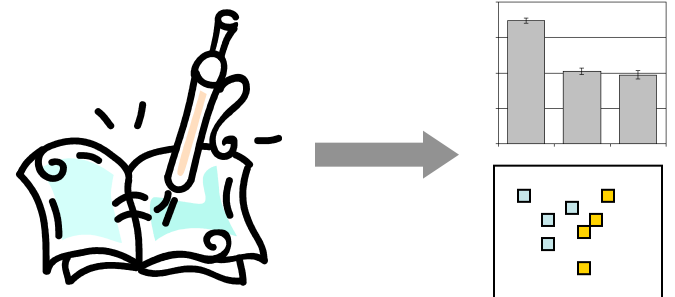


#	TITLE	AUTHOR
1	An Octopus (1935)	Moore
2	No Swan So Fine (1935)	Moore
3	The Steeple Jack (1935)	Moore
4	Poetry (1935)	Moore
5	A Grave (1935)	Moore
6	Marriage (1935)	Moore
7	The Pangolin (1941)	Moore
8	The Paper Nautilus (1941)	Moore
9	His Shield (1951)	Moore
10	Baseball and Writing (1961)	Moore
11	After Apple-Picking	Frost
12	The Wood-Pile	Frost
13	A Servant To Servants	Frost
14	Mending Wall	Frost
15	Home Burial	Frost
16	The Death of the Hired Man	Frost
17	The Day Lady Died	O'Hara
18	Ave Maria	O'Hara
19	A Step Away From Them	O'Hara
20	Music	O'Hara
21	Steps	O'Hara
22	Poem (Lana Turner has collapsed)	O'Hara
23	St. Paul and All That	O'Hara
24	Song (Is it dirty)	O'Hara

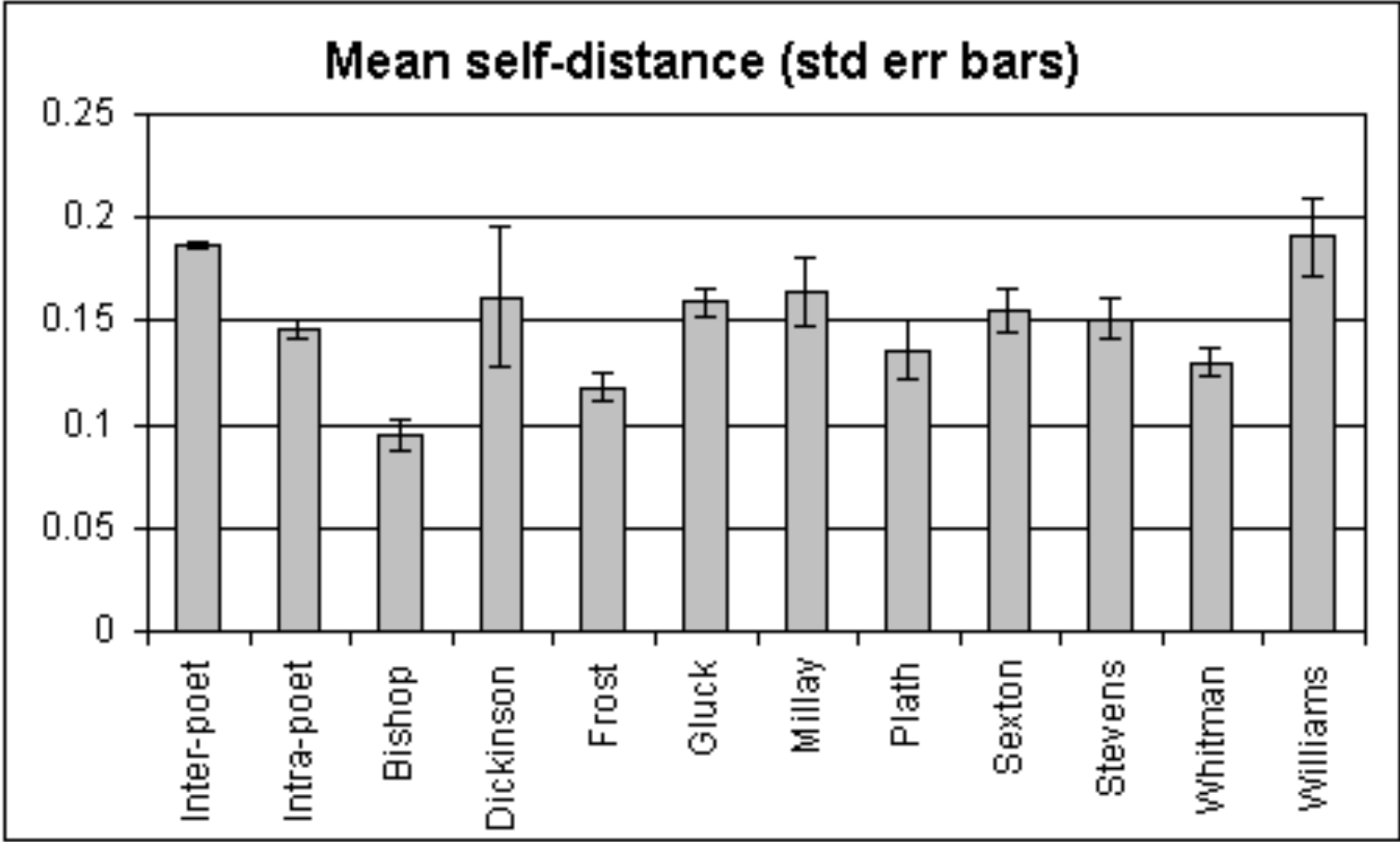


**Legend:** 1-7, Frost; 8-10, Whitman; 11-14, Williams; 15-20, Stevens; 21-24, Sexton; 25-29, Plath; 30, Pinsky; 31-32, Pound; 33-37, Millay; 38, Ginsberg; 39-44, Glück; 45-46, Eliot; 47-49, Dickinson; 50-51, Cummings; 52-55, Bishop; 56-57, Smith.

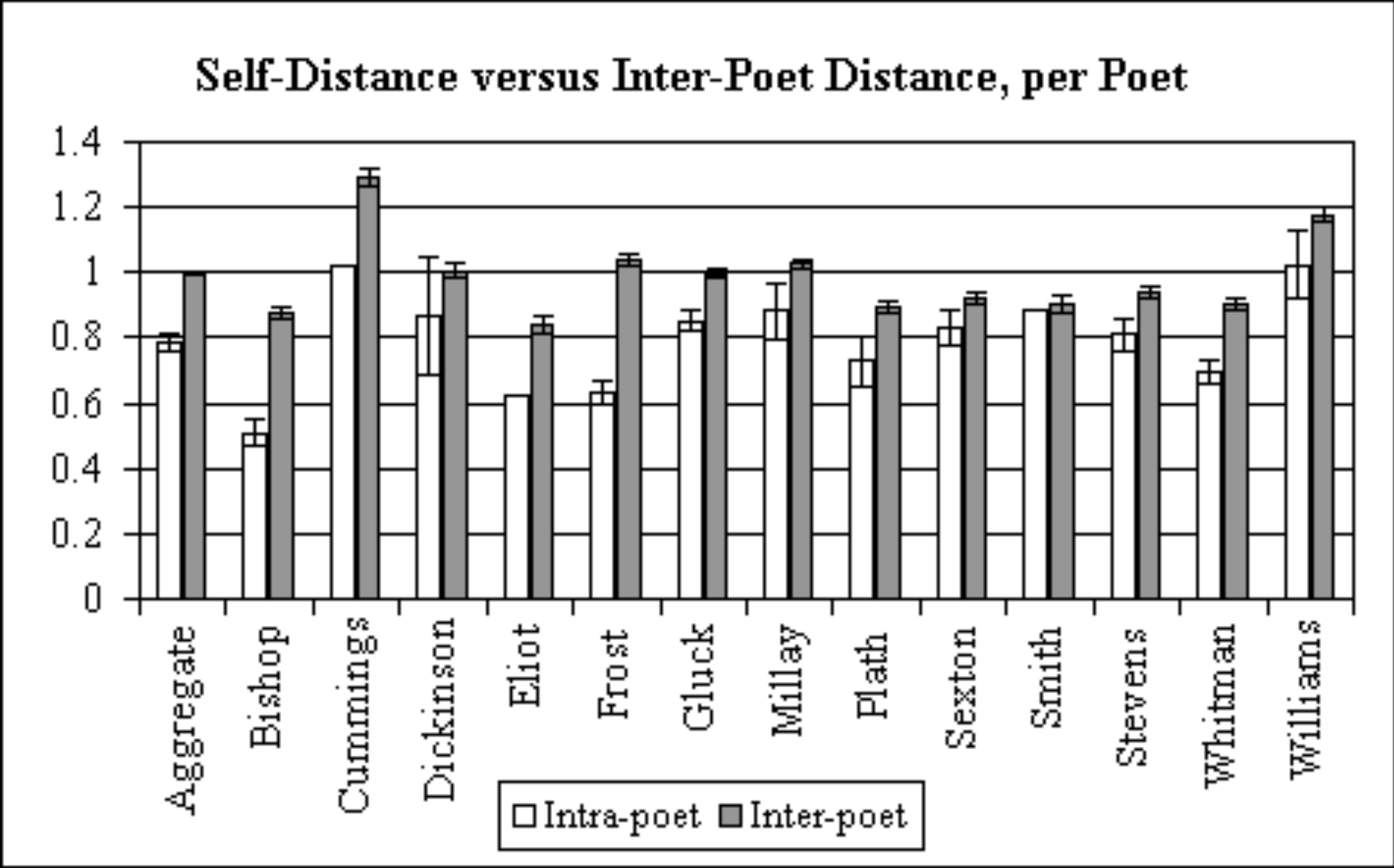
# Statistical Analysis



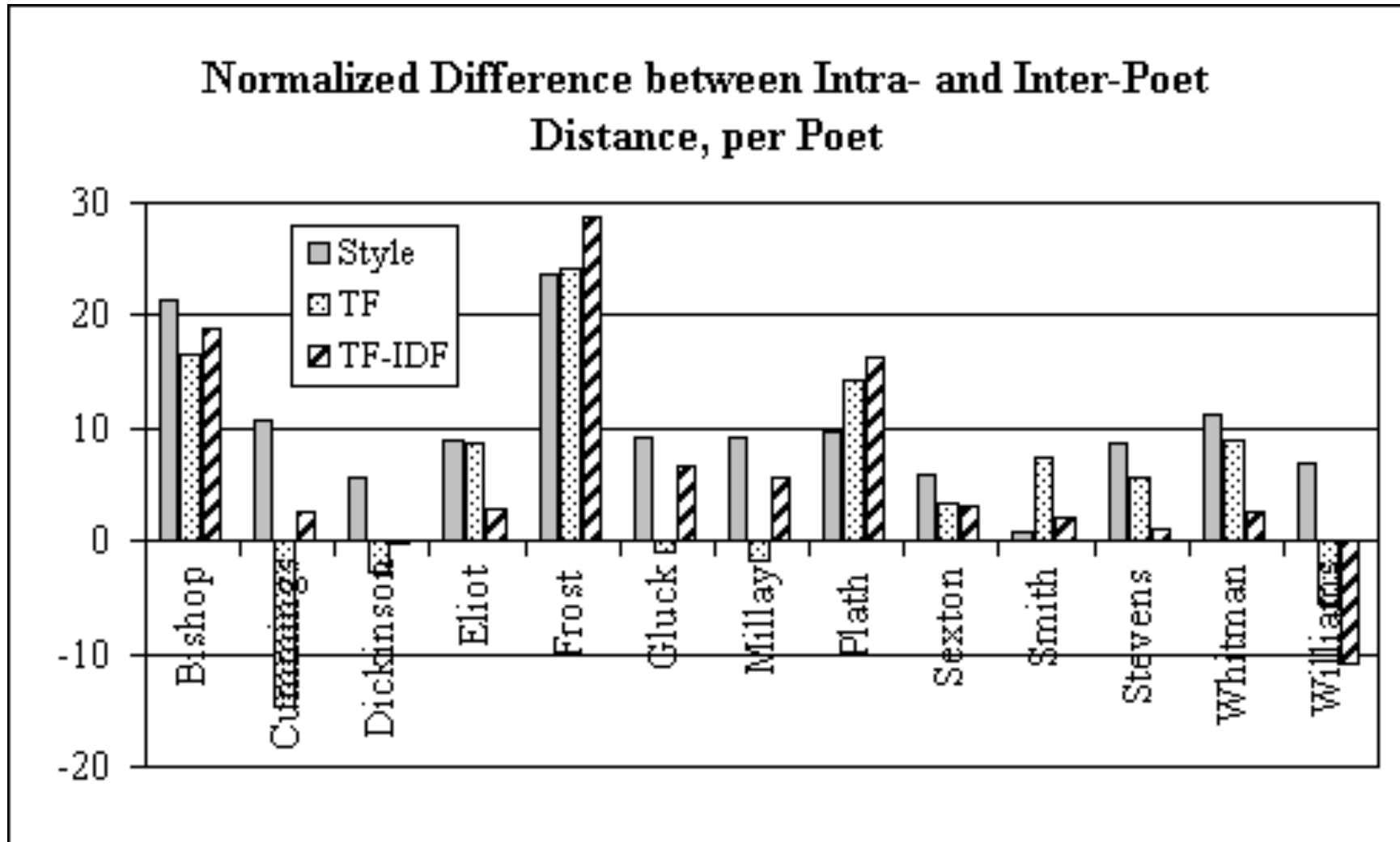
# Oxford Anthology



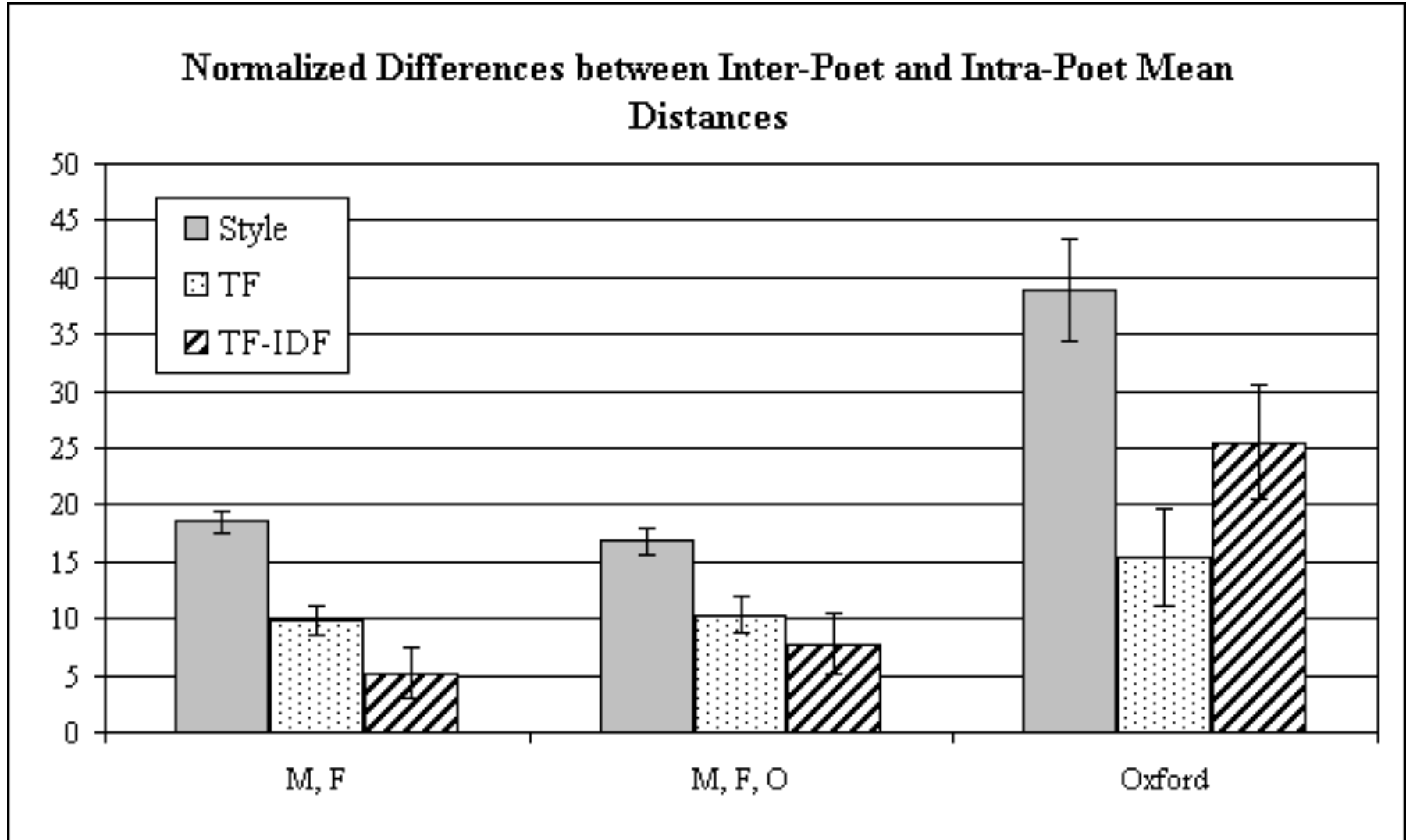
# Oxford Anthology



# Comparison with Bag of Words: Oxford Anthology



# Comparison with Bag of Words: Three Collections





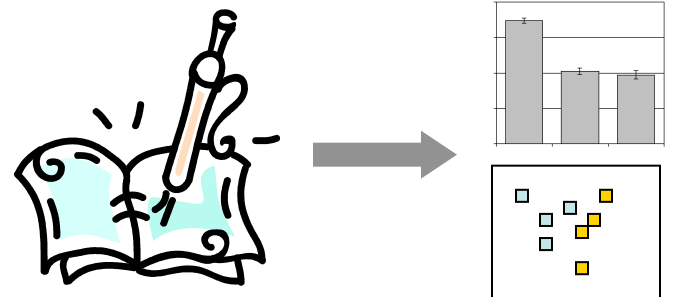
# A Computational Approach to Style in American Poetry

- We developed a novel quantitative method of feature analysis for poetry
- Similarity across a collection can be visualized to show patterns
- Our method outperforms word occurrence, using authorship as proxy for stylistic similarity

David M. Kaplan – [dkaplan@alumni.princeton.edu](mailto:dkaplan@alumni.princeton.edu)

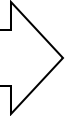
David M. Blei – [blei@cs.princeton.edu](mailto:blei@cs.princeton.edu)

# Appendix

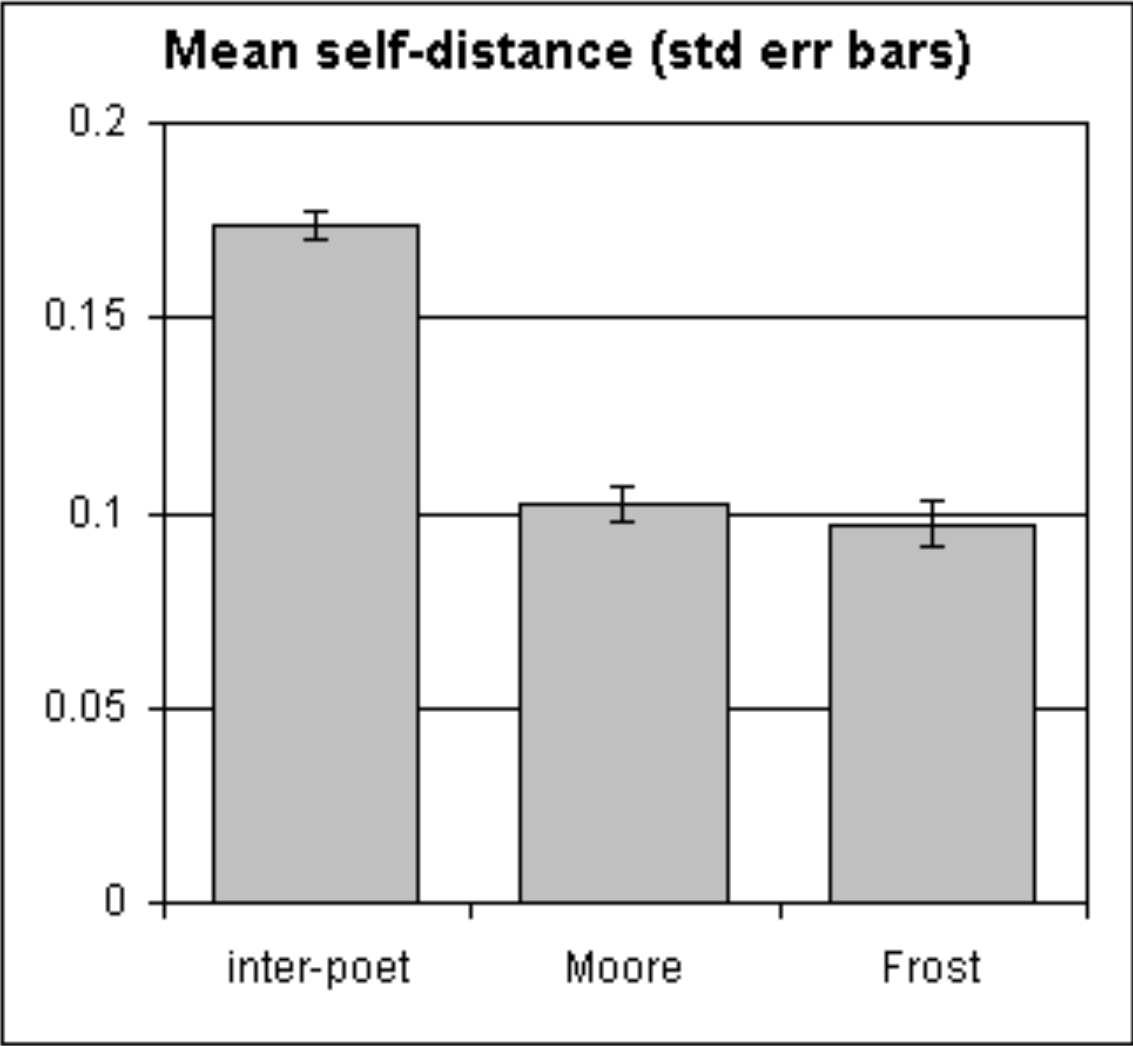


# Oxford Anthology Plot Titles

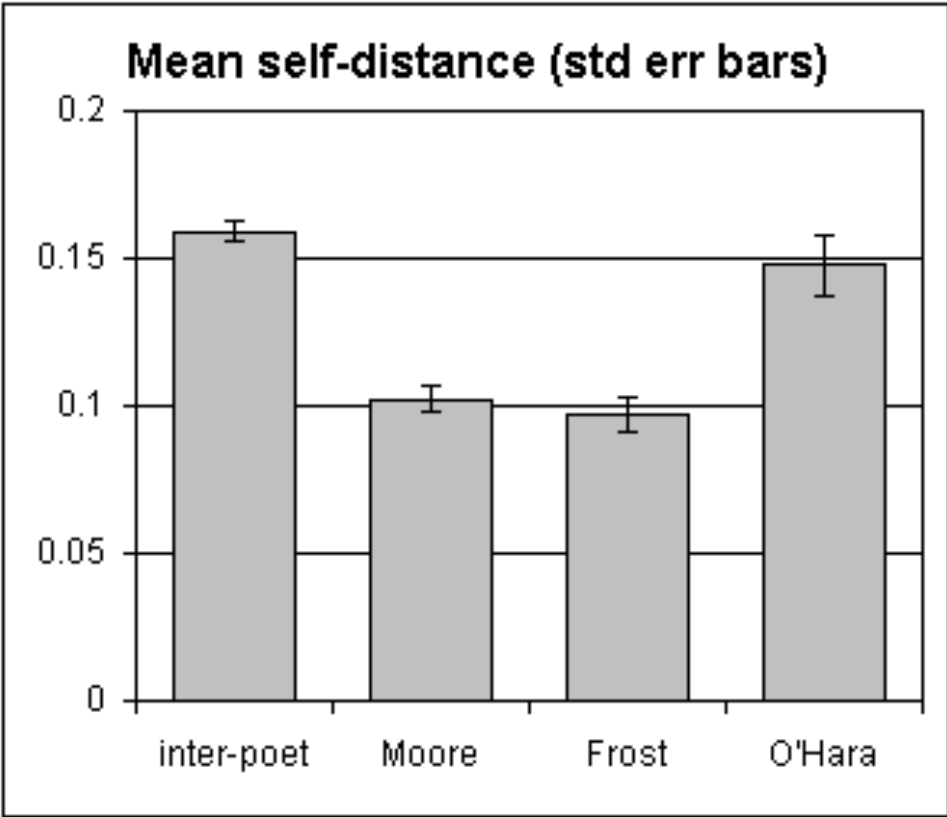
#	TITLE	AUTHOR
1	The Wood-Pile	Frost
2	Home Burial	Frost
3	After Apple-Picking	Frost
4	Birches	Frost
5	Mending Wall	Frost
6	The Road Not Taken	Frost
7	The Tuft of Flowers	Frost
8	One's-Self I Sing	Whitman
9	FOR YOU O DEMOCRACY	Whitman
10	SONG OF MYSELF	Whitman
11	The Red Wheelbarrow	Williams
12	To Elsie	Williams
13	Spring and All	Williams
14	The Great Figure	Williams
15	Anecdote of the Jar	Stevens
16	Thirteen Ways of Looking at a Blackbird	Stevens
17	The Emperor of Ice-Cream	Stevens
18	Disillusionment of Ten O'Clock	Stevens
19	The Snow Man	Stevens
20	Sunday Morning	Stevens
21	Her Kind	Sexton
22	The Truth The Dead Know	Sexton
23	And One For My Dame	Sexton
24	The Room of My Life	Sexton
25	Black Rook in Rainy Weather	Plath
26	The Arrival of the Bee Box	Plath
27	The Bee Meeting	Plath
28	Stings	Plath
29	The Swarm	Plath
30	Shirt	Pinsky
31	In a Station of the Metro	Pound
32	Ballad for Gloom	Pound
33	God's World	Millay
34	First Fig	Millay
35	I, Being Born a Woman and Distressed	Millay
36	Love is not Blind	Millay
37	Love Is Not All	Millay
38	Howl	Ginsberg
39	Penelope's Song	Gluck
40	Circe's Torment	Gluck
41	Circe's Power	Gluck
42	Circe's Grief	Gluck
43	Parable of Faith	Gluck
44	Parable of the Dove	Gluck
45	To Walter de la Mare	Eliot
46	The Love Song of J Alfred Prufrock	Eliot
47	Beclouded	Dickinson
48	Chartless	Dickinson
49	A Book	Dickinson
50	in Just-	Cummings
51	O sweet spontaneous	Cummings
52	At the Fishhouses	Bishop
53	The Fish	Bishop
54	The Man-moth	Bishop
55	The Armadillo	Bishop
56	Mangoes	Smith
57	A Hunger So Honed	Smith

Plot 

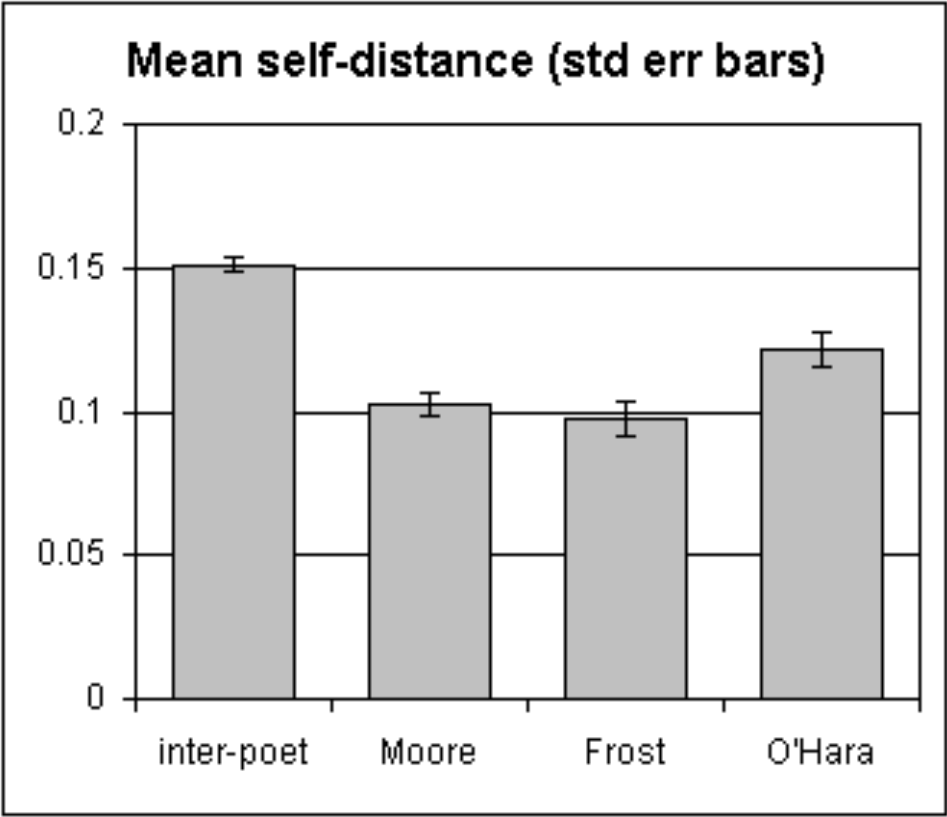
# Moore and Frost



# Moore, Frost, and O'Hara



Including outlier "Song (Is it dirty)"



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