UC Berkeley School of Information

Narrative Research, Some Takeaways

Exploring cultural representation and social interactions in fictional narratives

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Creative Narrative Workshop 2024

Pioneer Center for AI, University of Copenhagen
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AGENDA

- NARRATIVE RESEARCH: REPRESENTATION & AI
- DIRECTION #1: HISTORICAL TRENDS
- DIRECTION #2: FOCUSED ANALYSIS
- CURRENT WORK

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QUESTION 1

What is narrative research*?

* For Kent

A tentative definition

Use computational methods to measure various aspects of the narrative (plot, characters, cultural representations, etc.) in cultural artifacts

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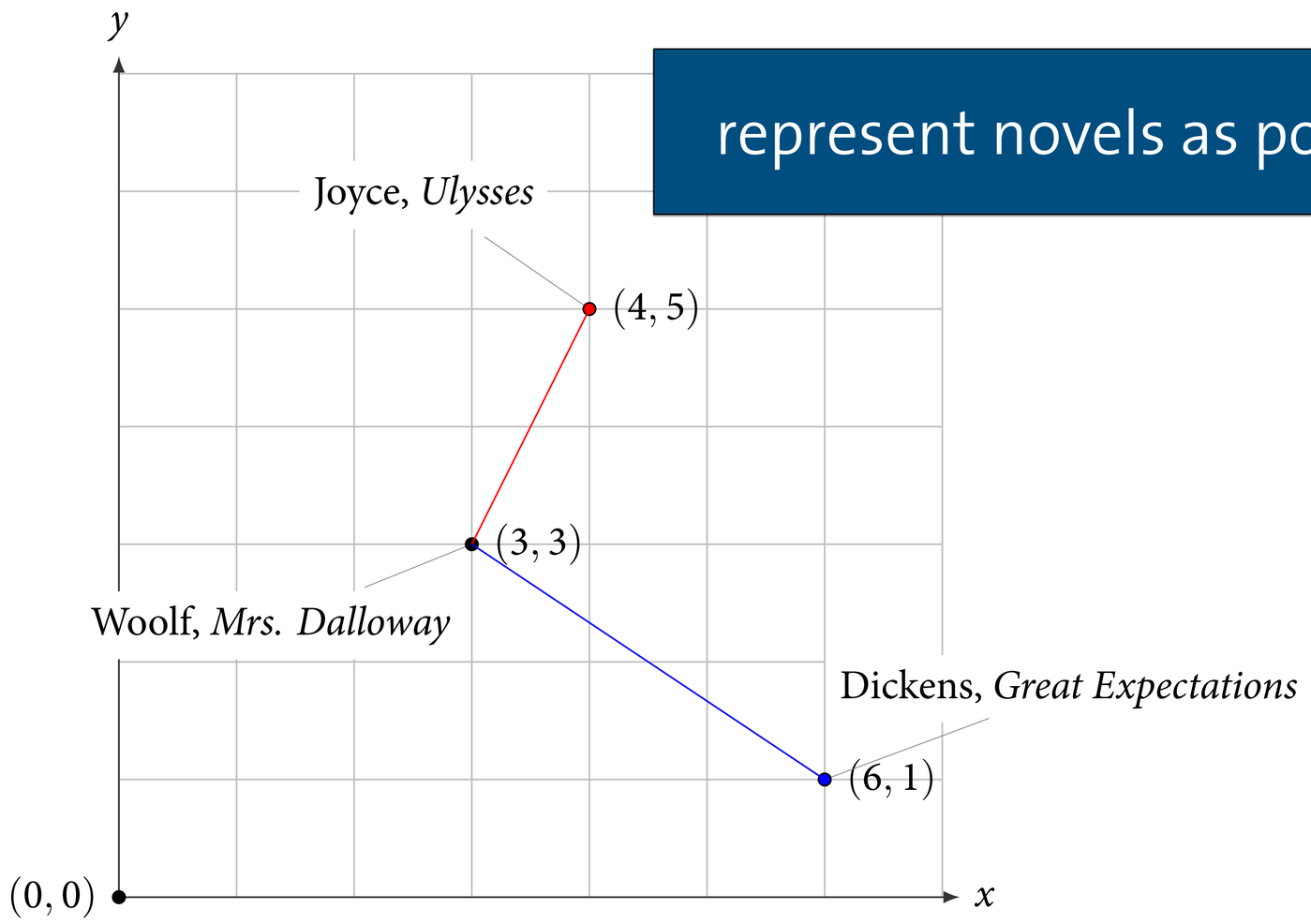
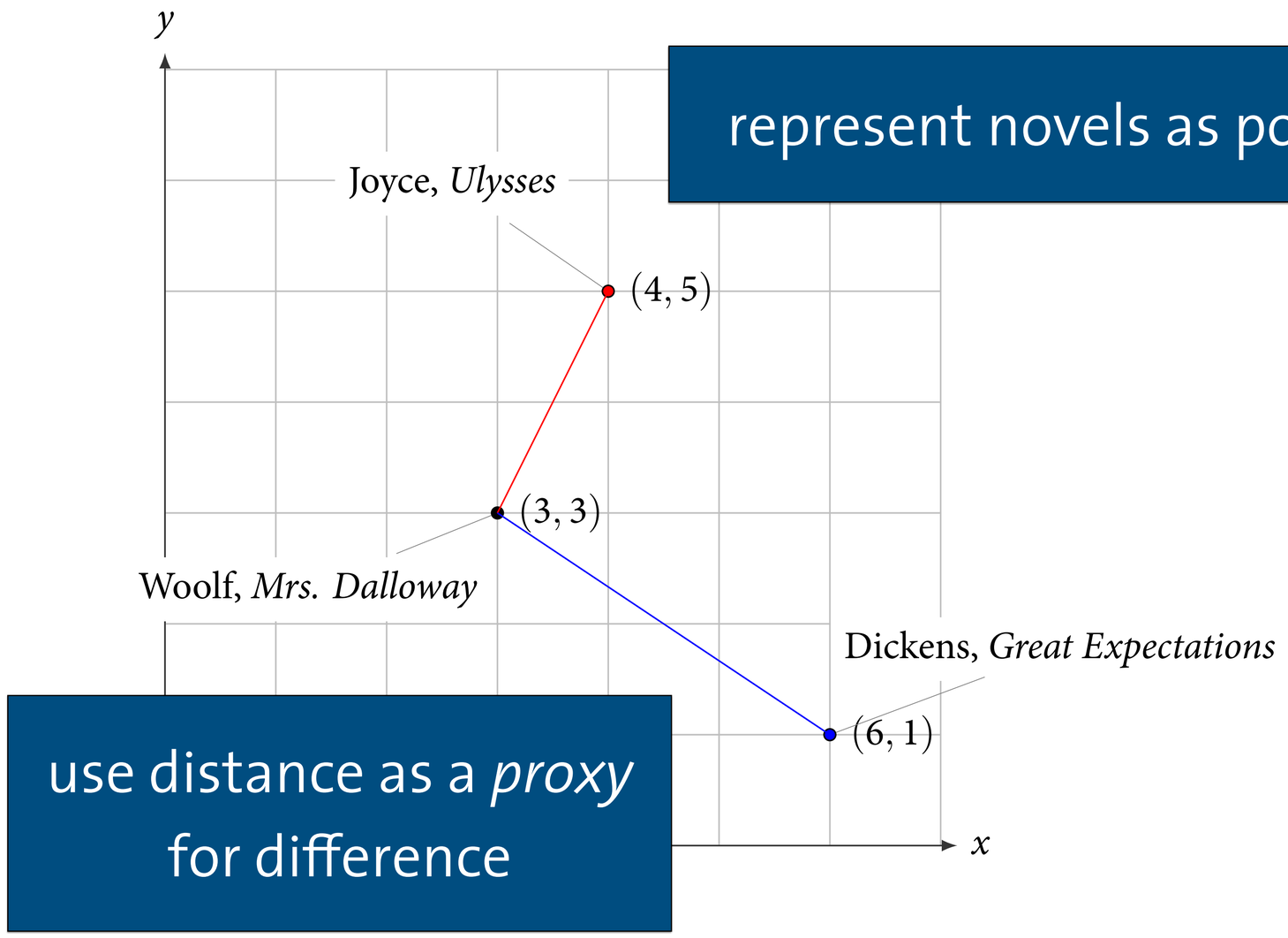
Use computational methods to **measure** various aspects of the narrative (plot, characters, cultural representations, etc.) in cultural artifacts



"Divergence and the Complexity of Difference in Text and Culture"
(Chang and Dedeo, *Journal of Cultural Analytics* 2020)



represent novels as points

use distance as a *proxy* for difference

"Divergence and the Complexity of Difference in Text and Culture"
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A tentative definition

Use **computational methods** to measure various aspects of the narrative (plot, characters, cultural representations, etc.) in cultural artifacts

use _____ as a *proxy* for _____

represent novels as _____

A tentative definition

Use computational methods to measure various aspects of the narrative (plot, **characters**, **cultural representations**, etc.) in cultural artifacts

QUESTION 2

Whose narratives?

QUESTION 2

Whose narratives?

Whose language, and whose lived experiences mediated through that language, is captured in large language models?

Speak, Memory: An Archaeology of Books Known to ChatGPT/GPT-4

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What novels might ChatGPT have seen?

"Speak, Memory" (Chang et al., EMNLP 2023)

Name cloze

At dawn, I lie in bed for a while, watching the sun come up on a beautiful morning. It's Sunday. A day off at home. I wonder if [MASK] is in the woods yet. Usually we devote all of Sunday to stocking up for the week.

→ ? (Collins, *Hunger Games*)

- Sampled 100 passages from 491 books that contain a single proper name (and no other named entities) and assess how often a model gets it right
- Human performance: 0%

Name cloze

At dawn, I lie in bed for a while, watching the sun come up on a beautiful morning. It's Sunday. A day off at home. I wonder if [MASK] is in the woods yet. Usually we devote all of Sunday to stocking up for the week.

→ Gale (Collins, *Hunger Games*)

- Sampled 100 passages from 491 books that contain a single proper name (and no other named entities) and assess how often a model gets it right
- Human performance: 0%

Data

- 91 novels from LitBank, published before 1923
- 90 Pulitzer prize nominees from 1924–2020
- 95 Bestsellers from the *NY Times* and *Publishers Weekly* from 1924–2020.
- 101 novels written by Black authors, either from the Black Book Interactive Project2 or Black Caucus American Library Association award winners from 1928–2018

Data

- 95 works of Global Anglophone fiction (outside the U.S. and U.K.) from 1935–2020
- 99 works of genre fiction, containing science fiction/fantasy, horror, mystery/crime, romance and action/spy novels from 1928–2017

You have seen the following passage in your training data. What is the proper name that fills in the [MASK] token in it? This name is exactly one word long, and is a proper name (not a pronoun or any other word). You must make a guess, even if you are uncertain.

Example:

Input: Stay gold, [MASK], stay gold.
Output: <name>Ponyboy</name>

Input: The door opened, and [MASK], dressed and hatted, entered with a cup of tea.
Output: <name>Gerty</name>

Input: My back's to the window. I expect a stranger, but it's [MASK] who pushes open the door, flicks on the light. I can't place that, unless he's one of them. There was always that possibility.
Output:

Figure 2: Sample name cloze prompt.

GPT-4	ChatGPT	Year	Author	Title
0.98	0.82	1865	Lewis Carroll	*Alice's Adventures in Wonderland*
0.76	0.43	1997	J.K. Rowling	*Harry Potter and the Sorcerer's Stone*
0.74	0.29	1850	Nathaniel Hawthorne	*The Scarlet Letter*
0.72	0.11	1892	Arthur Conan Doyle	*The Adventures of Sherlock Holmes*
0.70	0.10	1815	Jane Austen	*Emma*
0.65	0.19	1823	Mary W. Shelley	*Frankenstein*
0.62	0.13	1813	Jane Austen	*Pride and Prejudice*
0.61	0.35	1884	Mark Twain	*Adventures of Huckleberry F inn*
0.61	0.30	1853	Herman Melville	*Bartleby, the Scrivener*
0.61	0.08	1897	Bram Stoker	*Dracula*
0.61	0.18	1838	Charles Dickens	*Oliver Twist*
0.59	0.13	1902	Arthur Conan Doyle	*The Hound of the Baskervilles*
0.59	0.22	1851	Herman Melville	*Moby Dick; Or, The Whale*
0.58	0.35	1876	Mark Twain	*The Adventures of Tom Sawyer*

GPT-4	ChatGPT	Year	Author	Title
0.76	0.43	1997	J.K. Rowling	*Harry Potter and the Sorcerer's Stone*
0.57	0.30	1949	George Orwell	*1984*
0.51	0.20	1954	J.R.R. Tolkien	*The Fellowship of the Ring*
0.49	0.16	2012	E.L. James	*F ifty Shades of Grey*
0.48	0.14	2008	Suzanne Collins	*The Hunger Games*
0.43	0.27	1954	William Golding	*Lord of the Flies*
0.43	0.17	1979	Douglas Adams	*The Hitchhiker's Guide to the Galaxy*
0.30	0.16	1959	Chinua Achebe	*Things Fall Apart*
0.28	0.12	1977	J. R. R. & C. Tolkien	*The Silmarillion*
0.27	0.13	1953	Ray Bradbury	*Fahrenheit 451*
0.27	0.13	1996	George R.R. Martin	*A Game of Thrones*
0.26	0.05	2003	Dan Brown	*The Da Vinci Code*
0.26	0.08	1965	Frank Herbert	*Dune*
0.25	0.20	1937	Zora Neale Hurston	*Their Eyes Were Watching God*
0.25	0.14	1961	Harper Lee	*To Kill a Mockingbird*

Domain	Hits
archive.org	337
academia.edu	257
goodreads.com	234
coursehero.com	197
quizlet.com	181
litcharts.com	148
fliphtml5.com	124
genius.com	118
amazon.com	109
issuu.com	98

Table 4: Sources for copyrighted material.

Takeaway #1

The inherent knowledge of your LLM matters (for both generation and analysis)—not everything is equally represented in its training data

In practice: start from on your specific use case and assess (not necessarily as a membership test) its potential impact

	Genre			Haiku		
	Accuracy		Time	Accuracy		Time
Majority	0.200			0.529		
Linear	0.528	[0.502-0.556]	12.5	0.705	[0.658-0.752]	0.0
BERT	0.614	[0.588-0.641]	194.4	0.782	[0.738-0.824]	34.0
RoBERTa	0.648	[0.623-0.674]	195.0	0.986	[0.972-0.997]	56.9
Llama 3 8B	0.741	[0.717-0.765]	2013.5	0.992	[0.981-1.000]	296.0
GPT-4o	0.710	[0.683-0.734]		0.785	[0.741-0.826]	
Llama 3 70B	0.724	[0.699-0.750]		0.625	[0.576-0.675]	
Mixtral 8x22B	0.380	[0.351-0.406]		0.813	[0.771-0.851]	

"On Classification with Large Language Models in Cultural Analytics" (Bamman et al., CHR 2024)

Silence filled the room, and tension mounted. Frasier's younger brother, Niles, who had been quietly sipping his coffee, looked up, startled.

The brothers exchanged glances. The usually eloquent Frasier seemed momentarily at a loss for words.

"What do you suppose she meant by that?" Niles finally broke the silence.

Frasier sighed, looking slightly offended. "Obviously, she thinks we're always together. That we're some sort of 'couple.'"

Niles huffed indignantly, picking a tiny piece of fluff from Frasier's jacket in a manner reminiscent of a caring spouse. "That's ridiculous. We spend lots of time apart. Besides, who is she to talk? Look at her and Harry—they go everywhere together."

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affordances

> “[Q]uantitative literary studies should begin by trying [. . .] to consider the nature of **ontological gaps** and **epistemological biases** in its evidence”
>
> — KATHERINE BODE

“Why You Can’t Model Away Bias” (Bode, *MLQ* 2020)

Dramatic Conversation Disentanglement

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"Dramatic Conversation Disentanglement" (Chang et al., ACL 2023 Findings)

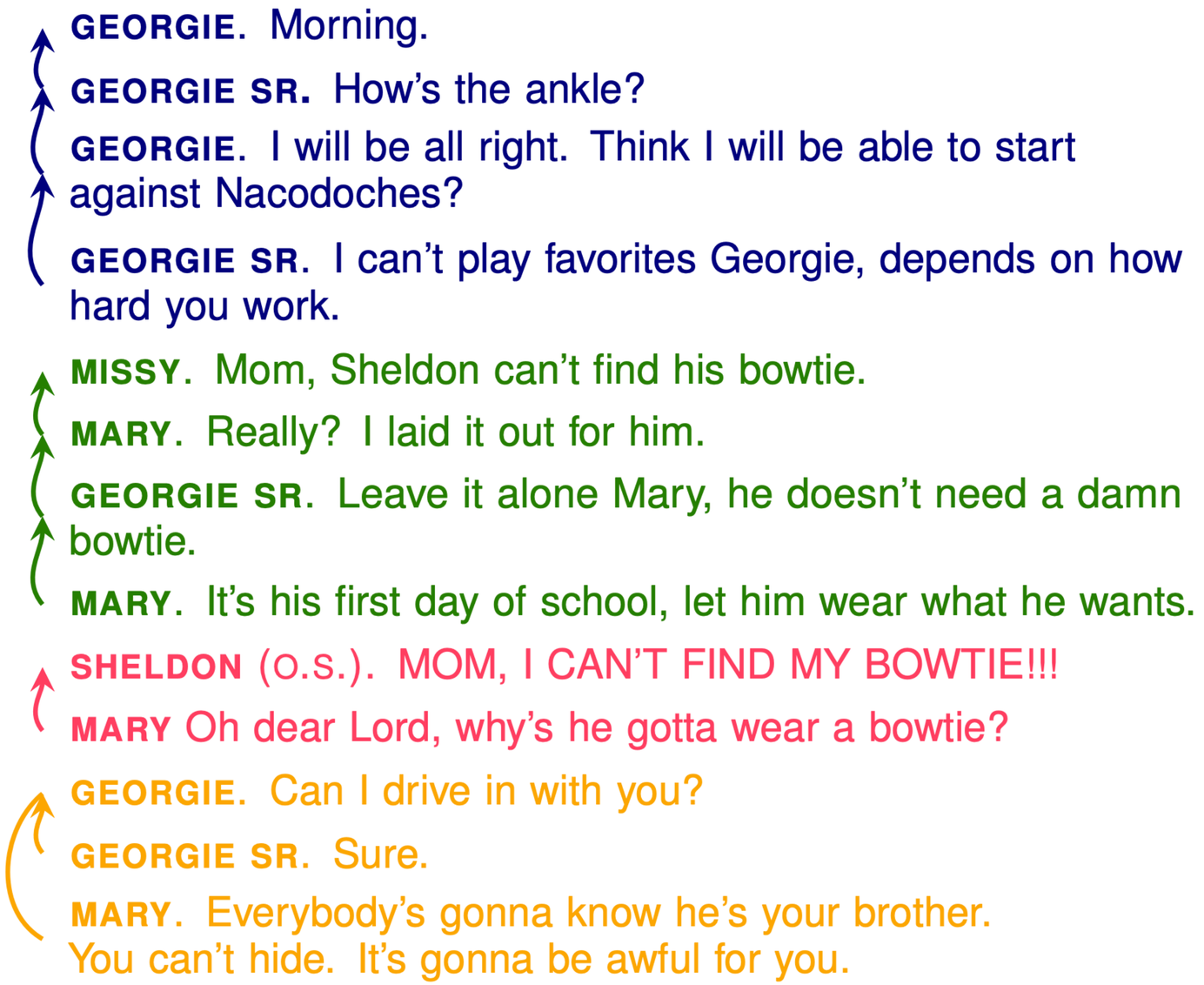
QUESTION 3

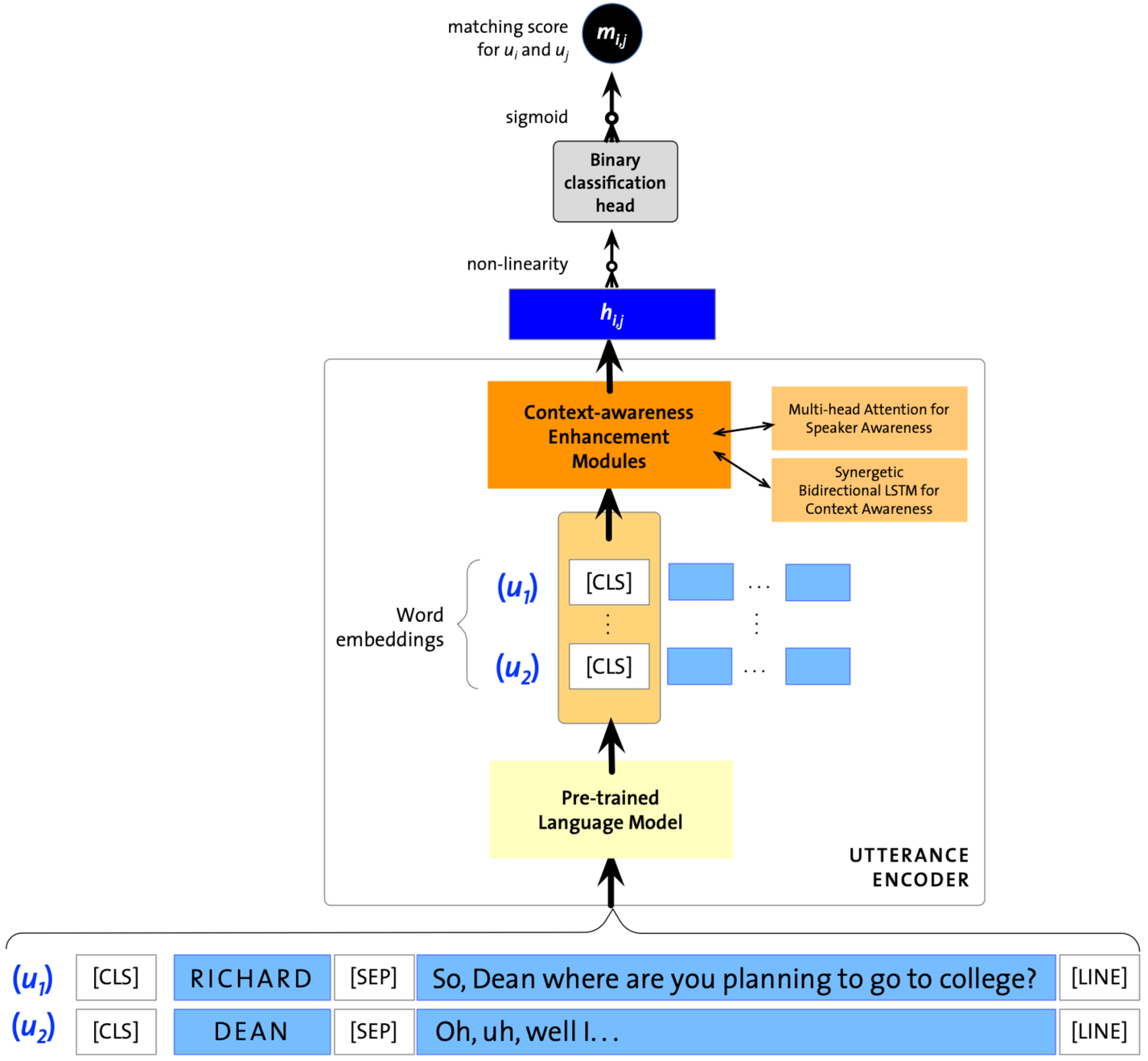
Are dialogues in movies/TV series getting shorter?

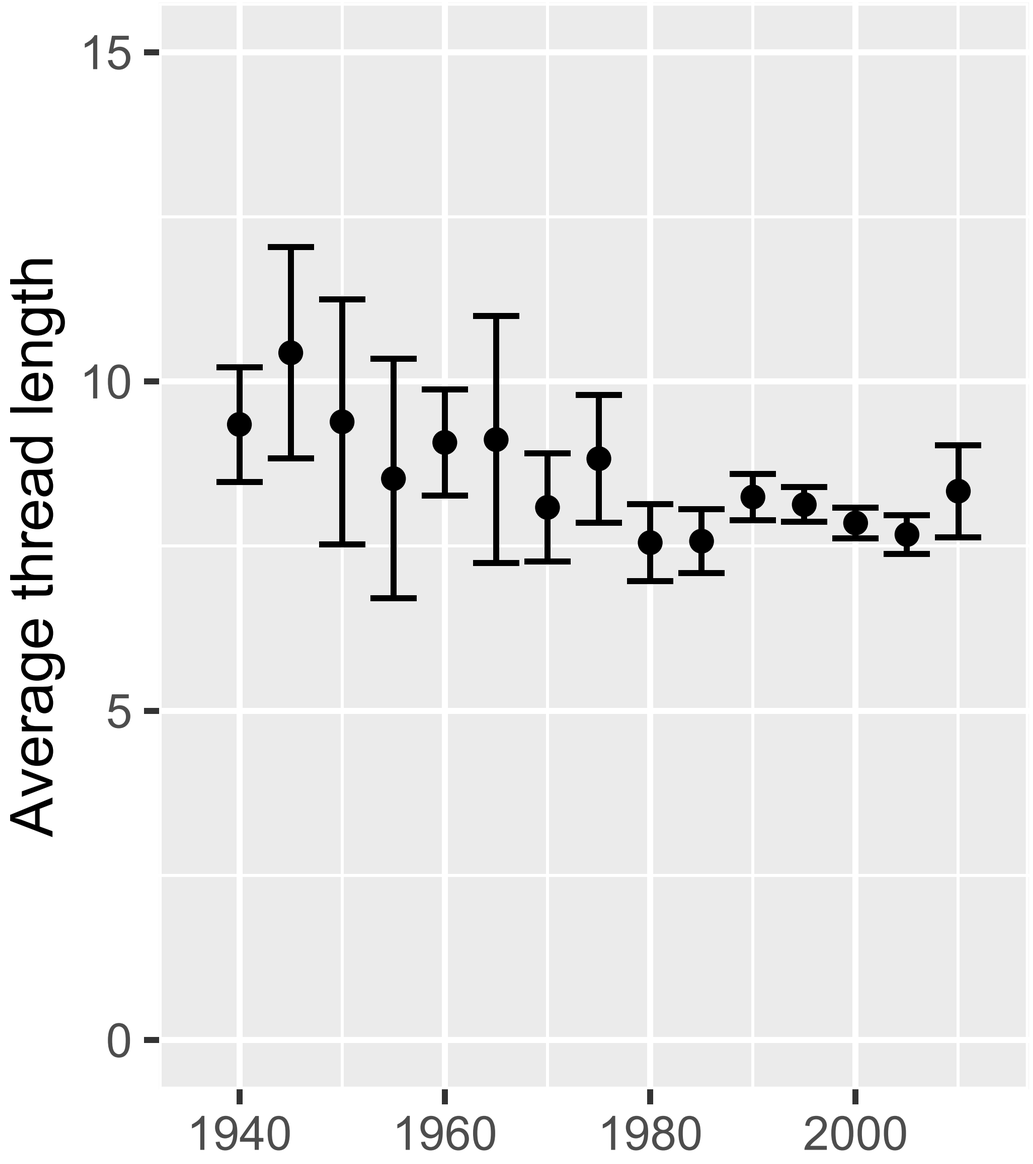
“For many of us, today’s popular American cinema is always fast.”

— DAVID BORDWELL

Who gets to start a conversation?

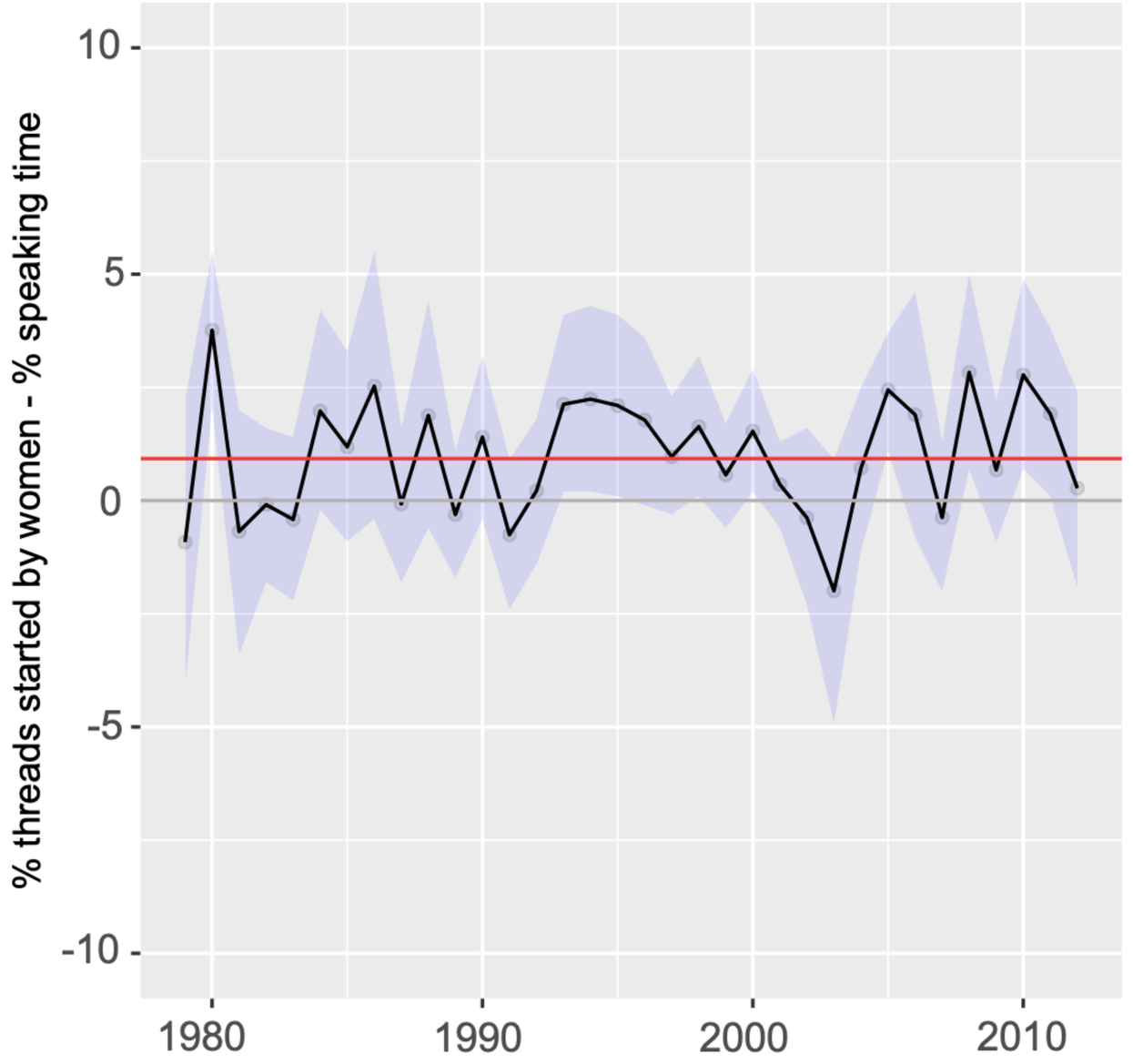



matching score for u_i and u_j
$m_{i,j}$
sigmoid
Binary classification head
non-linearity
$h_{i,j}$
Context-awareness Enhancement Modules
Multi-head Attention for Speaker Awareness
Synergetic Bidirectional LSTM for Context Awareness
Word embeddings
(u_1)
(u_2)
[CLS]
[CLS]
Pre-trained Language Model
UTTERANCE ENCODER
(u_1) [CLS] RICHARD [SEP] So, Dean where are you planning to go to college? [LINE]
(u_2) [CLS] DEAN [SEP] Oh, uh, well I. . . [LINE]


Average thread length
15
10
5
0
1940
1960
1980
2000

QUESTION 4

Do male characters get to start more conversations?



+1.0: significant over all years

Takeaway #2

The affordance of computational methods (from e.g. NLP) can ***enable*** you to characterize long-term, large-scale trends in (your) narrative.

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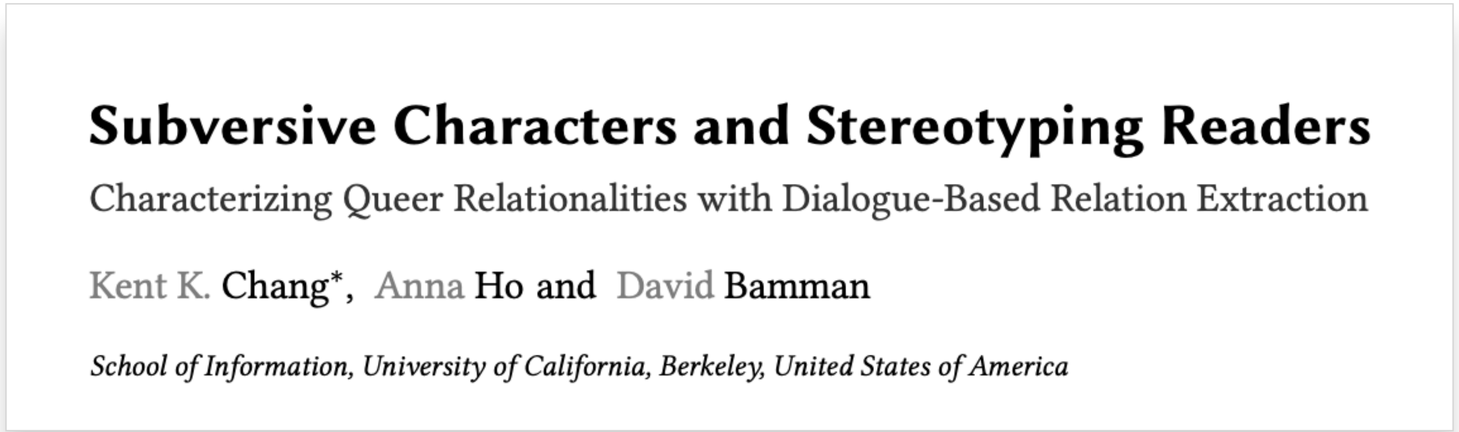


Subversive Characters and Stereotyping Readers

Characterizing Queer Relationalities with Dialogue-Based Relation Extraction

Kent K. Chang*, Anna Ho and David Bamman

School of Information, University of California, Berkeley, United States of America

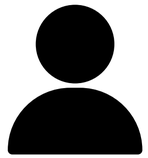
"Subversive Characters and Stereotyping Readers" (Chang et al., CHR 2024)

QUESTION 5

Can we do close re-reading with computational methods?

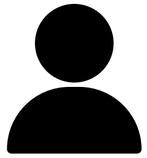
Subversive characters

What's the social relationship between the two speakers?



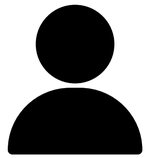
You're going off to work with the military, leaving me behind. Now I know how all those army wives feel.

Would you stop? We're just gonna be on the other side of campus.



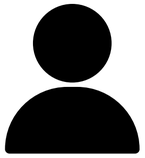
Subversive characters

couple



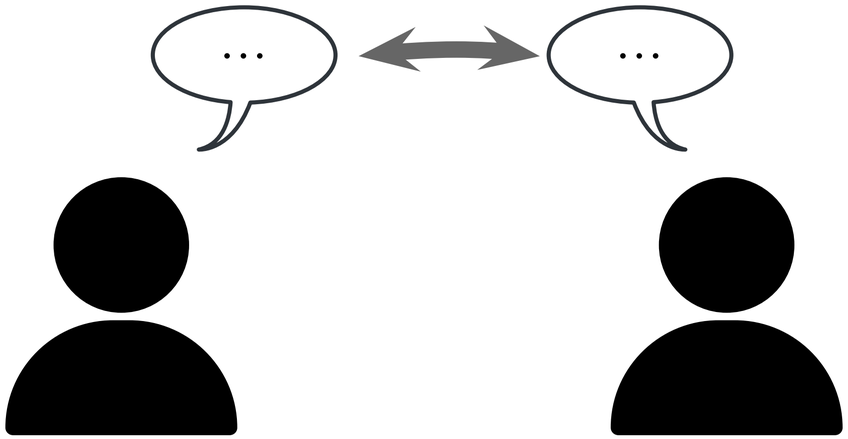
You're going off to work with the military, leaving me behind. Now I know how all those **army wives** feel.

Would you stop? We're just gonna be on the other side of campus.



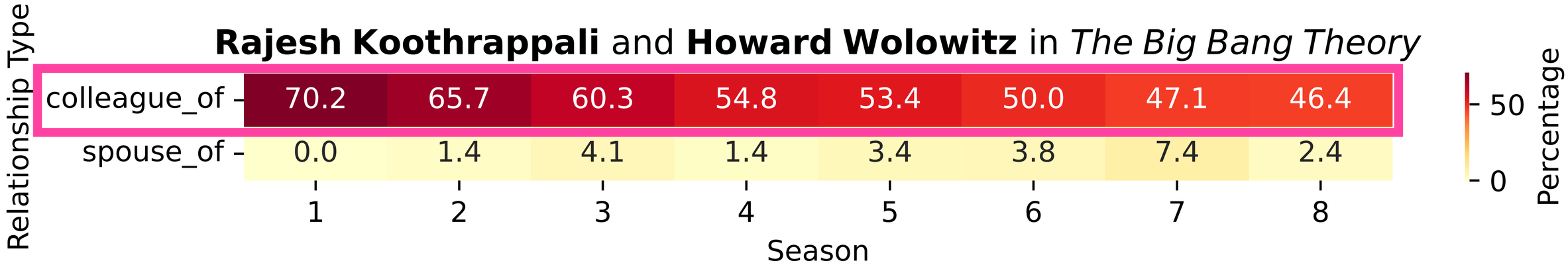

not X
subversion
X

Operationalizing subversion

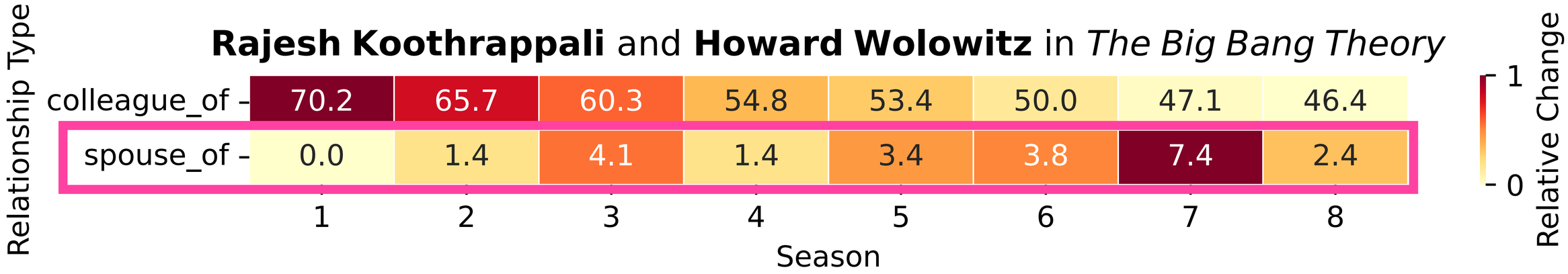


true relationship type **stereotyped relationship type**

Raj and Howard



Raj and Howard



HOWARD: If you're getting on that plane because you love Anu and you can’t stand the thought of spending another day without her, then go. If not . . . then stay here, with . . . the people who love you.

The Big Bang Theory XII.xxii “The Maternal Conclusion” (2016)

HOWARD: I love you, buddy.

RAJ: I love you, too.

[*They hug. Others at the airport start clapping.*]

HOWARD: No, no, that's ***not*** what's happening here.

The Big Bang Theory XII.xxii "The Maternal Conclusion" (2016)

“ Divorces are made in Heaven.

— ALGERNON to JACK in Wilde, *Earnest*

Queer, now and then

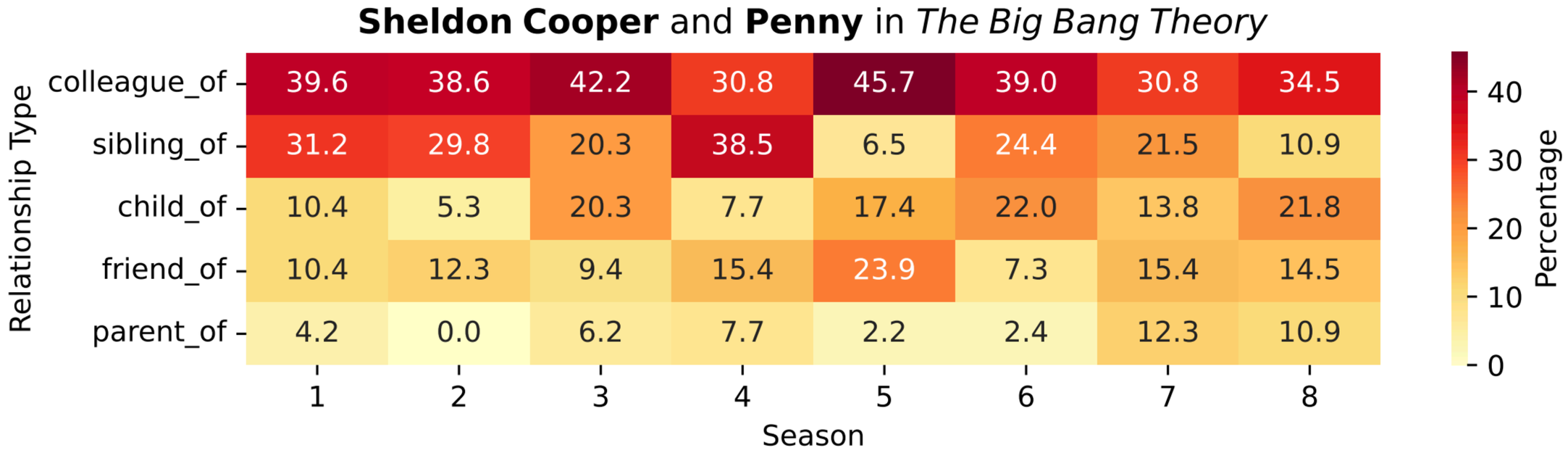
> [A] lot of the most exciting recent work around "queer" spins the term outward along dimensions that can't be subsumed under gender and sexuality at all!

Tendencies (Sedgwick, 1993)

4. Analysis

> Well, I suppose I do think of you as a sister. And sometimes, a mother.
>
> —Sheldon Cooper to his friend, Penny, in the *Big Bang Theory*

> [O]ne of the things that "queer" can refer to: the open mesh of possibilities, gaps, overlaps, dissonances and resonances, lapses and excesses of meaning [. . .].
>
> —EVE KOSOFSKY SEDGWICK, *Tendencies* [13]


Sheldon Cooper and Penny in The Big Bang Theory
Relationship Type
colleague_of
sibling_of
child_of
friend_of
parent_of
39.6 38.6 42.2 30.8 45.7 39.0 30.8 34.5
31.2 29.8 20.3 38.5 6.5 24.4 21.5 10.9
10.4 5.3 20.3 7.7 17.4 22.0 13.8 21.8
10.4 12.3 9.4 15.4 23.9 7.3 15.4 14.5
4.2 0.0 6.2 7.7 2.2 2.4 12.3 10.9
1 2 3 4 5 6 7 8
Season
Percentage
40
30
20
10
0

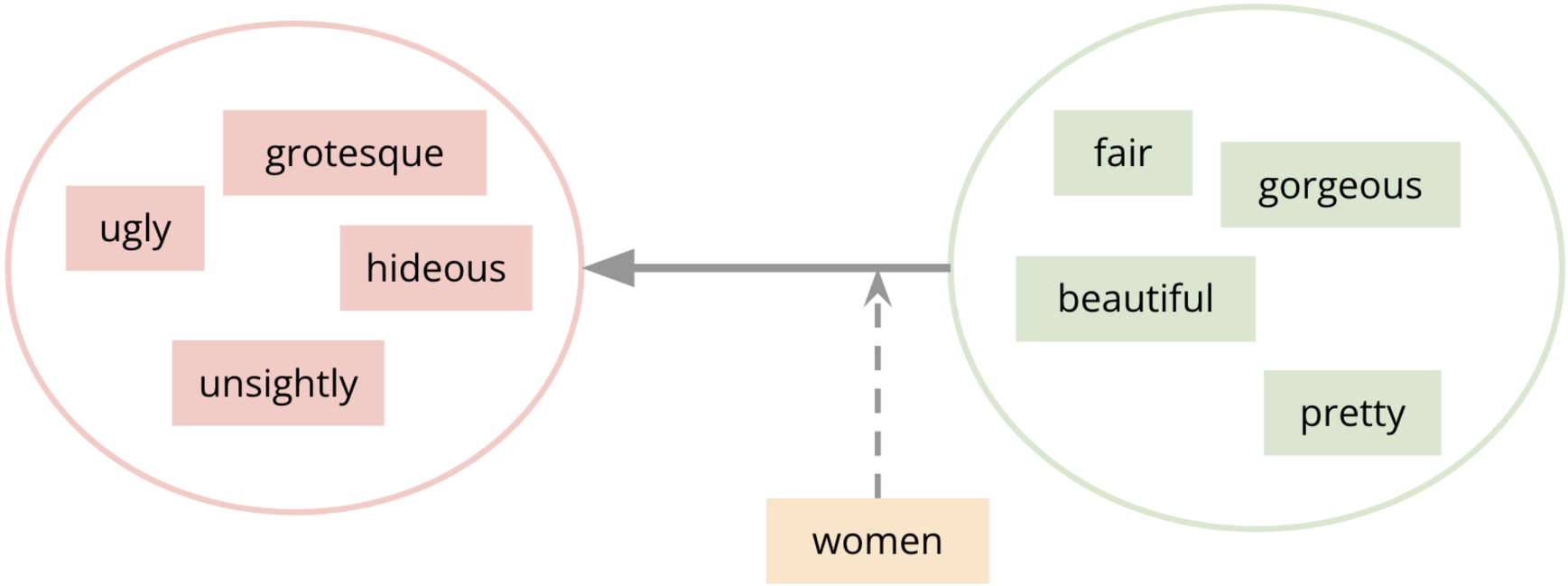
Takeaway #3

Computational methods, whose design is grounded in humanistic scholarship, can ***enable*** you to move between different levels of reading (close/distant, deep/surface).

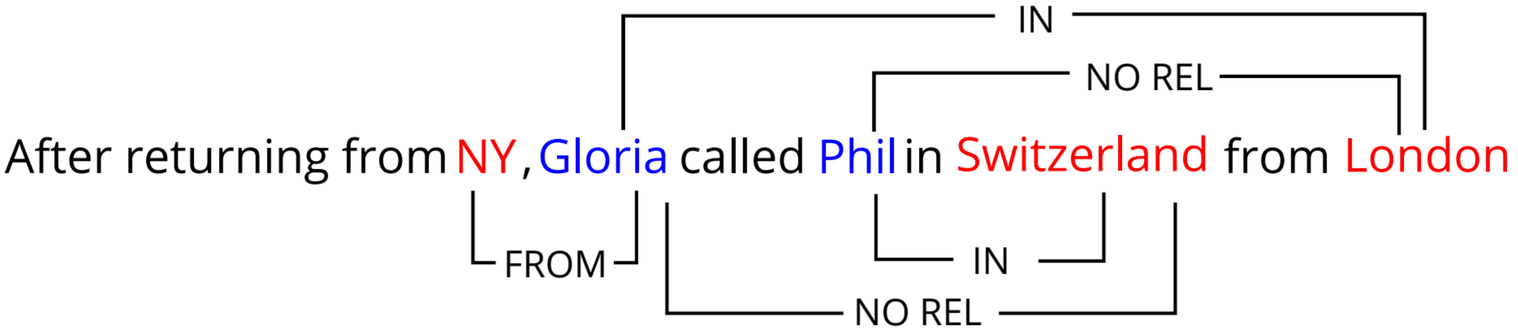
Table 3
Dialogue phrase groups with the highest and lowest emotional range scores. The table shows a representative phrase from each group.

Low Emotional Range		High Emotional Range	
Phrase	**Entropy**	**Phrase**	**Entropy**
“Could I ask you something?”	-17.02	“All rise.”	-7.85
“This is your captain speaking.”	-16.56	“Are you out of your mind?”	-7.88
“Is that okay?”	-16.53	“What the fuck wrong with you?”	-7.99
“Can I get something for you?”	-16.17	“You’re alive.”	-8.32
“Can I get something to drink?”	-16.16	“You saved my life.”	-8.34
“Hey, what can I get you?”	-15.91	“Don’t you understand?”	-8.34
“You wanna come?”	-15.65	“Don’t be so afraid.”	-8.39
“Yeah, that’s good.”	-15.36	“You son of a bitch.”	-8.40
“Any questions?”	-15.26	“You scared the shit out of me!”	-8.44
“That’s correct.”	-15.25	“Ow.”	-8.44

“Once More, with Feeling” (Zhou and Bamman, CHR 2024)



"Discovering Differences in the Representation of People using Contextualized Semantic Axes"
(Lucy et al., EMNLP 2022)



gender	indoor probability
he/him/his	0.54 ± 0.002
she/her	0.64 ± 0.002

"Grounding Characters and Places in Narrative Text" (Soni et al., ACL 2023)

Summary

What is narrative research?

What narratives are represented in LLMs?

Are dialogues in movies/TV series getting shorter? Do male characters get to start more conversations?

Can we do close re-reading with computational methods?

Thank you!

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