

# Computational History

Last updated: 2022/08/29, 12:49:59 EDT

Principles of Complex Systems, Vols. 1, 2, & 3D  
CSYS/MATH 300, 303, & 394, 2022-2023 | @pocsvox

Prof. Peter Sheridan Dodds | @peterdodds

Computational Story Lab | Vermont Complex Systems Center  
Santa Fe Institute | University of Vermont



Licensed under the *Creative Commons Attribution-NonCommercial-ShareAlike 3.0 License*.

PoCS  
@pocsvox

Computational  
History

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series  
Adjacent Narratives

Extras

Memory & Turbulence

References





These slides are brought to you by:

PoCS  
@pocsvox  
Computational  
History

Sealie & Lambie  
Productions



Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series  
Adjacent Narratives

Extras

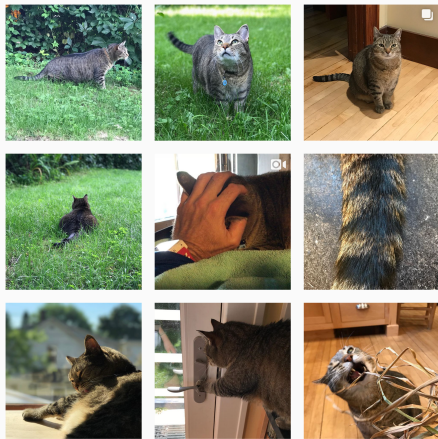
Memory & Turbulence



References



# These slides are also brought to you by:

## Special Guest Executive Producer



 On Instagram at [pratchett\\_the\\_cat](https://www.instagram.com/pratchett_the_cat) 

PoCS  
@pocsvox

Computational  
History

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series  
Adjacent Narratives

Extras

Memory & Turbulence

References



# Outline

Statistics of Surprise

Stories

Mechanics of Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series

Adjacent Narratives

Extras

Memory & Turbulence

References

PoCS  
@pocsvox

Computational  
History

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

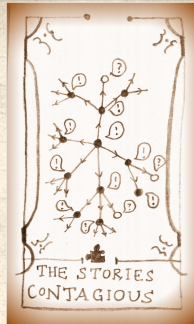
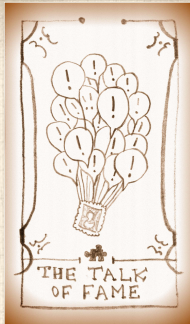
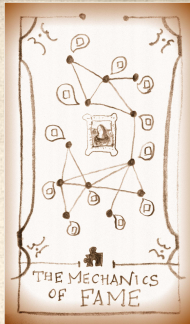
Sociotechnical time series  
Adjacent Narratives

Extras

Memory & Turbulence

References





PoCS  
@pocsvox

Computational  
History

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series  
Adjacent Narratives

Extras

Memory & Turbulence

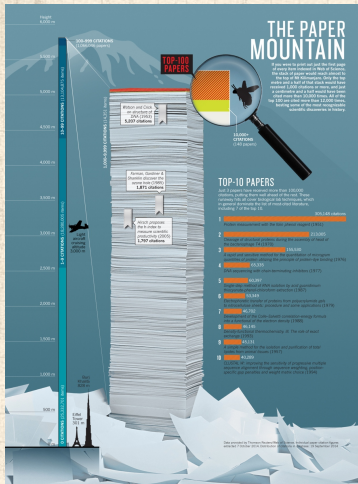
References





# Fame by rank

PoCS  
@pocsvox  
Computational  
History



Nature (2014): Most cited papers of all time

Statistics of Surprise

Stories

Mechanics of Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series  
Adjacent Narratives

Extras

Memory & Turbulence

References



# Word frequency:

PoCS  
@pocsvox

Computational  
History

Brown Corpus ↗ (~ 10<sup>6</sup> words):

rank	word	% q
1.	the	6.8872
2.	of	3.5839
3.	and	2.8401
4.	to	2.5744
5.	a	2.2996
6.	in	2.1010
7.	that	1.0428
8.	is	0.9943
9.	was	0.9661
10.	he	0.9392
11.	for	0.9340
12.	it	0.8623
13.	with	0.7176
14.	as	0.7137
15.	his	0.6886

rank	word	% q
1945.	apply	0.0055
1946.	vital	0.0055
1947.	September	0.0055
1948.	review	0.0055
1949.	wage	0.0055
1950.	motor	0.0055
1951.	fifteen	0.0055
1952.	regarded	0.0055
1953.	draw	0.0055
1954.	wheel	0.0055
1955.	organized	0.0055
1956.	vision	0.0055
1957.	wild	0.0055
1958.	Palmer	0.0055
1959.	intensity	0.0055

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series

Adjacent Narratives

Extras

Memory & Turbulence

References

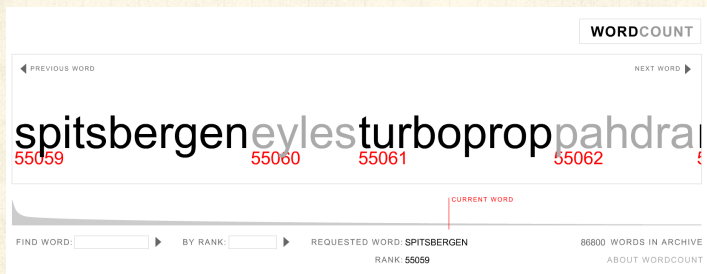


# Jonathan Harris's Wordcount:

A word frequency distribution explorer:

PoCS  
@pocsvox

Computational  
History



Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series

Adjacent Narratives

Extras

Memory & Turbulence

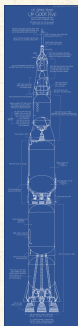
References





# "Thing Explainer: Complicated Stuff in Simple Words"

by Randall Munroe (2015). <sup>[14]</sup>



## BOAT THAT GOES UNDER THE SEA

We've always had boats that go under the sea, but in the last few hundred years, we've learned to make ones that come back up.

At first, we used those boats to shoot at other boats, make holes in them, or stick things to them that blew up.

Later, we found a new use for these boats: keeping our city-burning machines hidden, safe, and ready to use if there's a war.

### WORLD-ENDING BOAT

The boat shown here carries up to two dozen city-turning war machines. People have added on the power used during the Second World War—all the machines that blow up, all the guns that fire, and all the ships that burn it. It's a lot of fire power. Each of these boats carries several times that much.

### SPECIAL SEA WORDS

Most of the time, if you call a really big boat a "boat," people who know a bit about boats will get mad at you. But boats that go under the sea are really called "boats."

### HEAVY METAL POWER MACHINE

These boats are powered by heavy metal, just like some power buildings. The reason they can stay hidden for a long time without running out of power. Any time heavy metal is used for power, people worry about something going wrong. Of course, given what these boats are built for, people worry even more about the idea of one of them working right.

### BREATHING STICK

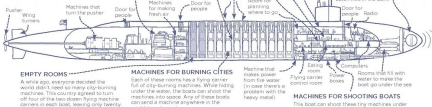
This brings fresh air into the boat, but the boat can also make its own air by breaking water into the parts it's made of. This takes a lot of power, but the boat is powered by heavy metal, so it has enough power to do whatever it wants.

### MIRROR LOOKERS

When the boat is hiding under the sea, it can come near the surface and use these sticks with mirrors in them to let the people inside see out of the water.

### SOUND LOOKERS

Light can't go far under water, so these boats "see" with sound. The boat makes sound, which hits things and comes back. By listening carefully, the people in the boat can tell what's around them without seeing it. Like those skin bands that catch flies in the dark.



### EMPTY ROOMS


A while ago, everyone decided the world didn't need so many city-burning machines. This country agreed to turn off four of the two dozen firing machine carriers in each boat, leaving only twenty.

### MACHINES FOR BURNING CITIES

Each of these rooms has a firing carrier full of city-burning machines. When firing under the sea, the boats can shoot the carriers and machines anywhere in the world in under an hour.

### OTHER BOATS THAT GO UNDER THE SEA

These are some other boats, drawn to show how big they are next to the world-ending boat above.

Up goer five 





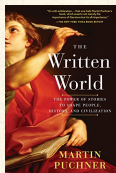
# The everywhere-ness of algorithms and stories:



“On the Origin of Stories: Evolution, Cognition, and Fiction” [a](#) [↗](#)  
by Brian Boyd (2010). <sup>[3]</sup>



“The Storytelling Animal: How Stories Make Us Human” [a](#) [↗](#)  
by Jonathan Gottschall (2013). <sup>[10]</sup>



“The Written World: How Literature Shaped Civilization” [a](#) [↗](#)  
by Martin Puchner (2017). <sup>[17]</sup>

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series  
Adjacent Narratives

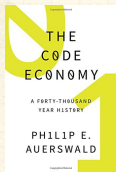
Extras

Memory & Turbulence

References

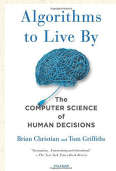


# Algorithms, recipes, stories, ...



“The Code Economy: A Forty-Thousand Year History” [a](#) [↗](#)

by Philip E Auerswald (2017). [1]



“Algorithms to Live By” [a](#) [↗](#)

by Christian and Griffiths (2016). [6]



“Once Upon an Algorithm” [a](#) [↗](#)

by Martin Erwig (2017). [9]

Also: Numerical Recipes in C [16] and How to Bake  $\pi$  [4]

PoCS  
@pocsvox

Computational  
History

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series  
Adjacent Narratives

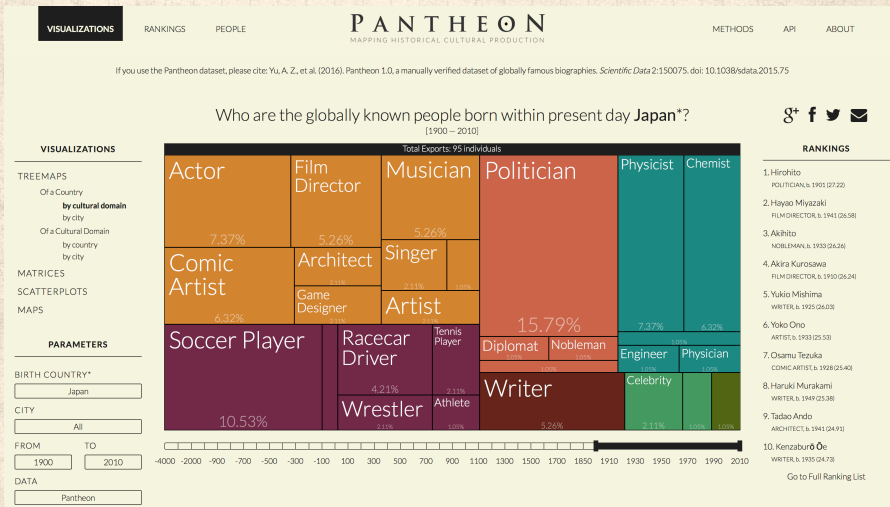
Extras

Memory & Turbulence

References

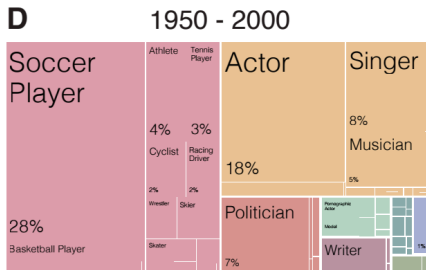
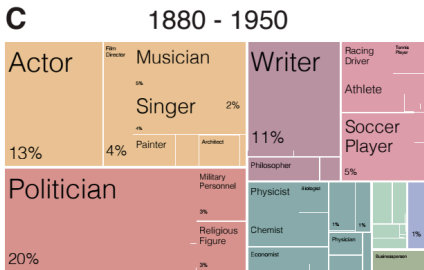
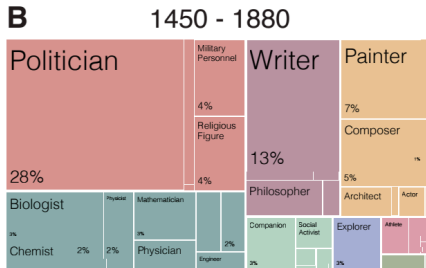
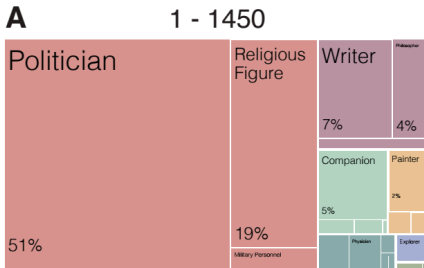


# The famous are storytellers—Japan:



For people born 1950–

[http://pantheon.media.mit.edu/treemap/country\\_exports/JP/all/1900/2010/H15/pantheon](http://pantheon.media.mit.edu/treemap/country_exports/JP/all/1900/2010/H15/pantheon)





## Super Survival of the Stories:



The Desirability  
of  
Storytellers [↗](#),  
The Atlantic,  
Ed Yong,  
2017-12-05.

- Study of Agta, Filipino hunter-gatherers.
- Storytelling valued well above all other skills including hunting.
- Stories encode prosocial norms such as cooperation.
- Like the best stories, the best storytellers reproduce more successfully.

PoCS  
@pocsvox  
Computational  
History

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series  
Adjacent Narratives

Extras

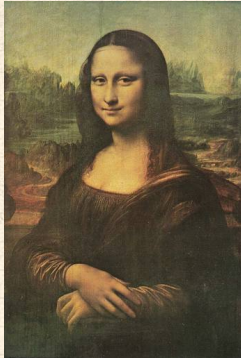
Memory & Turbulence

References



# The most famous painting in the world:

PoCS  
@pocsvox  
Computational  
History



Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series  
Adjacent Narratives

Extras

Memory & Turbulence

References



# The dismal predictive powers of editors .....

PoCS  
@pocsvox

Computational  
History

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series  
Adjacent Narratives

Extras

Memory & Turbulence

References



Twelve ...

# The completely unpredicted fall of Eastern Europe:

PoCS  
@pocsvox  
Computational  
History



Timur Kuran: <sup>[12]</sup> “Now Out of Never: The Element of Surprise in the East European Revolution of 1989”

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series  
Adjacent Narratives

Extras

Memory & Turbulence

References





# We understand bushfire stories:

PoCS  
@pocsvox  
Computational  
History

Statistics of  
Surprise

Stories

**Mechanics of  
Fame**

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series  
Adjacent Narratives

Extras

Memory & Turbulence

References

1. Sparks start fires.
2. System properties control a fire's spread.
3. But for three reasons, we make two mistakes about **Social Fires** ...



# Reason 1—We are Homo Narrativus.

PoCS  
@pocsvox

Computational  
History

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

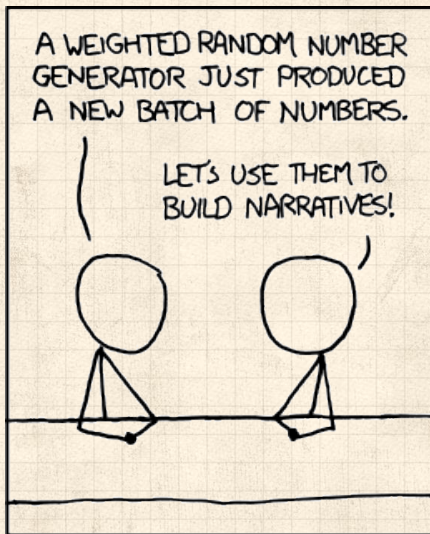
Extras

Sociotechnical time series  
Adjacent Narratives

Extras

Memory & Turbulence

References



ALL SPORTS COMMENTARY

<http://xkcd.com/904/>



## Reason 2—"We are all individuals."

Archival footage:

PoCS  
@pocsvox

Computational  
History

Statistics of  
Surprise

Stories

**Mechanics of  
Fame**

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series  
Adjacent Narratives

Extras

Memory & Turbulence

References



Individual narratives are not enough to understand distributed, networked minds.



## Reason 3—We are spectacular imitators.

PoCS  
@pocsvox

Computational  
History

Statistics of  
Surprise

Stories

**Mechanics of  
Fame**

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series  
Adjacent Narratives

Extras

Memory & Turbulence

References



BBC/David Attenborough.



# Mistake 1: Success is due to intrinsic properties

PoCS  
@pocsvox  
Computational  
History

Statistics of  
Surprise

Stories

**Mechanics of  
Fame**

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series  
Adjacent Narratives

Extras

Memory & Turbulence

References



See "Becoming Mona Lisa" by David Sassoon 







48 songs  
30k participants

PoCS  
@pocsvox  
Computational  
History

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series  
Adjacent Narratives

Extras

Memory & Turbulence

References



## Exp 1— weak social

	R	Rank	Delta	Rank	Delta
WANT TO BE	20	12	8	12	8
THROUGH A STRUGGLE	17	11	6	11	6
DEEP END OF THE	16	10	6	10	6
THE WINDY SPARKLE	15	9	6	9	6
THE BROTHERS	14	8	6	8	6
THE BROTHERS	13	7	6	7	6
THE BROTHERS	12	6	6	6	6
THE BROTHERS	11	5	6	5	6
THE BROTHERS	10	4	6	4	6
THE BROTHERS	9	3	6	3	6
THE BROTHERS	8	2	6	2	6
THE BROTHERS	7	1	6	1	6
THE BROTHERS	6	0	6	0	6
THE BROTHERS	5	-1	6	-1	6
THE BROTHERS	4	-2	6	-2	6
THE BROTHERS	3	-3	6	-3	6
THE BROTHERS	2	-4	6	-4	6
THE BROTHERS	1	-5	6	-5	6
THE BROTHERS	0	-6	6	-6	6
THE BROTHERS	-1	-7	6	-7	6
THE BROTHERS	-2	-8	6	-8	6
THE BROTHERS	-3	-9	6	-9	6
THE BROTHERS	-4	-10	6	-10	6
THE BROTHERS	-5	-11	6	-11	6
THE BROTHERS	-6	-12	6	-12	6
THE BROTHERS	-7	-13	6	-13	6
THE BROTHERS	-8	-14	6	-14	6
THE BROTHERS	-9	-15	6	-15	6
THE BROTHERS	-10	-16	6	-16	6
THE BROTHERS	-11	-17	6	-17	6
THE BROTHERS	-12	-18	6	-18	6
THE BROTHERS	-13	-19	6	-19	6
THE BROTHERS	-14	-20	6	-20	6
THE BROTHERS	-15	-21	6	-21	6
THE BROTHERS	-16	-22	6	-22	6
THE BROTHERS	-17	-23	6	-23	6
THE BROTHERS	-18	-24	6	-24	6
THE BROTHERS	-19	-25	6	-25	6
THE BROTHERS	-20	-26	6	-26	6
THE BROTHERS	-21	-27	6	-27	6
THE BROTHERS	-22	-28	6	-28	6
THE BROTHERS	-23	-29	6	-29	6
THE BROTHERS	-24	-30	6	-30	6
THE BROTHERS	-25	-31	6	-31	6
THE BROTHERS	-26	-32	6	-32	6
THE BROTHERS	-27	-33	6	-33	6
THE BROTHERS	-28	-34	6	-34	6
THE BROTHERS	-29	-35	6	-35	6
THE BROTHERS	-30	-36	6	-36	6
THE BROTHERS	-31	-37	6	-37	6
THE BROTHERS	-32	-38	6	-38	6
THE BROTHERS	-33	-39	6	-39	6
THE BROTHERS	-34	-40	6	-40	6
THE BROTHERS	-35	-41	6	-41	6
THE BROTHERS	-36	-42	6	-42	6
THE BROTHERS	-37	-43	6	-43	6
THE BROTHERS	-38	-44	6	-44	6
THE BROTHERS	-39	-45	6	-45	6
THE BROTHERS	-40	-46	6	-46	6
THE BROTHERS	-41	-47	6	-47	6
THE BROTHERS	-42	-48	6	-48	6
THE BROTHERS	-43	-49	6	-49	6
THE BROTHERS	-44	-50	6	-50	6
THE BROTHERS	-45	-51	6	-51	6
THE BROTHERS	-46	-52	6	-52	6
THE BROTHERS	-47	-53	6	-53	6
THE BROTHERS	-48	-54	6	-54	6
THE BROTHERS	-49	-55	6	-55	6
THE BROTHERS	-50	-56	6	-56	6
THE BROTHERS	-51	-57	6	-57	6
THE BROTHERS	-52	-58	6	-58	6
THE BROTHERS	-53	-59	6	-59	6
THE BROTHERS	-54	-60	6	-60	6
THE BROTHERS	-55	-61	6	-61	6
THE BROTHERS	-56	-62	6	-62	6
THE BROTHERS	-57	-63	6	-63	6
THE BROTHERS	-58	-64	6	-64	6
THE BROTHERS	-59	-65	6	-65	6
THE BROTHERS	-60	-66	6	-66	6
THE BROTHERS	-61	-67	6	-67	6
THE BROTHERS	-62	-68	6	-68	6
THE BROTHERS	-63	-69	6	-69	6
THE BROTHERS	-64	-70	6	-70	6
THE BROTHERS	-65	-71	6	-71	6
THE BROTHERS	-66	-72	6	-72	6
THE BROTHERS	-67	-73	6	-73	6
THE BROTHERS	-68	-74	6	-74	6
THE BROTHERS	-69	-75	6	-75	6
THE BROTHERS	-70	-76	6	-76	6
THE BROTHERS	-71	-77	6	-77	6
THE BROTHERS	-72	-78	6	-78	6
THE BROTHERS	-73	-79	6	-79	6
THE BROTHERS	-74	-80	6	-80	6
THE BROTHERS	-75	-81	6	-81	6
THE BROTHERS	-76	-82	6	-82	6
THE BROTHERS	-77	-83	6	-83	6
THE BROTHERS	-78	-84	6	-84	6
THE BROTHERS	-79	-85	6	-85	6
THE BROTHERS	-80	-86	6	-86	6
THE BROTHERS	-81	-87	6	-87	6
THE BROTHERS	-82	-88	6	-88	6
THE BROTHERS	-83	-89	6	-89	6
THE BROTHERS	-84	-90	6	-90	6
THE BROTHERS	-85	-91	6	-91	6
THE BROTHERS	-86	-92	6	-92	6
THE BROTHERS	-87	-93	6	-93	6
THE BROTHERS	-88	-94	6	-94	6
THE BROTHERS	-89	-95	6	-95	6
THE BROTHERS	-90	-96	6	-96	6
THE BROTHERS	-91	-97	6	-97	6
THE BROTHERS	-92	-98	6	-98	6
THE BROTHERS	-93	-99	6	-99	6
THE BROTHERS	-94	-100	6	-100	6

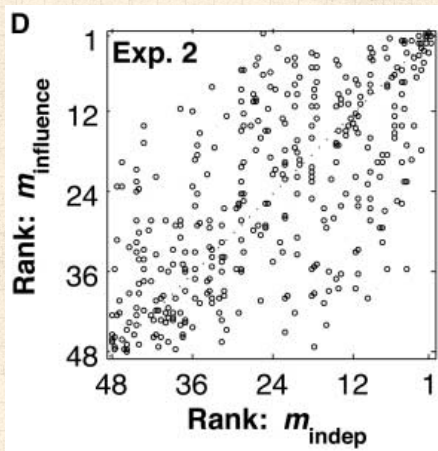
## Exp. 2—strong social

	R	Rank	Delta	Rank	Delta
WANT TO BE	20	12	8	12	8
THROUGH A STRUGGLE	17	11	6	11	6
DEEP END OF THE	16	10	6	10	6
THE WINDY SPARKLE	15	9	6	9	6
THE BROTHERS	14	8	6	8	6
THE BROTHERS	13	7	6	7	6
THE BROTHERS	12	6	6	6	6
THE BROTHERS	11	5	6	5	6
THE BROTHERS	10	4	6	4	6
THE BROTHERS	9	3	6	3	6
THE BROTHERS	8	2	6	2	6
THE BROTHERS	7	1	6	1	6
THE BROTHERS	6	0	6	0	6
THE BROTHERS	5	-1	6	-1	6
THE BROTHERS	4	-2	6	-2	6
THE BROTHERS	3	-3	6	-3	6
THE BROTHERS	2	-4	6	-4	6
THE BROTHERS	1	-5	6	-5	6
THE BROTHERS	0	-6	6	-6	6
THE BROTHERS	-1	-7	6	-7	6
THE BROTHERS	-2	-8	6	-8	6
THE BROTHERS	-3	-9	6	-9	6
THE BROTHERS	-4	-10	6	-10	6
THE BROTHERS	-5	-11	6	-11	6
THE BROTHERS	-6	-12	6	-12	6
THE BROTHERS	-7	-13	6	-13	6
THE BROTHERS	-8	-14	6	-14	6
THE BROTHERS	-9	-15	6	-15	6
THE BROTHERS	-10	-16	6	-16	6
THE BROTHERS	-11	-17	6	-17	6
THE BROTHERS	-12	-18	6	-18	6
THE BROTHERS	-13	-19	6	-19	6
THE BROTHERS	-14	-20	6	-20	6
THE BROTHERS	-15	-21	6	-21	6
THE BROTHERS	-16	-22	6	-22	6
THE BROTHERS	-17	-23	6	-23	6
THE BROTHERS	-18	-24	6	-24	6
THE BROTHERS	-19	-25	6	-25	6
THE BROTHERS	-20	-26	6	-26	6
THE BROTHERS	-21	-27	6	-27	6
THE BROTHERS	-22	-28	6	-28	6
THE BROTHERS	-23	-29	6	-29	6
THE BROTHERS	-24	-30	6	-30	6
THE BROTHERS	-25	-31	6	-31	6
THE BROTHERS	-26	-32	6	-32	6
THE BROTHERS	-27	-33	6	-33	6
THE BROTHERS	-28	-34	6	-34	6
THE BROTHERS	-29	-35	6	-35	6
THE BROTHERS	-30	-36	6	-36	6
THE BROTHERS	-31	-37	6	-37	6
THE BROTHERS	-32	-38	6	-38	6
THE BROTHERS	-33	-39	6	-39	6
THE BROTHERS	-34	-40	6	-40	6
THE BROTHERS	-35	-41	6	-41	6
THE BROTHERS	-36	-42	6	-42	6
THE BROTHERS	-37	-43	6	-43	6
THE BROTHERS	-38	-44	6	-44	6
THE BROTHERS	-39	-45	6	-45	6
THE BROTHERS	-40	-46	6	-46	6
THE BROTHERS	-41	-47	6	-47	6
THE BROTHERS	-42	-48	6	-48	6
THE BROTHERS	-43	-49	6	-49	6
THE BROTHERS	-44	-50	6	-50	6
THE BROTHERS	-45	-51	6	-51	6
THE BROTHERS	-46	-52	6	-52	6
THE BROTHERS	-47	-53	6	-53	6
THE BROTHERS	-48	-54	6	-54	6
THE BROTHERS	-49	-55	6	-55	6
THE BROTHERS	-50	-56	6	-56	6
THE BROTHERS	-51	-57	6	-57	6
THE BROTHERS	-52	-58	6	-58	6
THE BROTHERS	-53	-59	6	-59	6
THE BROTHERS	-54	-60	6	-60	6
THE BROTHERS	-55	-61	6	-61	6
THE BROTHERS	-56	-62	6	-62	6
THE BROTHERS	-57	-63	6	-63	6
THE BROTHERS	-58	-64	6	-64	6
THE BROTHERS	-59	-65	6	-65	6
THE BROTHERS	-60	-66	6	-66	6
THE BROTHERS	-61	-67	6	-67	6
THE BROTHERS	-62	-68	6	-68	6
THE BROTHERS	-63	-69	6	-69	6
THE BROTHERS	-64	-70	6	-70	6
THE BROTHERS	-65	-71	6	-71	6
THE BROTHERS	-66	-72	6	-72	6
THE BROTHERS	-67	-73	6	-73	6
THE BROTHERS	-68	-74	6	-74	6
THE BROTHERS	-69	-75	6	-75	6
THE BROTHERS	-70	-76	6	-76	6
THE BROTHERS	-71	-77	6	-77	6
THE BROTHERS	-72	-78	6	-78	6
THE BROTHERS	-73	-79	6	-79	6

# Resolving the paradox:

PoCS  
@pocsvox

Computational  
History



Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series

Adjacent Narratives

Extras

Memory & Turbulence

References

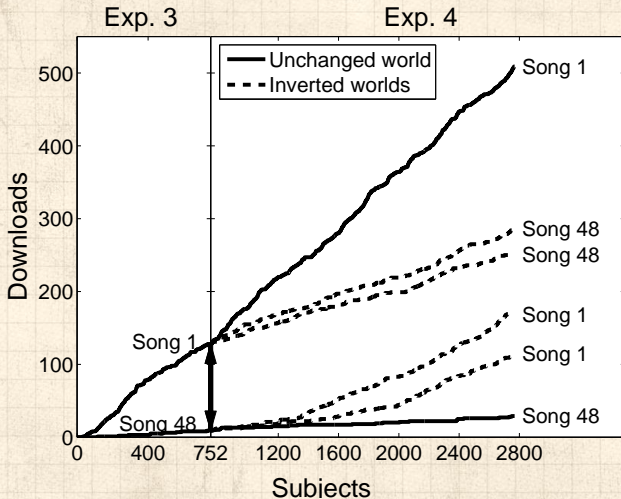


Increased social awareness leads to  
Stronger inequality + Less predictability.

# Payola/Deceptive advertising hurts us all:

PoCS  
@pocsvox

Computational  
History



Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series  
Adjacent Narratives

Extras

Memory & Turbulence

References



## “Mistake” 2:

Seeing success is ‘due to social’ and  
wanting to say ‘all your interactions are  
belong to us’

PoCS  
@pocsvox

Computational  
History

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series

Adjacent Narratives

Extras

Memory & Turbulence

References



# "This is truly the last time, believe me"

The Washington Post

Business + Analysis



### 14 years of Mark Zuckerberg saying sorry, not sorry

By Geoffrey A. Fowler and Christ Eichenlaub April 8, 2019

Do you trust Mark Zuckerberg?

From the moment the Facebook founder entered the public eye in 2005 for creating a Harvard student hot-or-not rating site, he's been apologizing. So we collected this abbreviated history of his public mea culpas.

It reads like a record on repeat. Zuckerberg, who made "move fast and break things" his slogan, says sorry for being naive, and then promises solutions such as privacy "controls," "transparency" and better policy "enforcement." And then he promises it again the next time. You can track his [apologies to Congress](#) and [promises to users](#) on the timeline below.

All the while, Facebook's access to our personal data increases and little changes about the way Zuckerberg handles it. So as Zuckerberg prepares to apologize for the first time in front of Congress, the question that lingers is: What will be different this time?

Robert Godwin Sr.

"Our **hearts go out** to the family and friends of Robert Godwin Sr., and we have a lot of work — and **we will keep doing all we can** to prevent tragedies like this from happening."



September 2017

While revealing a nine-step plan to stop nations from using Facebook to interfere in one another's elections, noting that the amount of "problematic content" found so far is "relatively small."

"I care deeply about the democratic process and protecting its integrity. ... It is a new challenge for internet communities to deal with



December 2007

After launching Beacon, which opted in everyone to sharing with advertisers what they were doing in outside websites and apps.

"We simply did a bad job with this release, and I apologize for it. ... People need to be able to explicitly choose what they share."

February 2009

After unveiling new terms of service that angered users.

"Over the past couple of days, we received a lot of questions and comments. ... Based on this feedback, we've decided to return to our previous terms of use while we resolve the issues."

"We won't prevent all mistakes or abuse, but we currently make too many errors enforcing our policies and preventing misuse of our tools. ... This will be a serious year of self-improvement and I'm looking forward to learning from working to fix our issues together."

March 2018

After details emerged about Cambridge Analytica taking user data.

"We have a responsibility to protect your data, and if we can't then we don't deserve to serve you. ... We will learn from this experience to secure our platform further and make our community safer for everyone going forward."

Commission for deceiving consumers about privacy.

"I'm the first to admit that **we've made a bunch of mistakes**. ... Facebook has always been committed to being transparent about the information you have stored with us — and we have led the internet in building tools to **give people the ability to see and control what they share**."



July 2014

After an academic paper exposed that Facebook conducted psychological tests on nearly 700,000 users without their knowledge. (Apology by Facebook COO Sheryl Sandberg)

"It was my mistake, and I'm sorry. ... There's more we can do here to **limit the information developers can access and put more safeguards in place** to prevent abuse."

Related stories

Facebook: Most users may have had public data 'scraped'

Facebook COO Sheryl Sandberg on data leak: 'I am really sorry, we are late'

As Facebook confronts data misuse, foreign governments might see real change

What if we paid for Facebook — instead of letting it spy on us for free?

About this story

Photo/illustrations based on photos by Tony Avelar/(Bloomberg) News, Drew Angerer/Getty Images, Jeff Blomquist/WI, Jim Watson/Getty Images, Craig Ruttle/WI, Paul Sotomayor/WI, Stephen Lam/Reuters, Jesse Green/Reuters, Richard Drew/AP

233 Comments

More stories

The Facebook ads Russians showed to different groups

Facebook has said these ads were created by the Internet

PoCS  
@pocsvox

Computational  
History

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series  
Adjacent Narratives

Extras

Memory & Turbulence

References

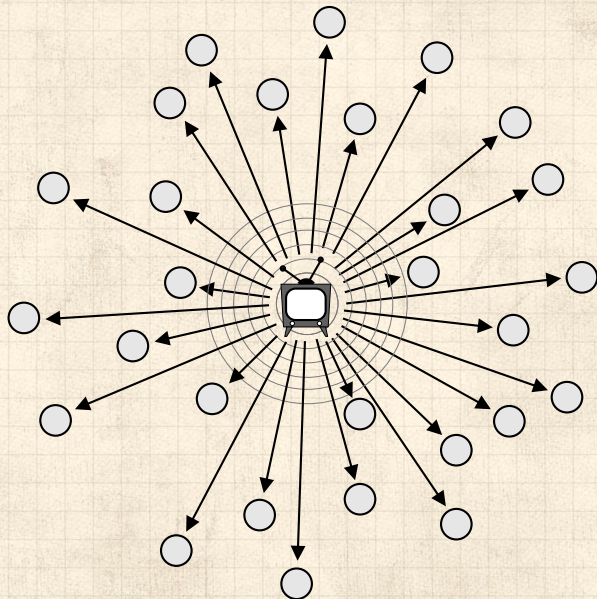




# The hypodermic model of influence:

PoCS  
@pocsvox

Computational  
History



Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series  
Adjacent Narratives

Extras

Memory & Turbulence

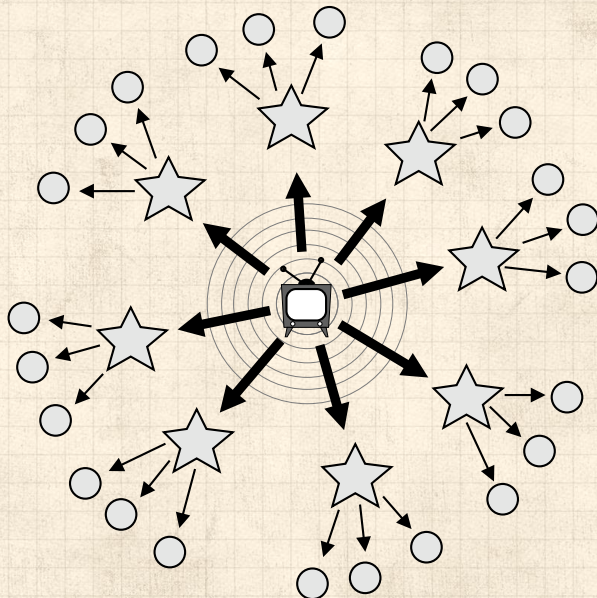
References



# The two step model of influence: [11]

PoCS  
@pocsvox

Computational  
History



Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series  
Adjacent Narratives

Extras

Memory & Turbulence

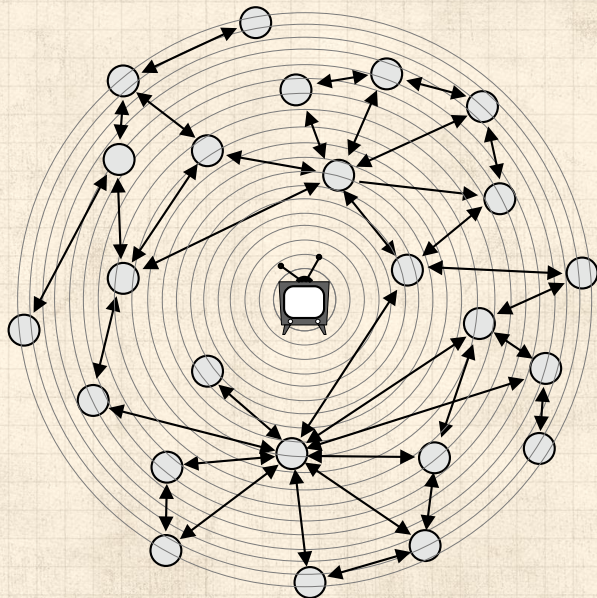
References



# The network model of influence:

PoCS  
@pocsvox

Computational  
History



Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series  
Adjacent Narratives

Extras

Memory & Turbulence

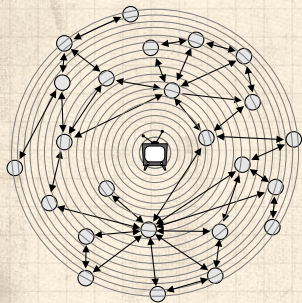
References



# The network model of influence:

PoCS  
@pocsvox


Computational  
History



## How superspreading works:

Many interconnected, average, trusting people must benefit from both **receiving** and **sharing** a message far from its source.



“Influentials, Networks, and Public Opinion Formation” 

Watts and Dodds,

J. Consum. Res., **34**, 441–458, 2007. <sup>[19]</sup>

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series

Adjacent Narratives

Extras


Memory & Turbulence


References









## Etymological clarity:


 **Fate**—from the Latin *fatus*: meaning “spoken”.



 Fate is talk that has been done.  
“It is written”, fore-tell, pre-dict.



 “There is no such thing as fate, only the story of fate.” 

 Destiny is probablistic.

 **Fame**—from the Latin *fāma*: meaning “to talk.”

 Fame is inherently the social discussion about the thing, not the thing itself.

 Renown : Repeatedly named, talked about. Old French *renon*, from re- + non (“name”).

 Réclame . “Clamo”—Proto-Indo-European: “to shout” (again). Connected to “lowing”.

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series  
Adjacent Narratives

Extras

Memory & Turbulence

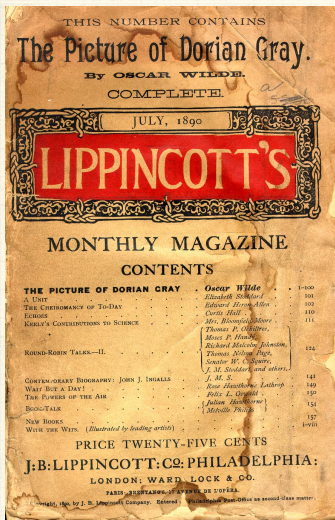
References





# Oscar Wilde, The Picture of Dorian Gray: Raw Fame

PoCS  
@pocsvox  
Computational  
History



“There is only one thing in the world worse than being talked about, and that is not being talked about.”

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

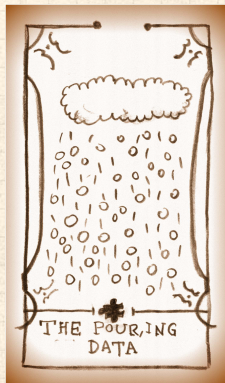
Sociotechnical time series  
Adjacent Narratives

Extras

Memory & Turbulence

References





Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series  
Adjacent Narratives

Extras

Memory & Turbulence

References





“Fame and Ultrafame: Measuring and comparing daily levels of ‘being talked about’ for United States’ presidents, their rivals, God, countries, and K-pop”

Dodds et al.,

Available online at

<https://arxiv.org/abs/1910.00149>, 2019. [7]



“Computational timeline reconstruction of the stories surrounding Trump: Story turbulence, narrative control, and collective chronopathy”

Dodds et al.,

, 2020. [8]



POTUSometer with the Smorgasdashbord:

<http://compstorylab.org/potusometer/>



Stories surrounding Trump:

<http://compstorylab.org/trumpstoryturbulence/>

PoCS  
@pocsvox

Computational  
History

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

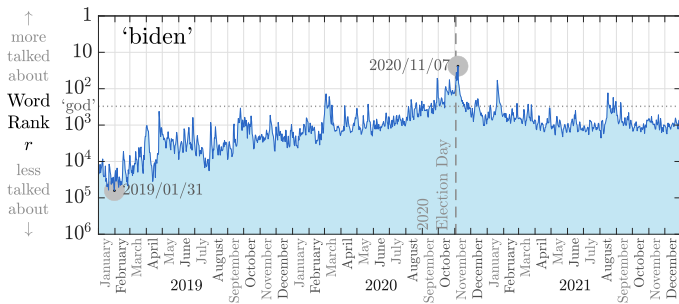
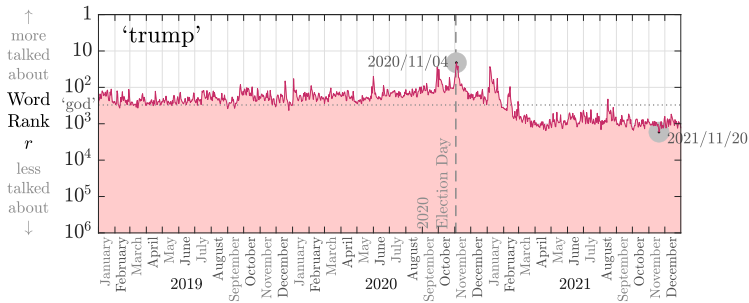
Sociotechnical time series  
Adjacent Narratives

Extras

Memory & Turbulence

References





PoCS  
@pocsvox

Computational  
History

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series  
Adjacent Narratives

Extras

Memory & Turbulence

References



# Ultrafame: Nobody expects the Spanish Inquisition K-pop:

PoCS  
@pocsvox  
Computational  
History

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras


Sociotechnical time series  
Adjacent Narratives

Extras

Memory & Turbulence

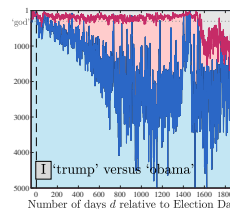
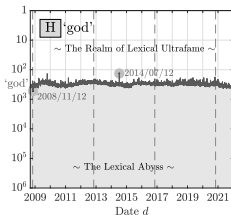
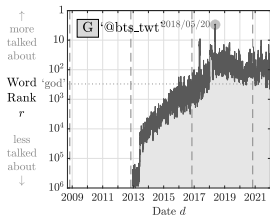
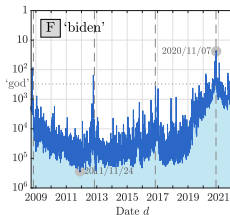
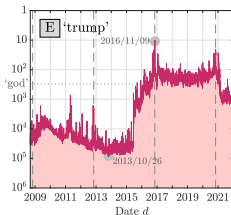
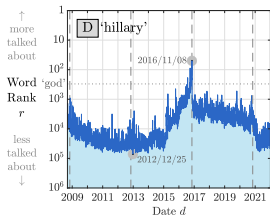
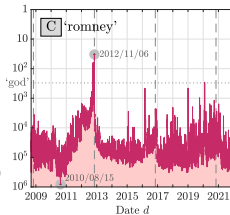
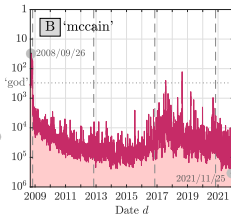
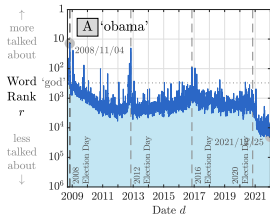
References



Vox (2019-04-17):  
BTS, the band that changed K-pop, explained 



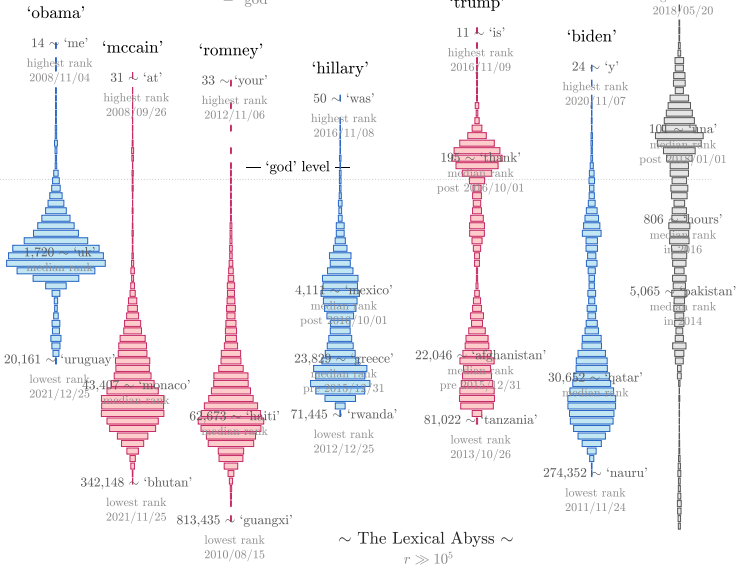






~ The Realm of Lexical Ultraframe ~

$$r \leq r_{\text{god}} = 303$$



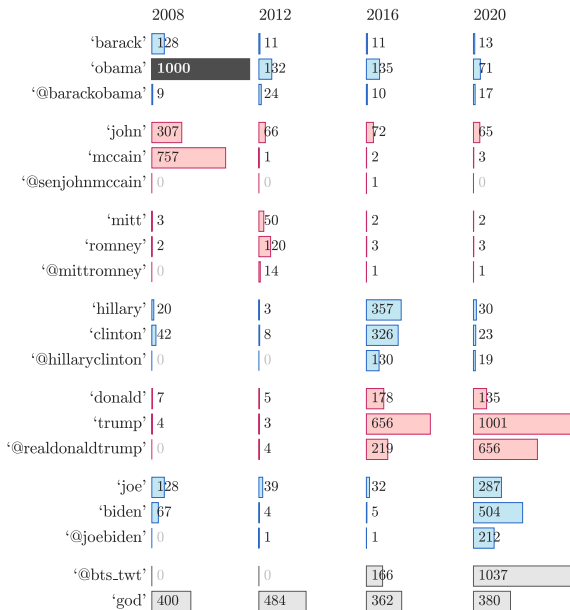
~ The Lexical Abyss ~

$$r \gg 10^5$$

## Ultrafame—Percentage of days per year ranked above 'god'

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
'barack'	1.8%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
'obama'	54.4%	6.9%	0.5%	0.5%	2.2%	0.3%	0.0%	0.3%	2.2%	2.2%	0.5%	0.0%	0.3%	0.0%
'@barackobama'	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
'john'	3.5%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.8%	0.3%	0.5%	0.0%
'mccain'	39.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	1.1%	0.0%	0.0%	0.0%
'@senjohnmccain'	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
'mitt'	0.0%	0.0%	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
'romney'	0.0%	0.0%	0.0%	0.0%	1.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%
'@mittromney'	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
'hillary'	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	10.4%	0.0%	0.0%	0.0%	0.0%	0.0%
'clinton'	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	7.7%	0.0%	0.0%	0.0%	0.0%	0.0%
'@hillaryclinton'	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%
'donald'	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.7%	0.5%	0.0%	0.0%	1.6%	0.6%
'trump'	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	47.8%	98.6%	93.7%	92.3%	100.0%	10.2%
'@realdonaldtrump'	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.7%	26.8%	41.4%	62.7%	90.2%	2.2%
'joe'	3.5%	2.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	8.2%	0.6%
'biden'	1.8%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	23.8%	6.1%
'@joebiden'	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.1%	0.3%
'@bts_twt'	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	8.5%	50.7%	100.0%	100.0%	98.9%	93.1%

Relative median rates of ‘being talked about’  
in the 8 weeks (56 days) pre-election day:

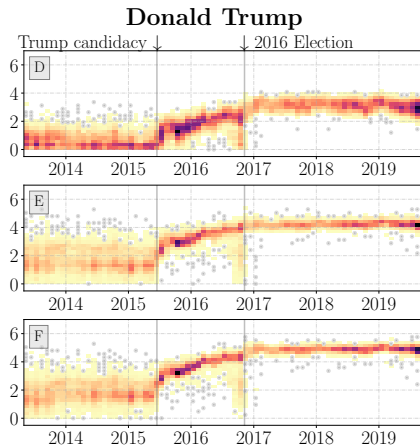
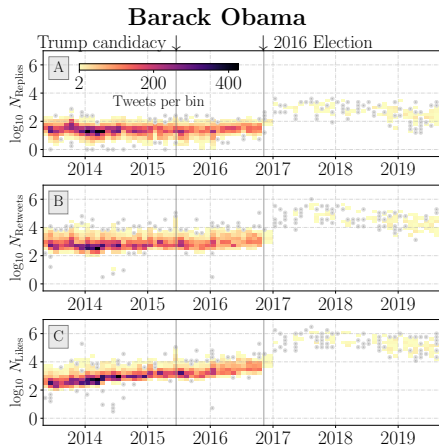


Relative median rates of 'being talked about' per year:

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
'barack'	50	38	17	9	10	7	8	11	14	15	14	14	19	3
'obama'	897	379	52	87	97	79	91	103	56	60	129	106	104	17
'@barackobama'	10	8	11	10	17	15	16	13	13	17	17	13	24	5
'john'	405	274	88	26	117	104	113	121	118	29	28	114	108	82
'mccain'	579	11	4	2	2	2	1	1	3	15	7	5	3	2
'@senjohnmccain'	0	2	1	0	0	1	1	1	1	9	2	0	0	0
'mitt'	5	8	5	6	25	6	5	4	4	2	2	3	3	2
'romney'	3	1	1	4	42	2	1	1	4	1	1	3	4	1
'@mittromney'	0	0	0	0	5	0	0	0	1	0	0	1	1	0
'hillary'	28	10	5	3	3	4	6	30	69	72	61	43	33	6
'clinton'	62	25	16	10	8	6	8	27	40	65	62	45	32	8
'@hillaryclinton'	0	0	0	0	0	0	1	11	71	22	19	21	23	3
'donald'	11	17	11	11	8	6	7	44	66	45	14	104	143	43
'trump'	7	20	10	7	4	3	3	77	583	1000	865	808	1134	229
'@realdonaldtrump'	0	0	0	1	2	3	2	32	219	468	555	652	888	1
'joe'	57	87	38	87	66	58	44	46	50	48	44	78	97	117
'biden'	72	7	3	1	2	2	2	3	5	3	4	52	284	221
'@joebiden'	0	0	0	0	0	0	0	0	1	1	2	18	62	28
'@bts_twt'	0	0	0	0	0	5	36	23	242	595	2487	1802	1440	1437
'god'	666	851	687	694	791	719	607	616	601	590	612	611	612	510



# Ratiometrics:



“Ratioming the President: An exploration of public engagement with Obama and Trump on Twitter,”

Minot et al., 2020 [13]

# Ratiometrics:

PoCS  
@pocsvox

Computational  
History

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

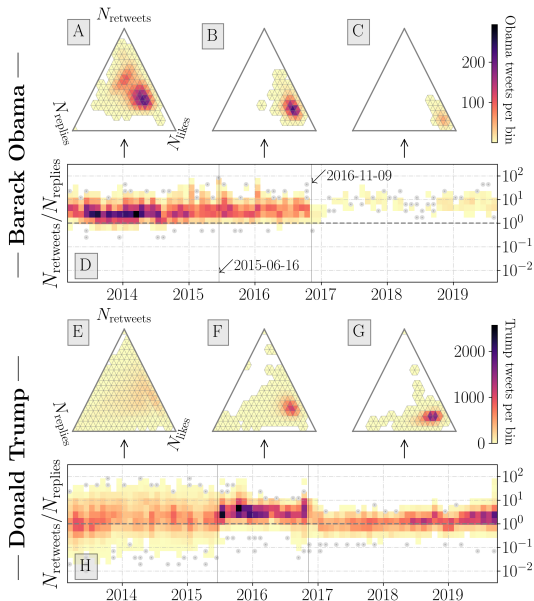
Extras

Sociotechnical time series  
Adjacent Narratives

Extras

Memory & Turbulence

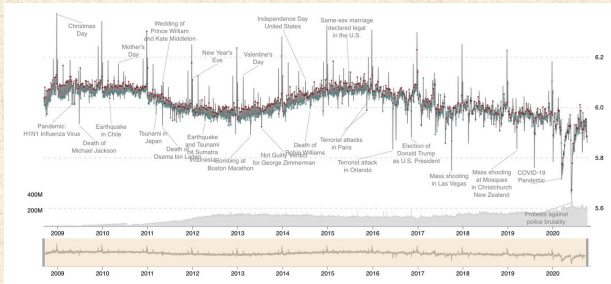
References



# Emotional turbulence:

PoCS  
@pocsvox

Computational  
History



Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

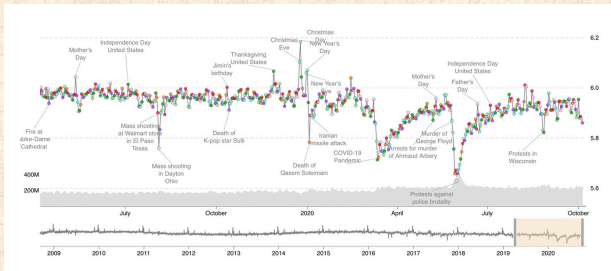
Extras

Sociotechnical time series  
Adjacent Narratives

Extras

Memory & Turbulence

References



<http://hedonometer.org/>



# Emotional turbulence:

PoCS  
@pocsvox

Computational  
History

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

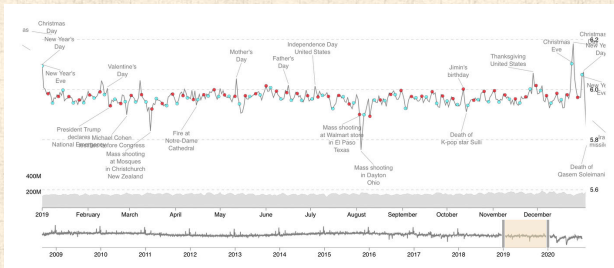
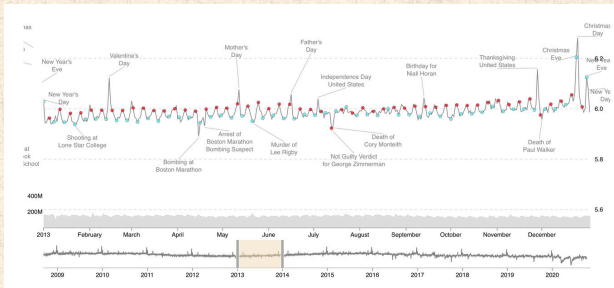
Extras

Sociotechnical time series  
Adjacent Narratives

Extras

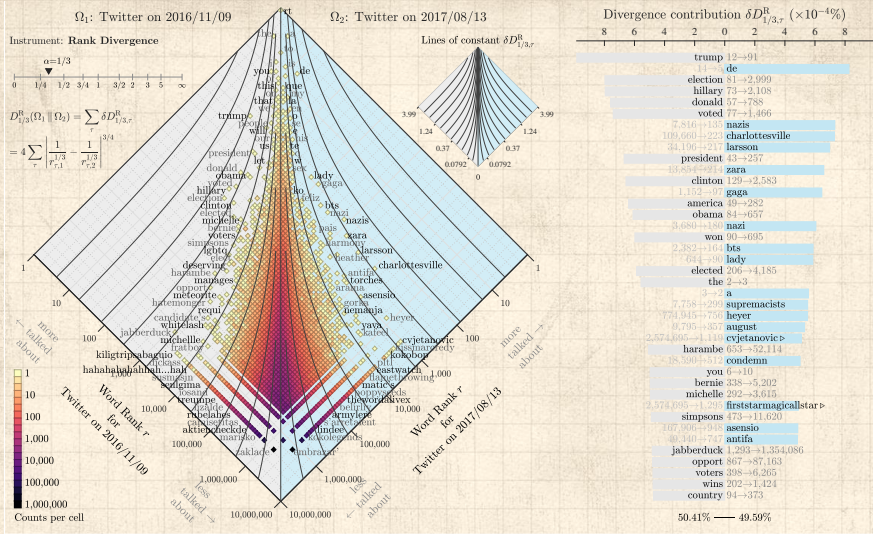
Memory & Turbulence

References



<http://hedonometer.org/>





Allotaxonomy—  
the comparison of complex systems:

<http://compstoriolab.org/allotaxonomy/>



2016/01/01



top 10 most narratively dominant words

01/01 2016 → 2020



most narratively dominant word at day-scale

most narratively dominant word at week-scale

narrative control

2020/10/05

12/31

Week	2016	2017	2018	2019	2020
1. 01/01-01/07	Hillary 34.7	hacking 28.6	Bannon 2.2	shutdown 0.0	Iraq 9.6
2. 01/08-01/14	Cruz 1.0	Merji 5.0	Mueller 0.0	shutdown 0.0	Soleimani 5.9
3. 01/15-01/21	Cruz 10.7	inauguration 0.6	DACA 6.7	Pelosi 6.8	Parnas 0.0
4. 01/22-01/28	Cruz 10.6	inauguration 3.1	Mueller 0.0	Pelosi 2.6	Ukraine 5.5
5. 01/29-02/04	Cruz 11.2	ban 2.1	Mueller 0.0	border 0.0	impeachment 0.0
6. 02/05-02/11	Cruz 5.1	Bannon 0.0	menz 2.3	Whitaker 0.0	Vindjanj 2.5
7. 02/12-02/18	Cruz 6.9	Flynn 0.0	Mueller 0.0	emergency 0.0	Bar 2.2
8. 02/19-02/25	Rubio 3.8	Sweden 4.9	Parkland 0.3	Jussie 0.0	Bloomberg 6.3
9. 02/26-03/04	Rubio 9.2	Russia 6.4	Mueller 0.0	Cohen 3.7	coronavirus 0.0
10. 03/05-03/11	Cruz 1.0	Russia 4.8	Mueller 0.0	Nadler 13.7	coronavirus 0.0
11. 03/12-03/18	Cruz 5.7	tax 1.8	Mueller 2.2	emergency 1.6	coronavirus 0.0
12. 03/19-03/25	Arizona 16.8	Nunes 0.0	Mueller 2.2	Barr 0.0	coronavirus 0.0
13. 03/26-04/01	women 8.3	Russia 9.9	Stormy 0.0	Schiff 5.2	coronavirus 0.5
14. 04/02-04/08	Cruz 1.5	Russia 2.8	Mueller 0.0	returns 0.0	coronavirus 0.0
15. 04/09-04/15	Cruz 1.7	Syria 0.4	Mueller 2.0	Bar 2.4	coronavirus 0.0
16. 04/16-04/22	Cruz 10.5	Russia 0.5	Mueller 0.1	Bar 0.1	coronavirus 0.0
17. 04/23-04/29	Cruz 3.0	days 0.1	Kanye 8.0	Biden 6.0	coronavirus 0.0
18. 04/30-05/06	Indiana 11.5	Trumpcare 0.0	Mueller 0.0	Bar 0.0	coronavirus 0.0
19. 05/07-05/13	Ryan 2.5	Comy 2.8	Iraq 6.6	Bar 0.0	coronavirus 0.0
20. 05/14-05/20	Berle 25.3	Comy 1.0	ZTE 4.5	Bar 0.0	coronavirus 0.0
21. 05/21-05/27	Clinton 9.5	budget 0.0	Korea 18.2	Bar 0.0	pasdemie 0.0
22. 05/28-06/03	Hillary 11.9	Katly 4.4	Roosefine 4.0	USS 3.0	Minneapolis 32.1
23. 06/04-06/10	Clinton 11.1	Comy 0.8	parson 0.0	Moon 27.6	police 4.2
24. 06/11-06/17	Orlando 12.4	Mueller 0.0	Kin 4.1	soeign 2.0	Tuba 4.5
25. 06/18-06/24	Hillary 23.9	Trumpcare 0.0	children 1.0	Iraq 12.9	Tuba 2.1
26. 06/25-07/01	Clinton 13.0	Russia 5.8	Justice 8.3	Moon 29.9	bounties 0.0
27. 07/02-07/08	Cooked 80.6	CNN 0.0	toeddlers 0.0	parade 0.0	Rushmore 2.3
28. 07/09-07/15	Cooked 71.5	Russian 1.2	NATO 13.0	Epstein 0.0	coronavirus 0.0
29. 07/16-07/22	Penz 2.9	Mueller 0.0	Helmski 3.1	nazi 0.8	coronavirus 0.0
30. 07/23-07/29	DNC 6.1	Scouts 0.0	Cohen 0.0	Baltimore 13.6	Portland 11.8
31. 07/30-08/05	Khan 6.5	Mueller 0.0	LeBron 0.7	Baltimore 9.4	pasdemie 0.0
32. 08/06-08/12	Cooked 55.2	Kore 5.8	Omarosa 0.4	Past 7.6	USPS 0.0
33. 08/13-08/19	Manufact 0.0	Charlotteville 1.5	Greenland 9.5	Greenland 6.9	USPS 0.0
34. 08/20-08/26	Clinton 7.6	Charlotteville 3.8	Cohen 2.7	Greenland 8.0	Biden 6.6
35. 08/27-09/02	Cooked 57.4	Harvey 0.0	Oh 14.0	Dorian 12.2	Kerzhals 9.5
36. 09/03-09/09	Boudi 0.0	DACA 2.4	Kavanaugh 2.1	Dustin 12.6	Atlantic 4.8
37. 09/10-09/16	deplorable 0.0	ESPN 2.7	Puerto 7.5	flavored 0.0	Woodward 2.6
38. 09/17-09/23	Clinton 6.5	Kin 4.9	Kavanaugh 1.7	Ukraine 4.5	coronavirus 0.0
39. 09/24-09/30	debate 4.9	Puerto 4.7	Kavanaugh 9.5	Ukraine 6.8	ballots 0.7
40. 10/01-10/07	Penz 4.9	Puerto 2.1	Kavanaugh 6.8	Ukraine 5.1	Covid 0.0
41. 10/08-10/14	sexual 0.3	Puerto 1.8	Kavanaugh 4.3	Kurfs 8.2	
42. 10/15-10/21	rigged 10.1	Puerto 0.2	Puerto 5.3	Kurfs 3.7	
43. 10/22-10/28	star 0.0	Mueller 0.0	Mueller 0.0	caravan 0.0	impeachment 0.0
44. 10/29-11/04	FBI 5.9	Mueller 0.0	caravan 0.0	impeachment 0.0	impeachment 0.0
45. 11/05-11/11	Clinton 0.9	Gillette 12.0	Whitaker 6.2	Ukraine 6.2	Ukraine 5.2
46. 11/12-11/18	Bannon 0.0	sexual 1.7	caravan 0.0	Ukraine 5.2	Ukraine 3.5
47. 11/19-11/25	Hamtop 12.4	LaVar 21.3	Sund 1.6	Moose 0.0	impeachment 0.3
48. 11/26-11/29	recount 0.0	Moose 0.0	Moose 0.0	Cohen 2.1	impeachment 0.0
49. 12/03-12/09	Taxen 7.8	Mueller 0.0	Cohen 2.1	Cohen 6.9	impeachment 0.0
50. 12/10-12/16	Russia 2.9	Mueller 0.0	wall 9.8	impeachment 1.4	impeachment 1.4
51. 12/17-12/23	inauguration 11.8	Mueller 0.0	wall 20.4	impeachment 1.4	impeachment 1.4
52. 12/24-12/31	inauguration 3.2	Mueller 0.0			

Week	2016	2017	2018	2019	2020	2021
1. 01/01-01/07	Hillary 34.7	hacking 28.6	Bannon 2.2	shutdown 0.0	Iran 9.6	Georgia 14.7
2. 01/08-01/14	Cruz 1.0	Meryl 5.0	Mueller 0.0	shutdown 0.0	Soleimani 5.9	Capitol 0.1
3. 01/15-01/21	Cruz 10.7	inauguration 3.6	DACA 6.7	Pelosi 6.8	Parnas 0.0	Capitol 0.0
4. 01/22-01/28	Cruz 10.6	inauguration 3.1	Mueller 0.0	Pelosi 2.6	Ukraine 5.5	insurrection 0.0
5. 01/29-02/04	Cruz 11.2	ban 2.1	Mueller 0.0	border 0.0	impeachment 0.0	Greene 0.0
6. 02/05-02/11	Cruz 5.1	Bannon 0.0	memo 2.3	Whitaker 0.0	Vindman 2.5	insurrection 0.0
7. 02/12-02/18	Cruz 6.9	Flynn 0.0	Mueller 0.0	emergency 0.0	Barr 2.2	Capitol 0.0
8. 02/19-02/25	Rubio 3.8	Sweden 4.9	Parkland 0.3	Jussie 0.0	Bloomberg 6.3	Capitol 0.0
9. 02/26-03/04	Rubio 9.2	Russia 6.4	Mueller 0.0	Cohen 3.7	coronavirus 0.0	Capitol 0.0
10. 03/05-03/11	Cruz 1.0	Russia 4.8	Mueller 0.0	Nadler 13.7	coronavirus 0.0	insurrection 0.0
11. 03/12-03/18	Cruz 5.7	tax 1.8	Mueller 2.2	emergency 1.6	coronavirus 0.0	Biden 0.0
12. 03/19-03/25	Arizona 16.8	Nunes 0.0	Mueller 2.2	Barr 0.0	coronavirus 0.0	Biden 0.0
13. 03/26-04/01	women 8.3	Russia 9.9	Stormy 0.0	Schiff 5.2	coronavirus 0.5	Capitol 0.0
14. 04/02-04/08	Cruz 1.5	Russia 2.8	Mueller 0.0	returns 0.0	coronavirus 0.0	Matt 0.0
15. 04/09-04/15	Cruz 1.7	Syria 0.4	Mueller 2.0	Barr 2.4	coronavirus 0.0	Capitol 0.0
16. 04/16-04/22	Cruz 10.5	Russia 0.5	Mueller 0.1	Barr 0.1	coronavirus 0.0	Capitol 0.0
17. 04/23-04/29	Cruz 3.0	days 0.1	Kanye 8.0	Biden 6.0	coronavirus 0.0	audit 0.0
18. 04/30-05/06	Indiana 11.5	Trumpcare 0.0	Mueller 0.0	Barr 0.0	coronavirus 0.0	Cheney 0.0
19. 05/07-05/13	Ryan 2.5	Comey 2.8	Iran 6.6	Barr 0.0	coronavirus 0.0	Cheney 0.0
20. 05/14-05/20	Bernie 25.3	Comey 1.0	ZTE 4.5	Barr 0.0	coronavirus 0.0	Cheney 0.0
21. 05/21-05/27	Clinton 9.5	budget 0.0	Korea 18.2	Barr 0.0	pandemic 0.0	Weisselberg 0.0
22. 05/28-06/03	Hillary 11.9	Kathy 4.4	Roseanne 4.0	USS 3.0	Minneapolis 32.1	reinstated 0.0
23. 06/04-06/10	Clinton 11.1	Comey 0.8	pardon 0.0	Mexico 27.6	police 4.2	McGahn 0.0
24. 06/11-06/17	Orlando 12.4	Mueller 0.0	Kim 4.1	foreign 2.0	Tulsa 4.5	DOJ 0.0
25. 06/18-06/24	Hillary 23.9	Trumpcare 0.0	children 1.0	Iran 12.9	Tulsa 2.1	Capitol 0.0
26. 06/25-07/01	Clinton 13.0	Russia 5.8	Justice 8.3	Moon 29.9	bounties 0.0	Organization 0.0
27. 07/02-07/08	Crooked 80.6	CNN 0.7	toddlers 0.0	parade 0.0	Rushmore 2.3	Weisselberg 0.0
28. 07/09-07/15	Crooked 71.5	Russian 1.2	NATO 13.0	Epstein 0.0	coronavirus 0.0	CPAC 0.0
29. 07/16-07/22	Pence 2.9	Mueller 0.0	Helsinki 3.1	racist 0.8	coronavirus 0.0	vaccinated 0.0
30. 07/23-07/29	DNC 6.1	Scouts 0.0	Cohen 0.0	Baltimore 13.6	Portland 11.8	Jan 0.0
31. 07/30-08/05	Khan 6.5	Mueller 0.0	LeBron 0.7	Baltimore 9.4	pandemic 0.0	Capitol 0.0
32. 08/06-08/12	Crooked 55.2	Korea 5.8	Omarosa 0.4	Paso 7.6	USPS 0.0	Rosen 0.0
33. 08/13-08/19	Manafort 0.7	Charlottesville 1.5	Omarosa 9.5	Greenland 6.9	USPS 0.0	Taliban 0.0
34. 08/20-08/26	Clinton 7.6	Charlottesville 3.8	Cohen 2.7	Greenland 8.0	Biden 6.6	Taliban 0.0
35. 08/27-09/02	Crooked 57.4	Harvey 0.0	Ohr 14.0	Dorian 12.2	Kenosha 9.5	Taliban 0.0
36. 09/03-09/09	Bondi 0.0	DACA 2.4	Kavanaugh 2.1	Dorian 12.6	Atlantic 4.8	Afghanistan 0.0
37. 09/10-09/16	deplorable 0.0	ESPN 2.7	Puerto 7.5	flavored 0.0	Woodward 2.6	Milley 0.0
38. 09/17-09/23	Clinton 6.5	Kim 4.9	Kavanaugh 1.7	Ukraine 4.5	coronavirus 0.0	Eastman 0.0
39. 09/24-09/30	debate 4.9	Puerto 4.7	Kavanaugh 9.5	Ukraine 6.8	ballots 0.7	audit 0.0
40. 10/01-10/07	Pence 4.9	Puerto 2.1	Kavanaugh 9.3	Ukraine 5.1	Covid 1.4	Bannon 0.0
41. 10/08-10/14	sexual 0.3	Puerto 1.8	Kavanaugh 4.8	Kurds 8.2	COVID 1.4	Jan 0.0
42. 10/15-10/21	rigged 10.1	Puerto 0.2	Saudi 5.3	Kurds 3.7	Biden 8.2	Powell 0.0
43. 10/22-10/28	star 0.0	Mueller 0.0	caravan 0.0	impeachment 0.0	Biden 9.2	Jan 0.0
44. 10/29-11/04	FBI 5.9	Mueller 0.0	caravan 0.0	impeachment 0.0	Biden 10.0	Youngkin 0.0
45. 11/05-11/11	Clinton 0.9	Gillespie 12.0	Whitaker 6.2	Ukraine 6.2	votes 3.4	infrastructure 0.0
46. 11/12-11/18	Bannon 0.0	sexual 1.7	caravan 0.0	Ukraine 5.2	Dominion 23.2	Christie 0.0
47. 11/19-11/25	Hamilton 12.4	LaVar 21.3	Saudi 1.6	Ukraine 3.5	Sidney 0.1	Rittenhouse 0.0
48. 11/26-12/02	recount 0.0	Moore 0.0	Moscow 0.1	impeachment 3.1	votes 24.1	Waukesha 0.0
49. 12/03-12/09	Taiwan 7.8	Mueller 0.0	Cohen 2.1	impeachment 0.0	Georgia 20.2	Meadows 0.0
50. 12/10-12/16	Russia 2.9	Mueller 0.0	Cohen 6.9	impeachment 0.0	vaccine 11.1	Meadows 0.0
51. 12/17-12/23	inauguration 11.8	Mueller 0.0	wall 9.8	impeachment 1.4	vaccine 15.4	Manchin 0.0
52. 12/24-12/31	inauguration 3.2	Mueller 0.0	wall 20.4	impeachment 7.6	Election 60.2	Brandon 0.0

## Computational History

## Statistics of Surprise

## Stories

## Mechanics of Fame

## Superspreading

## Lexical Ultrafame

## Turbulent times

## Extras

Sociotechnical time series

Adjacent Narratives

## Extras

Memory & Turbulence

## References



Computational  
History

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series  
Adjacent Narratives

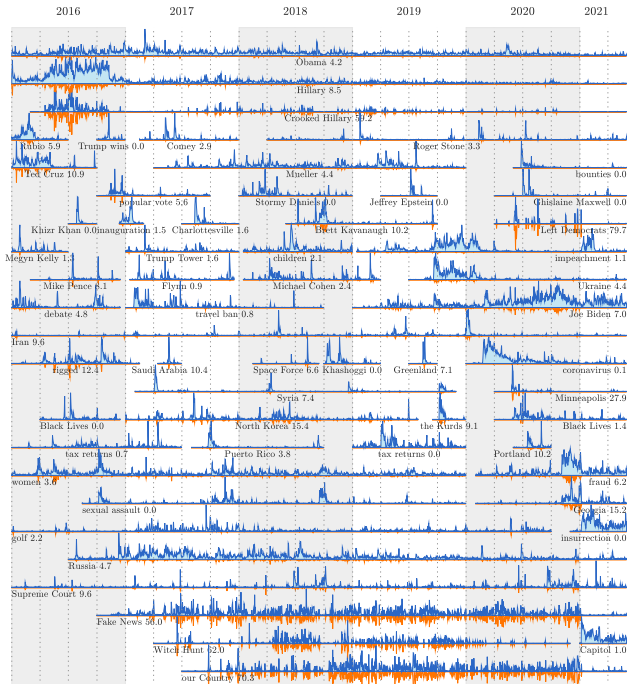
Extras

Memory & Turbulence

References



Week	2016	2017	2018	2019	2020	2021
1. 01/01-01/07	Hillary Clinton 32.7	plant in 85.1	Steve Bannon 5.7	the government 0.0	a war 6.6	in Georgia 20.2
2. 01/08-01/14	Trump rally 0.0	Meryl Streep 6.6	shithole countries 0.0	the border 1.0	impeachment trial 0.0	the Capitol 0.0
3. 01/15-01/21	Ted Cruz 26.0	Trump's inauguration 0.0	the government 1.4	Cohen to 0.0	impeachment trial 0.0	the Capitol 0.0
4. 01/22-01/28	Megyn Kelly 4.9	executive order 0.0	the FBI 5.6	the government 0.0	impeachment trial 0.0	the Capitol 0.0
5. 01/29-02/04	Ted Cruz 19.7	travel ban 1.0	the FBI 9.4	Ralph Northam 26.0	impeachment trial 0.0	the Capitol 0.0
6. 02/05-02/11	New Hampshire 19.5	travel ban 1.1	military parade 0.0	El Paso 4.7	Alexander Vindman 7.0	the Capitol 0.0
7. 02/12-02/18	Ted Cruz 15.7	Michael Flynn 0.0	school shooting 3.1	national emergency 0.0	Roger Stone 4.0	the Capitol 0.0
8. 02/19-02/25	Ted Cruz 30.1	Trump administration 0.0	the NRA 0.0	Jussie Smollett 0.0	Bernie Sanders 13.6	the Capitol 0.0
9. 02/26-03/04	vote for 4.4	to Russia 22.0	Hope Hicks 0.0	Michael Cohen 5.3	the coronavirus 0.0	the Capitol 0.0
10. 03/05-03/11	Ted Cruz 2.4	travel ban 0.0	Stormy Daniels 0.0	Tim Apple 0.0	the coronavirus 0.0	voted for 0.0
11. 03/12-03/18	Trump is 0.1	Meals on 0.0	Stormy Daniels 0.0	New Zealand 17.9	the coronavirus 0.0	Lara Trump 0.0
12. 03/19-03/25	Lynin' Ted 66.2	health care 0.0	Cambridge Analytics 0.0	Mueller report 0.0	the coronavirus 0.0	the border 0.0
13. 03/26-04/01	Trump is 0.0	Freedom Caucus 20.8	Stormy Daniels 0.0	Mueller report 0.0	the coronavirus 0.0	Matt Gaetz 0.0
14. 04/02-04/08	Ted Cruz 3.9	Susan Rice 0.3	National Guard 0.0	tax returns 0.0	the coronavirus 0.0	Matt Gaetz 0.0
15. 04/09-04/15	New York 19.3	in Syria 0.2	Michael Cohen 0.0	sanctuary cities 5.3	the coronavirus 0.0	Matt Gaetz 0.0
16. 04/16-04/22	Ted Cruz 28.1	turnout for 0.0	Michael Cohen 2.4	Mueller report 0.0	the coronavirus 0.0	Maxine Waters 0.0
17. 04/23-04/29	Trump rally 0.0	tax plan 0.0	the Korean 0.0	Mueller report 0.0	the coronavirus 0.0	Liz Cheney 0.0
18. 04/30-05/06	Ted Cruz 5.5	health care 0.0	Stormy Daniels 0.0	Mueller report 0.0	treated worse 0.0	Liz Cheney 0.0
19. 05/07-05/13	Paul Ryan 2.0	James Comey 6.7	the Iran 9.0	tax returns 0.0	tested positive 0.0	Liz Cheney 0.0
20. 05/14-05/20	Hillary Clinton 26.5	Saudi Arabia 12.5	are animals 0.0	Lindsey Graham 0.0	the pandemic 0.0	Kevin McCarthy 0.0
21. 05/21-05/27	Hillary Clinton 24.8	Saudi Arabia 8.2	the FBI 23.3	Nancy Pelosi 12.5	a mask 6.3	the January 0.0
22. 05/28-06/03	Trump University 3.4	Kathy Griffin 5.7	Samantha Bee 4.4	John McCain 0.0	photo op 0.0	Memorial Day 0.0
23. 06/04-06/10	Hillary Clinton 18.6	James Comey 0.2	Justin Trudeau 8.5	with Mexico 39.2	Left Democrats 75.1	Jean Carroll 0.0
24. 06/11-06/17	Trump is 0.0	obstruction 12.6	their parents 0.0	the FBI 8.5	in Tulsa 7.4	Trump DOJ 0.0
25. 06/18-06/24	Hillary Clinton 20.6	Karen Handel 16.6	their parents 3.4	need soap 0.0	in Tulsa 2.2	the Capitol 0.0
26. 06/25-07/01	Hillary Clinton 20.5	Fake News 37.6	Supreme Court 3.7	Jean Carroll 0.0	American soldiers 0.0	Trump Organization 0.0
27. 07/02-07/08	Crooked Hillary 82.8	North Korea 28.6	Trump administration 0.0	Jeffrey Epstein 0.0	Mount Rushmore 3.9	Ashli Babbitt 0.0
28. 07/09-07/15	Crooked Hillary 73.3	Trump Jr 0.0	Supreme Court 7.9	Jeffrey Epstein 0.0	Roger Stone 0.0	the Capitol 0.0
29. 07/16-07/22	Mike Pence 6.8	Secret Service 0.0	in Helsinki 1.7	a racist 0.0	in Portland 0.0	Tom Barrack 0.0
30. 07/23-07/29	Crooked Hillary 79.6	Boy Scouts 0.0	Walk of 0.0	Elijah Cummings 27.2	in Portland 8.9	the Capitol 0.0
31. 07/30-08/05	Khizr Khan 0.0	Maxine Waters 0.0	enemy of 22.2	El Paso 11.1	the election 3.4	the Capitol 0.0
32. 08/06-08/12	Hillary Clinton 10.5	North Korea 5.7	Space Force 11.1	El Paso 7.7	Social Security 0.0	overturn the 0.0
33. 08/13-08/19	Trump campaign 0.0	white supremacists 0.0	security clearance 0.0	New Hampshire 26.5	the USPS 0.0	the Taliban 0.0
34. 08/20-08/26	Hillary Clinton 19.1	Joe Arpaio 3.5	Michael Cohen 4.3	Prime Minister 28.7	Joe Biden 5.9	the Taliban 0.0
35. 08/27-09/02	Crooked Hillary 61.8	Hurricane Harvey 0.1	John McCain 0.2	Hurricane Dorian 9.6	Joe Biden 2.7	the Taliban 0.0
36. 09/03-09/09	in Detroit 0.0	to end 0.0	Brett Kavanaugh 7.6	the Taliban 3.0	Joe Biden 3.4	Robert E 0.0
37. 09/10-09/16	tax returns 0.0	white supremacist 0.0	Puerto Rico 8.4	Dan Bishop 37.7	Joe Biden 13.3	the Taliban 0.0
38. 09/17-09/23	Trump Jr 0.0	North Korea 12.8	Blasey Ford 0.0	a foreign 6.4	Supreme Court 7.3	to overturn 0.0
39. 09/24-09/30	Hillary Clinton 7.5	Puerto Rico 5.2	Brett Kavanaugh 15.2	impeachment inquiry 0.0	Supreme Court 5.7	debt ceiling 0.0
40. 10/01-10/07	Mike Pence 8.9	Puerto Rico 2.6	Supreme Court 6.9	Adam Schiff 13.3	Walter Reed 5.7	the debt 0.0
41. 10/08-10/14	sexual assault 0.0	Puerto Rico 2.2	Kanye West 0.0	the Kurds 11.3	Biden is 26.5	the January 0.0
42. 10/15-10/21	Hillary Clinton 19.9	families of 0.0	Saudi Arabia 6.6	the Kurds 3.8	Joe Biden 12.1	the January 0.0
43. 10/22-10/28	Hillary Clinton 11.7	Myshia Johnson 0.0	the bombs 0.0	World Series 0.0	Joe Biden 10.1	Alec Baldwin 0.0
44. 10/29-11/04	Hillary Clinton 6.5	Twitter employee 0.0	birthright citizenship 0.0	the impeachment 0.0	Joe Biden 12.6	in Virginia 0.0
45. 11/05-11/11	Trump wins 0.0	mental health 0.0	Jim Acosta 0.0	pro quo 8.1	the election 2.2	infrastructure bill 0.0
46. 11/12-11/18	Steve Bannon 0.0	ban on 0.0	president who 0.0	impeachment inquiry 0.0	the election 7.5	Chris Christie 0.0
47. 11/19-11/25	Mike Pence 24.3	Roy Moore 0.0	Saudi Arabia 2.5	quid pro 1.3	the election 6.7	Kyle Rittenhouse 0.0
48. 11/26-12/02	popular vote 17.4	Native American 0.1	Trump Tower 2.5	Hong Kong 0.0	voter fraud 32.2	Donald Trump 0.0
49. 12/03-12/09	Air Force 18.2	Roy Moore 3.5	campaign finance 0.0	to impeach 7.7	in Georgia 12.9	Donald Trump 0.0
50. 12/10-12/16	of State 7.6	of sexual 0.0	Michael Cohen 7.8	articles of 0.0	the election 9.0	Mark Meadows 0.0
51. 12/17-12/23	Electoral College 5.8	tax bill 0.0	the wall 13.7	Christianity Today 8.1	election fraud 13.9	the Capitol 0.0



PoCS  
@pocsvox

Computational  
History

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series  
Adjacent Narratives

Extras

Memory & Turbulence

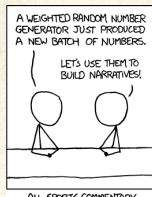
References



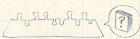




# Understanding the Sociotechnocene—Stories:



[xkcd.com/904/](http://xkcd.com/904/)



Toward a Science of Stories.



Claim: Homo narrativus—we run on stories.



“What’s the John Dory?”



“They’ve lost the plot/thread”



Narrative hierarchies and scalability of stories.



Research: Real-time and offline extraction of metaphors, frames, plots, narratives, conspiracy theories, and stories from large-scale text.



Research: The taxonomy of human stories.



To be built:  
Storyscopes—improvable, online, interactive instruments.

PoCS  
@pocsvox

Computational  
History

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series  
Adjacent Narratives

Extras

Memory & Turbulence

References





\*ding!\*

PoCS  
@pocsvox

Computational  
History



 On Instagram at [pratchett\\_the\\_cat](https://www.instagram.com/pratchett_the_cat) 

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series  
Adjacent Narratives

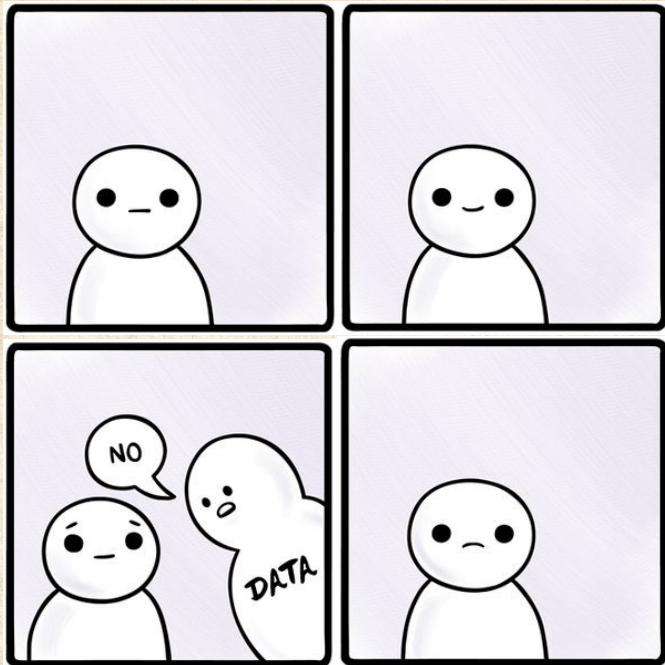
Extras

Memory & Turbulence

References



# Theories bloom in darkness



PoCS  
@pocsvox

Computational  
History

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series

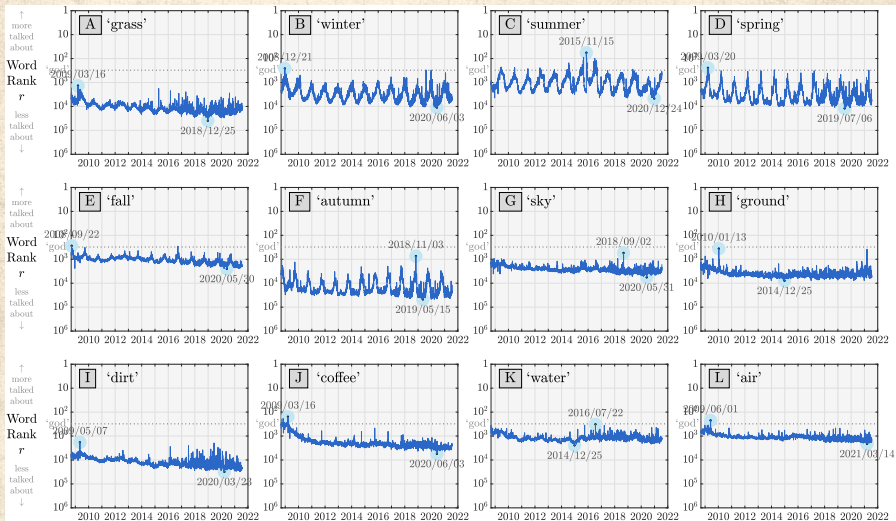
Adjacent Narratives

Extras

Memory & Turbulence

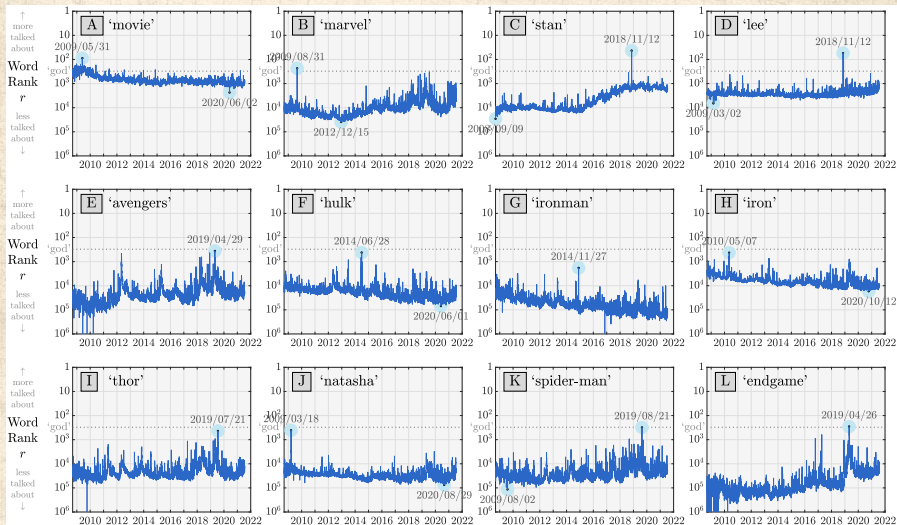
References

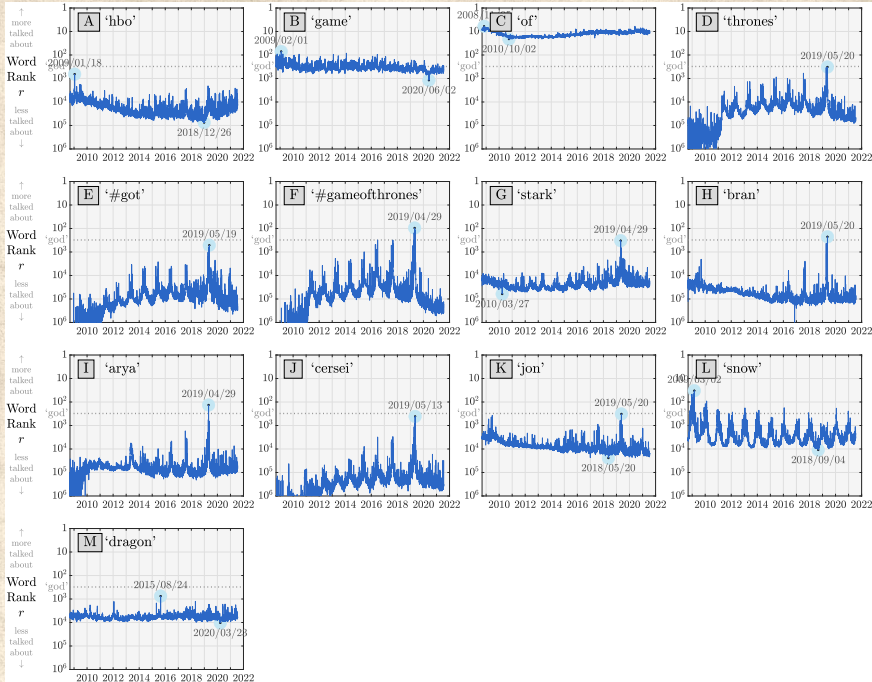


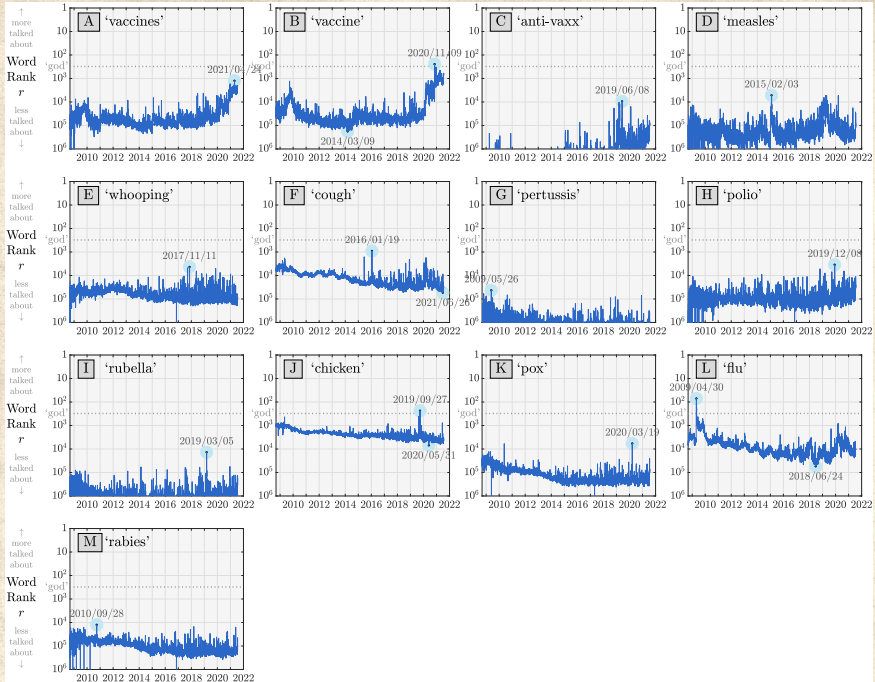


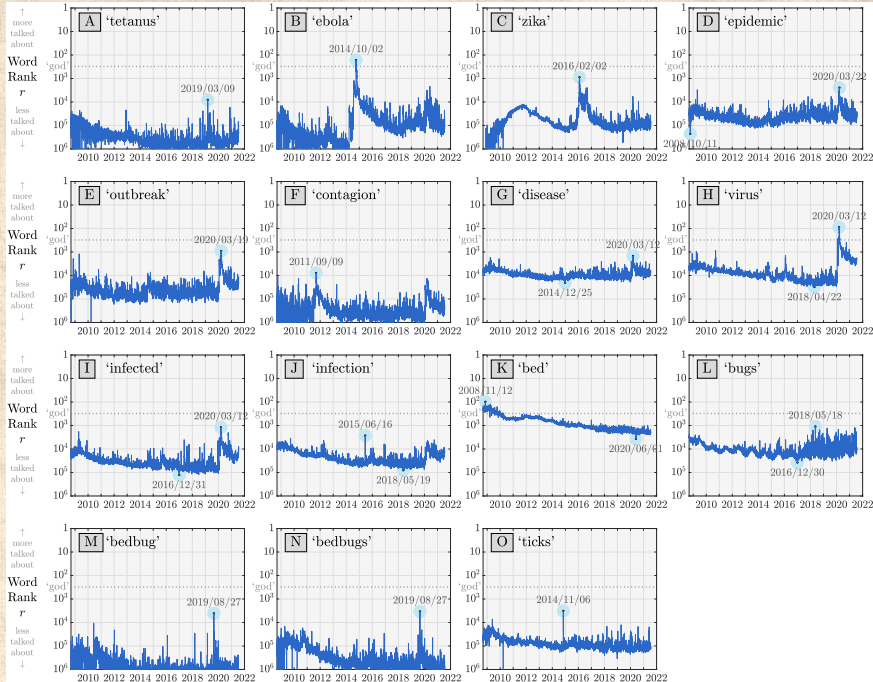


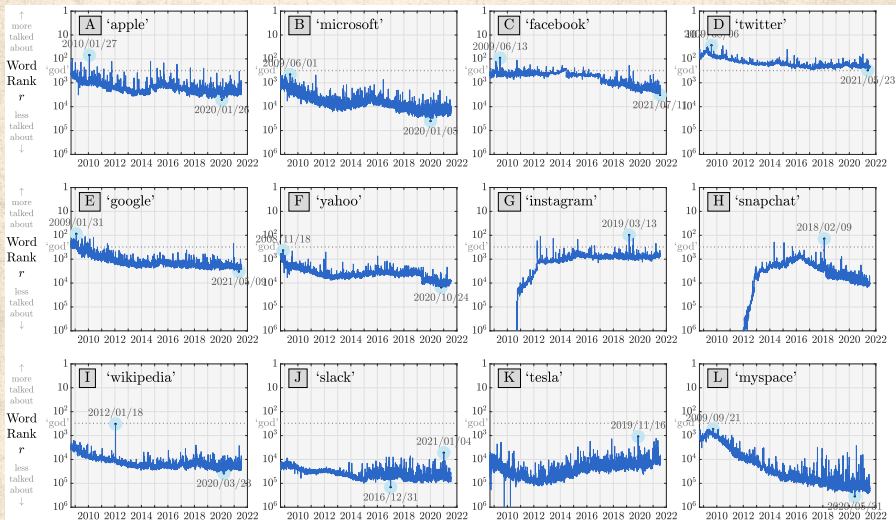




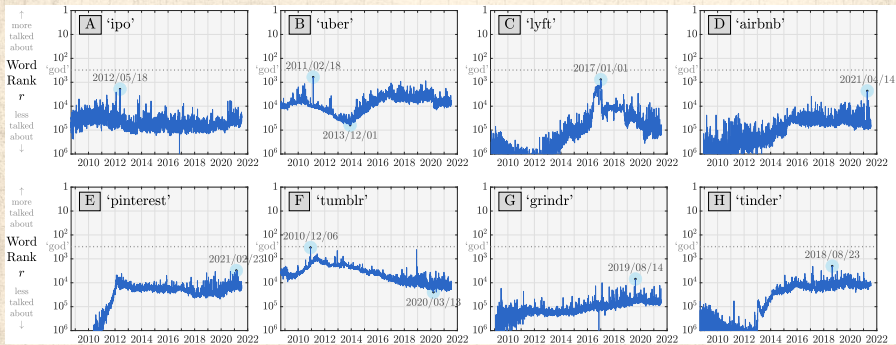


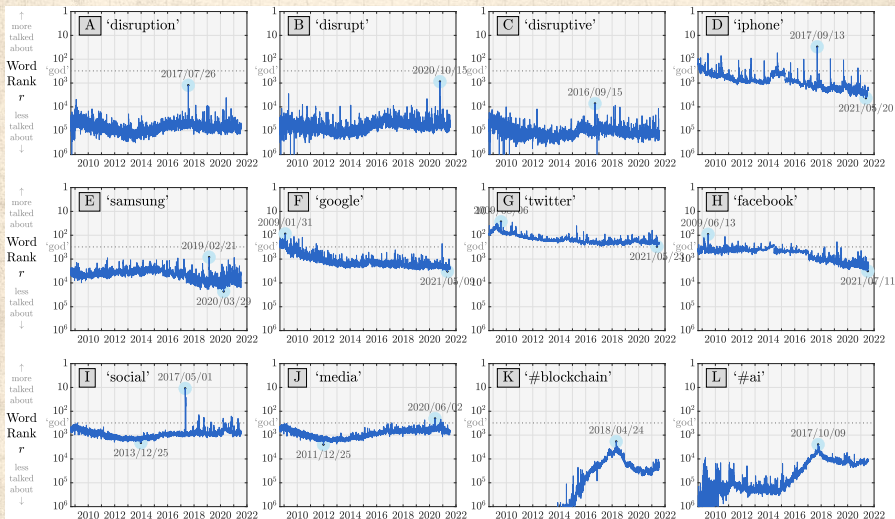




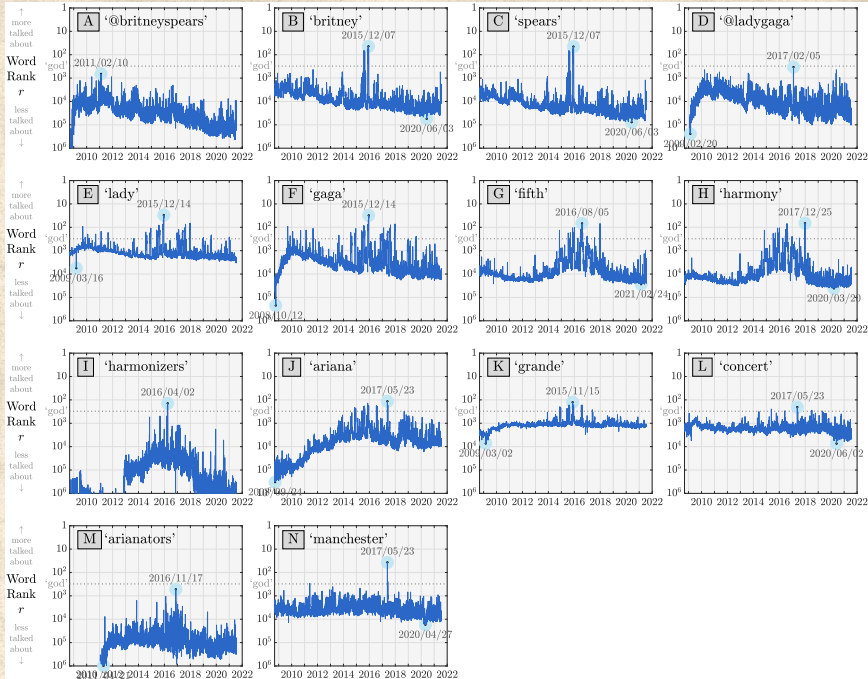


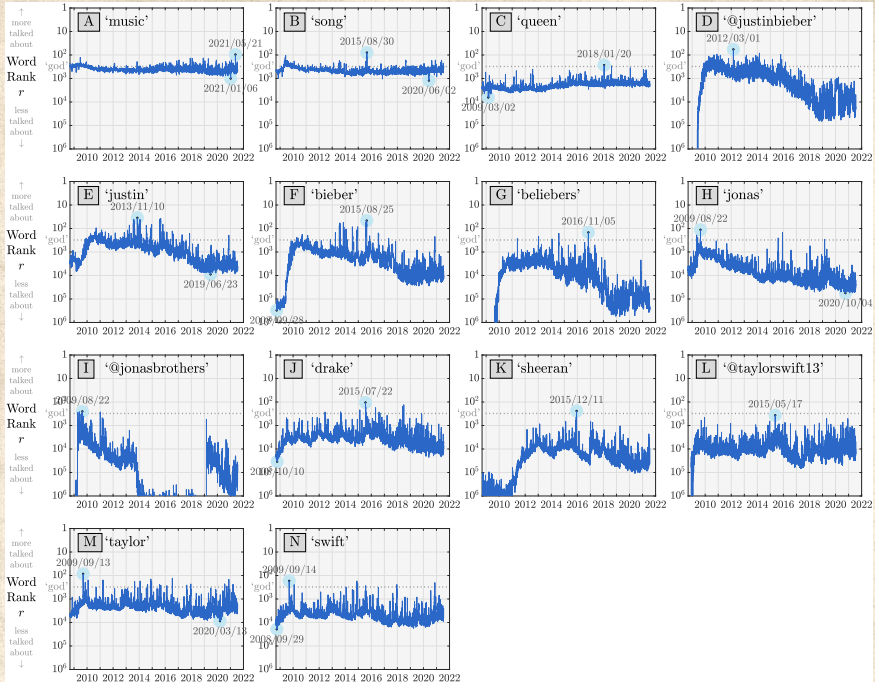








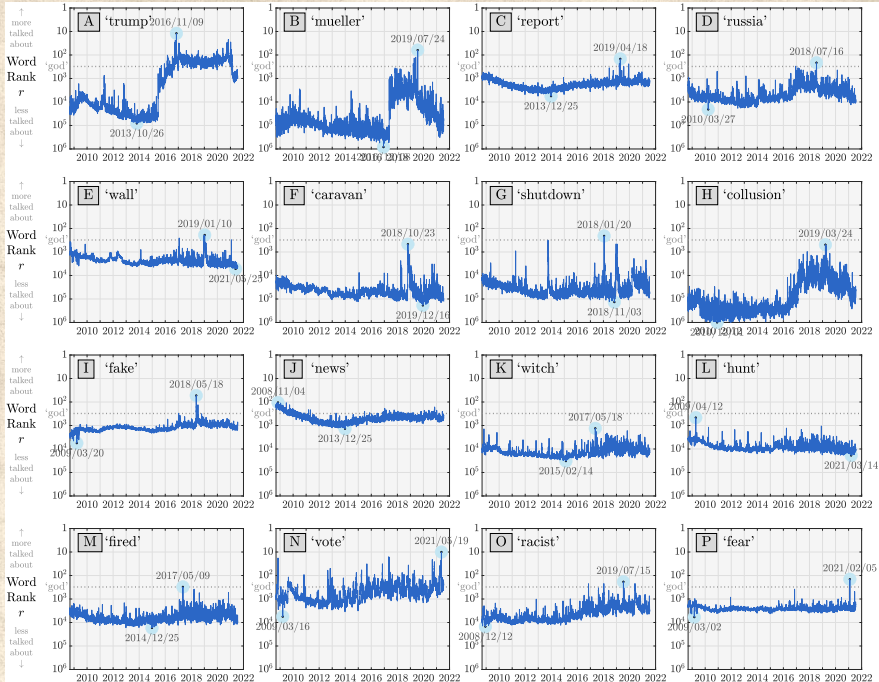


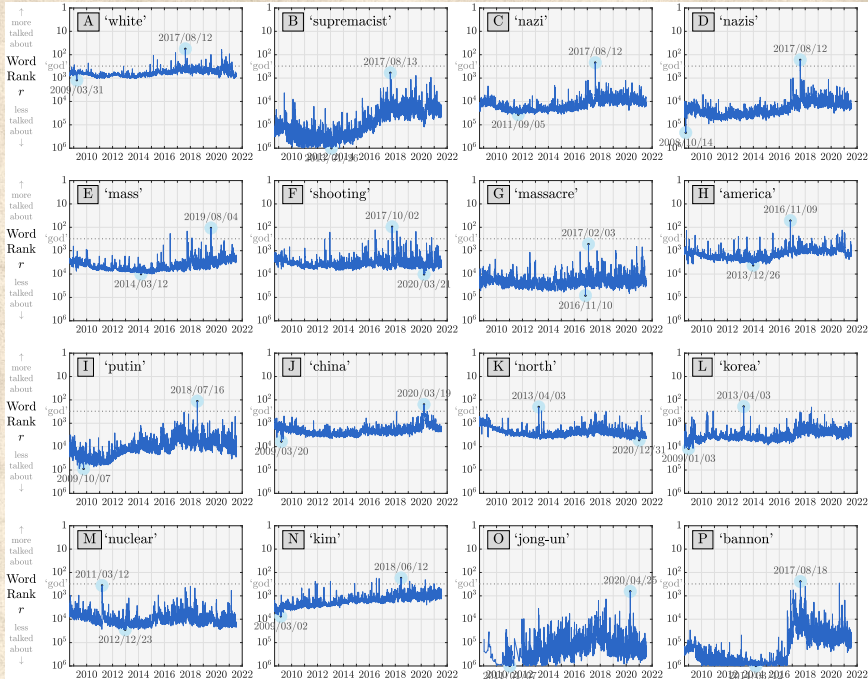




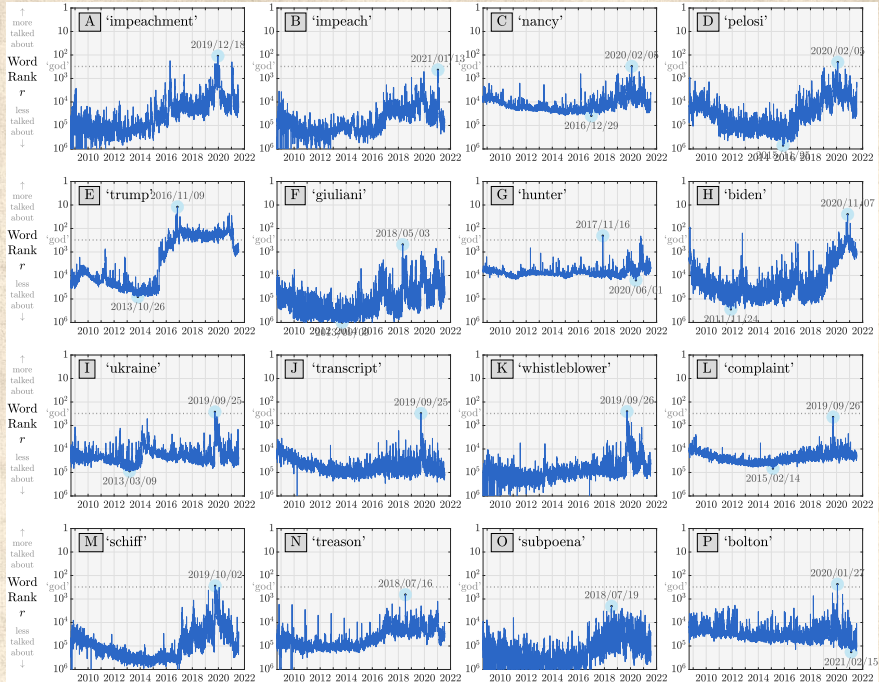




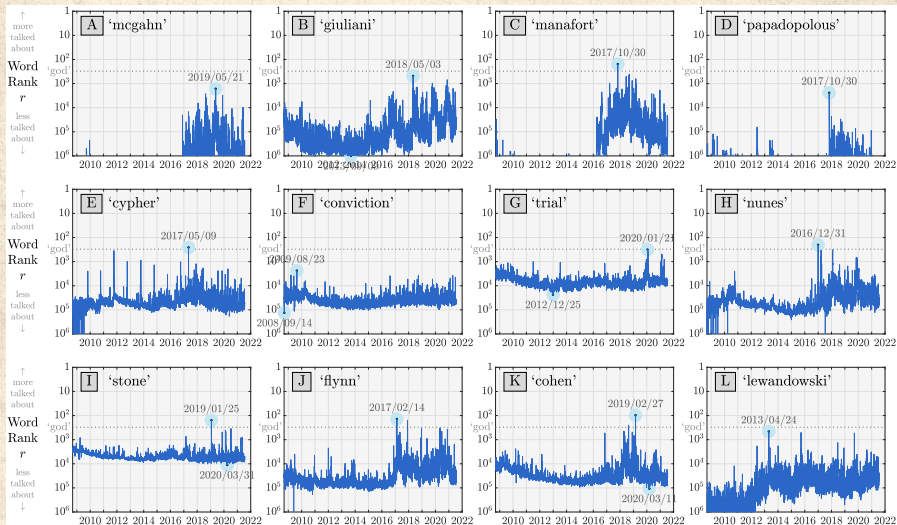




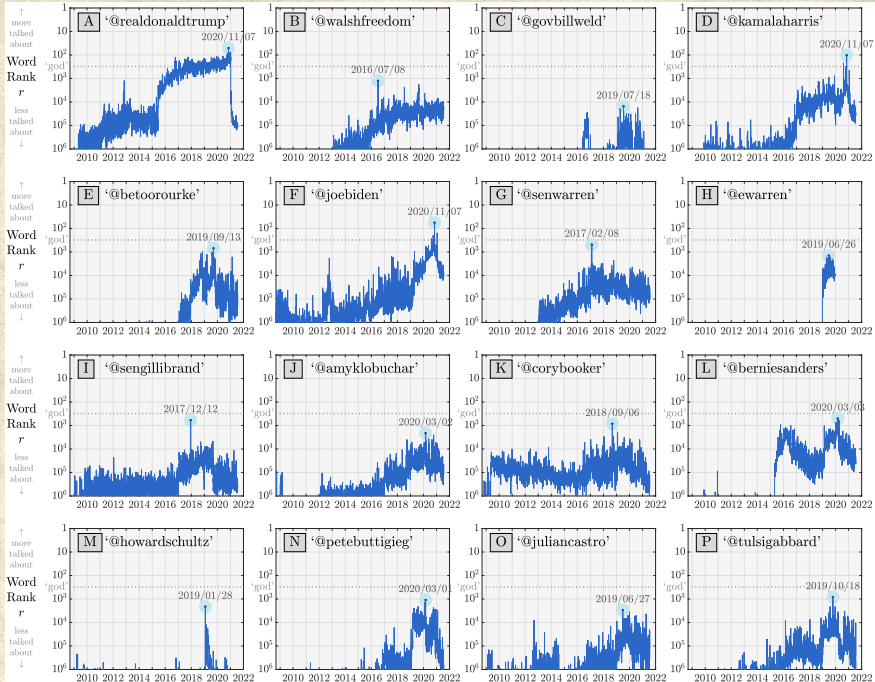


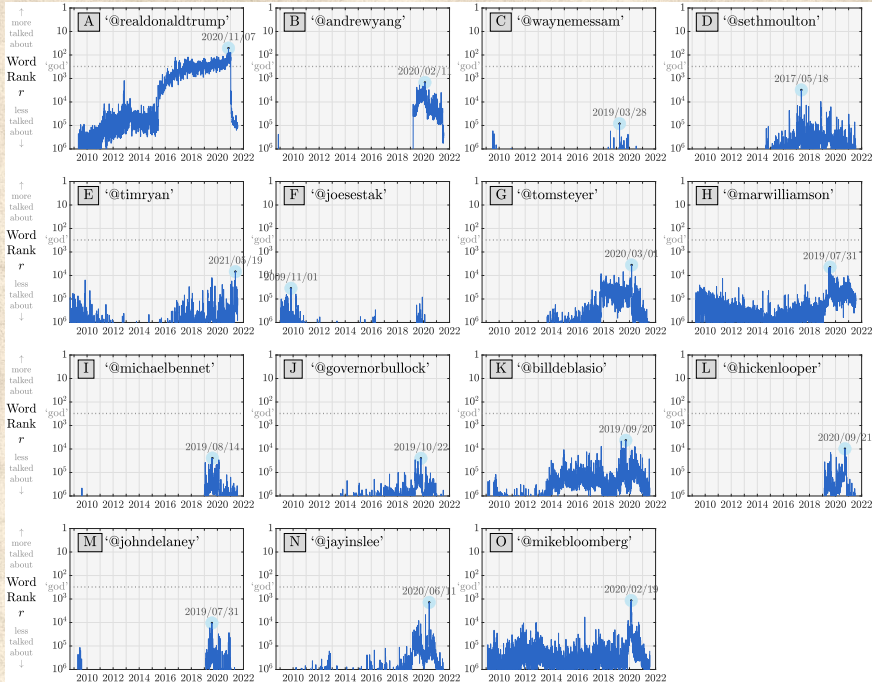














Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

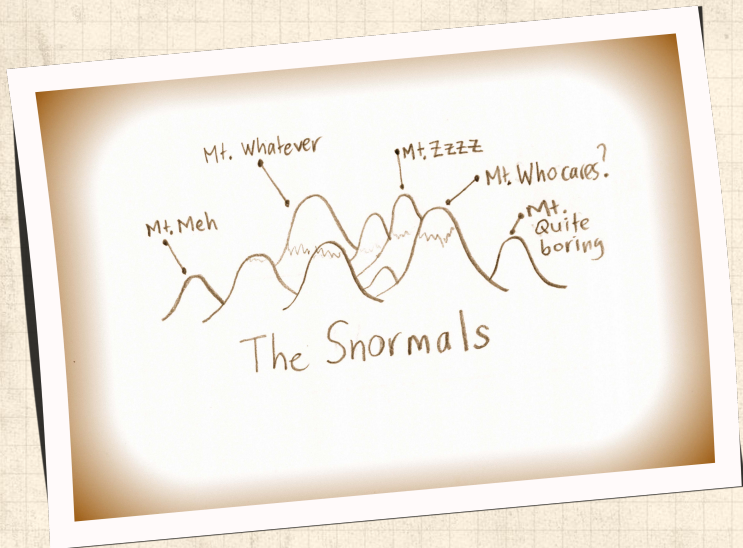
Extras

Sociotechnical time series  
Adjacent Narratives

Extras

Memory & Turbulence

References





Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

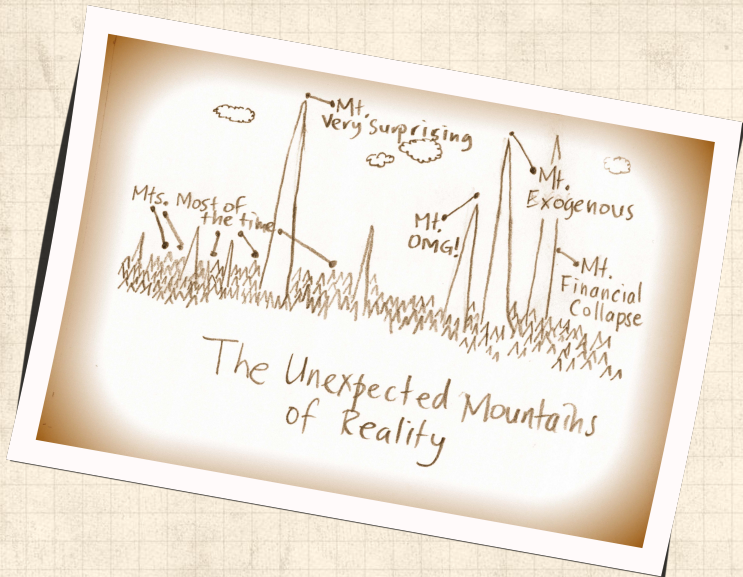
Extras

Sociotechnical time series  
Adjacent Narratives

Extras

Memory & Turbulence

References



Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series  
Adjacent Narratives

Extras

Memory & Turbulence

References



The Random Road  
through the Forests of Forgettable Events

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

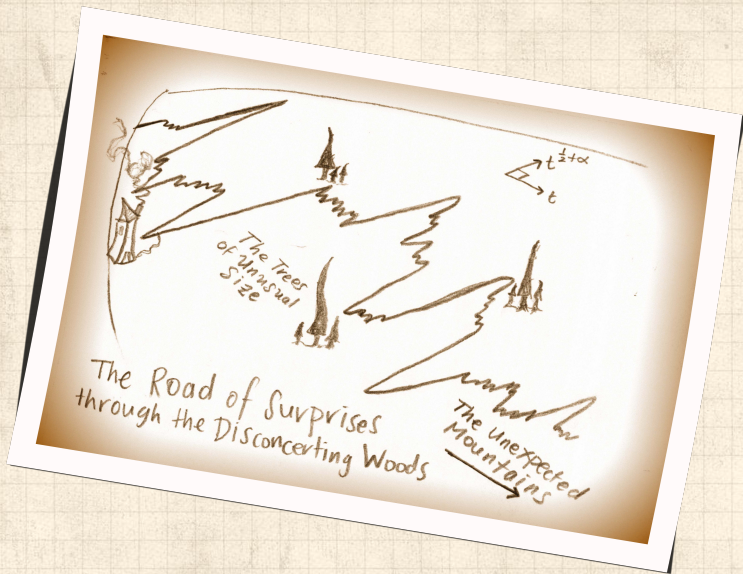
Extras

Sociotechnical time series  
Adjacent Narratives

Extras

Memory & Turbulence

References



# The long tail:

PoCS  
@pocsvox

Computational  
History

Money  
≡  
Belief

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series  
Adjacent Narratives

Extras

Memory & Turbulence

References



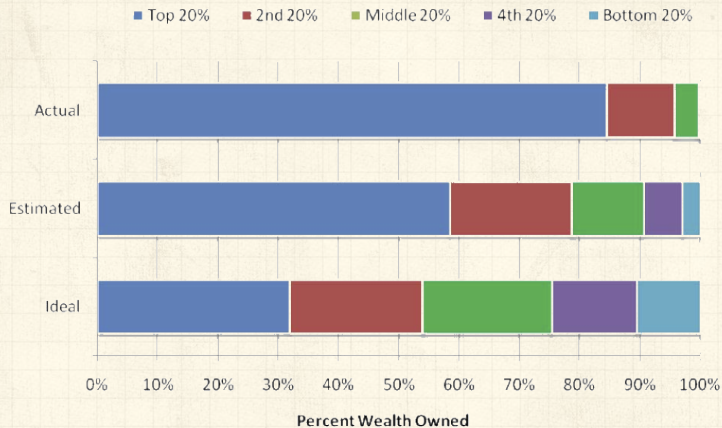
## Two questions about wealth distribution in the United States:

1. Estimate the percentage of all wealth owned by individuals when grouped into quintiles.
2. Estimate what you believe each quintile should own, ideally.
3. Extremes: 100, 0, 0, 0, 0 and 20, 20, 20, 20, 20

“Building a better America—One wealth quintile at a time”  
Norton and Ariely, 2011. <sup>[15]</sup>



## Wealth distribution in the United States: <sup>[15]</sup>



**Fig. 2.** The actual United States wealth distribution plotted against the estimated and ideal distributions across all respondents. Because of their small percentage share of total wealth, both the “4th 20%” value (0.2%) and the “Bottom 20%” value (0.1%) are not visible in the “Actual” distribution.

“Building a better America—One wealth quintile at a time”  
Norton and Ariely, 2011. <sup>[15]</sup>

PoCS  
@pocsvox

Computational  
History

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series

Adjacent Narratives

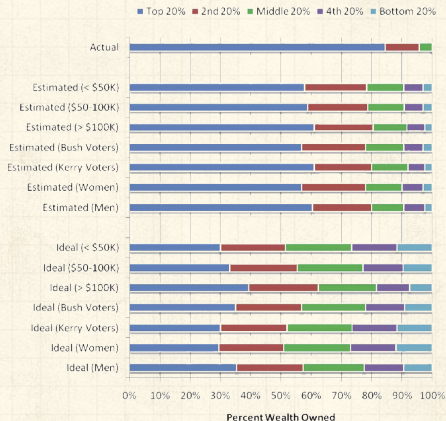
Extras

Memory & Turbulence

References



# Wealth distribution in the United States: [15]



**Fig. 3.** The actual United States wealth distribution plotted against the estimated and ideal distributions of respondents of different income levels, political affiliations, and genders. Because of their small percentage share of total wealth, both the "4th 20%" value (0.2%) and the "Bottom 20%" value (0.1%) are not visible in the "Actual" distribution.

Aside: The 1% framing may be effective but makes no sense.

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series

Adjacent Narratives

Extras

Memory & Turbulence

References





My, what big words you have ...



PoCS  
@pocsvox




Computational  
History

# Test your vocab

*How many words  
do you know?*



 Test  capitalizes on word frequency following a heavily skewed frequency distribution with a decaying power-law tail.

 This Man Can Pronounce Every Word in the Dictionary  (story here )

 Best of Dr. Bailly 

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series  
Adjacent Narratives

Extras

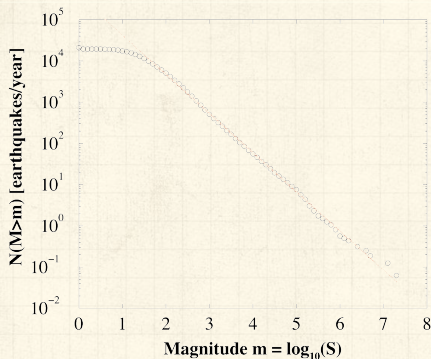
Memory & Turbulence


References





# The statistics of surprise:

## Gutenberg-Richter law




 Log-log plot

 Base 10

 Slope = -1

$$N(M > m) \propto m^{-1}$$

 From **both** the very awkwardly similar Christensen et al. and Bak et al.:  
"Unified scaling law for earthquakes" [5, 2]

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series

Adjacent Narratives

Extras

Memory & Turbulence

References



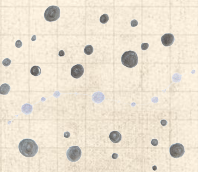
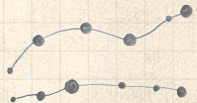
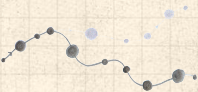
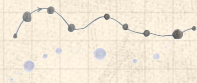
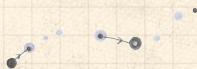
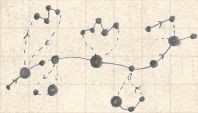




# Adjacent narratives —why mistruths and conspiracy theories exist and flourish:

PoCS  
@pocsvox

Computational  
History



Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series

Adjacent Narratives

Extras

Memory & Turbulence

References

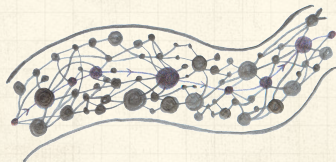




# Why adjacent narratives exist and untrue stories flourish:

1/4. A real story is never recorded and retold completely

- Impossible to record every detail.
- Recording entails compression to scale of medium (narrative hierarchy).
- Story logic will be favored, and seemingly irrelevant aspects discarded.



Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series

Adjacent Narratives

Extras

Memory & Turbulence

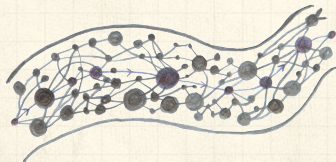
References



# Why adjacent narratives exist and untrue stories flourish:

2/4. The infinitude of adjacent stories will afford “better” stories

- 🧱 Better = More engaging, more motivating to spread, more durable under spreading.
- 🧱 Better stories exist for truthful recorders and retellers (journalists).



Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series

Adjacent Narratives

Extras

Memory & Turbulence

References

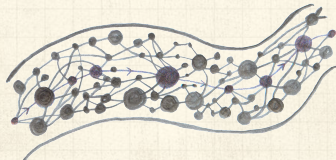




# Why adjacent narratives exist and untrue stories flourish:

3/4. The infinitude of adjacent stories means “better” stories exist for those who would disinform

- Adjacent stories may be truth-limited and/or falsehood-bearing.
- There may exist adjacent stories that conform to a world view/ideology.
- Even the seemingly non-adjacent must have some plausibility (Pizzagate).



PoCS  
@pocsvox

Computational  
History

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series

Adjacent Narratives

Extras

Memory & Turbulence

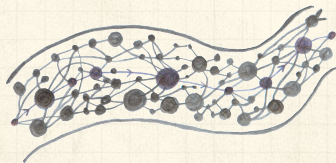
References



# Why adjacent narratives exist and untrue stories flourish:

## 4/4. Character is the short cut to story

- ❏ The barely implausible can be believed if the character can make it so.
- ❏ A believe-to-be evil character can do anything.
- ❏ Iterate between character and story to make the character fixed.



Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series

Adjacent Narratives

Extras

Memory & Turbulence

References



# Things that spread quickly:



+ News + Conspiracy  
Theories ...

[buzzfeed.com](http://buzzfeed.com)

PoCS  
@pocsvox

Computational  
History

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series

Adjacent Narratives

Extras

Memory & Turbulence






References



# The boiled-down essence of stories:

PoCS  
@pocsvox  
Computational  
History

## The three fundamental events of (non-clone) life:

-  Hatchings, Matchings, and Dispatchings.
-  Stories encode survival algorithms.
-  Survival algorithms are for both individuals and groups.
-  Stories are dynamic paths of the true, the possible, the unlikely.
-  The unifying theme of existence is existence.

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series

Adjacent Narratives

Extras

Memory & Turbulence

References





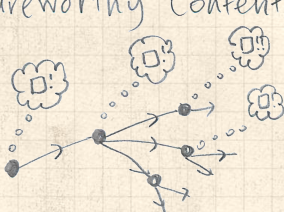
# Deep fame:

PoCS  
@pocsvox

Computational  
History

Shareworthy Content is King

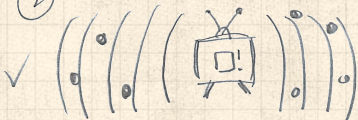
①



③



②



④



Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series

Adjacent Narratives

Extras

Memory & Turbulence

References



## Shareworthy Content is "King":

1. Build entities/messages/stories that have intrinsic and social value out in the **Social Wild**.
2. Advertise but lay off the social interactions.
3. Just keep trying and be trustworthy.
4. Of course it can all go wrong and be used for any purpose: good, stupid, bad, evil, ...
5. Essential implication: Billions of people can be harmoniously wrong.
6. Beware the evil, payola version.
7. Challenge: What's the societal vaccine for conspiracy theories?

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series

Adjacent Narratives

Extras

Memory & Turbulence

References





# Fame: Zipfian rank-frequency plots

PoCS  
@pocsvox

Computational  
History

## George Kingsley Zipf:

📦 Noted various rank distributions have power-law tails, often with exponent near -1 (word frequency, city sizes, species numbers, ...)

📦 Zipf's 1949 Magnum Opus [↗](#):



“Human Behaviour and the Principle of Least-Effort” [a](#) [↗](#)  
by G. K. Zipf (1949). [20]

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series

Adjacent Narratives

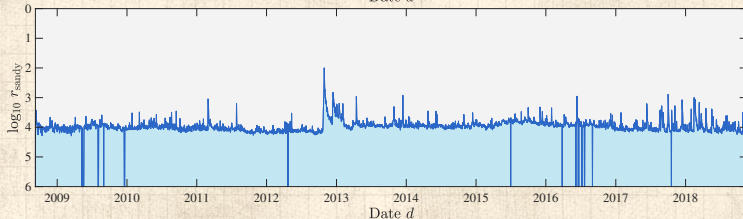
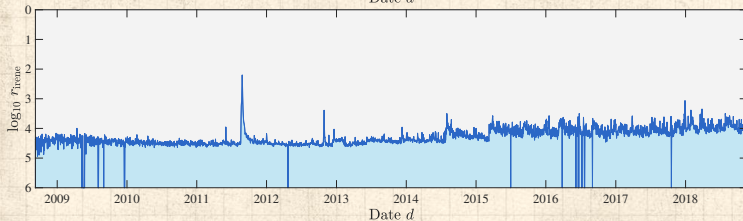
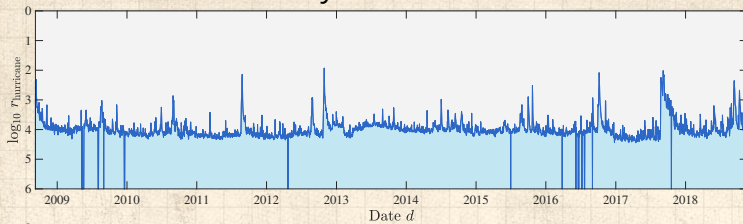
Extras

Memory & Turbulence

References



# Awareness and Memory: Hurricanes



PoCS  
@pocsvox

Computational  
History

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series  
Adjacent Narratives

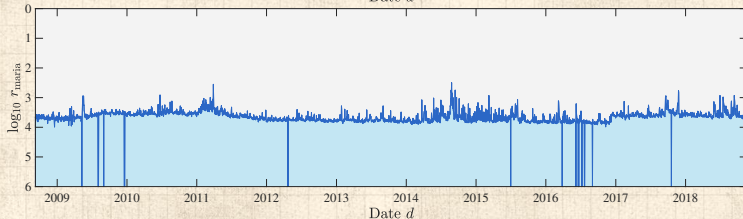
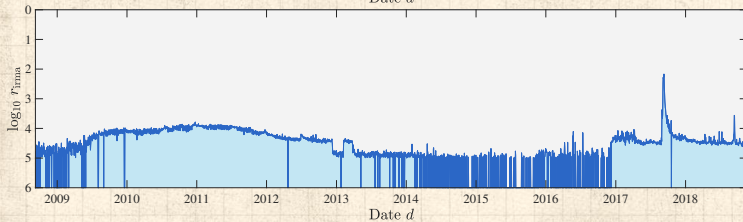
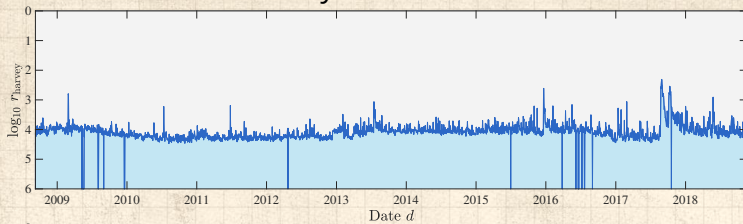
Extras

Memory & Turbulence

References



# Awareness and Memory: Hurricanes



PoCS  
@pocsvox

Computational  
History

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series  
Adjacent Narratives

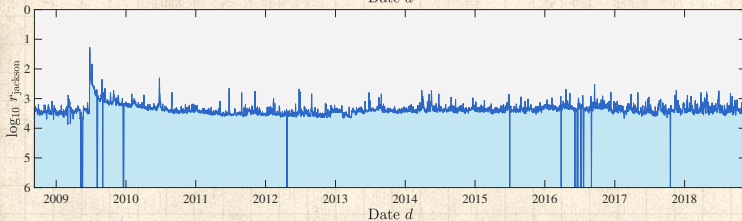
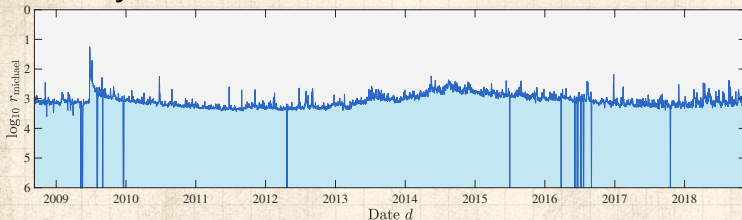
Extras

Memory & Turbulence

References



# Michael Jackson



Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series

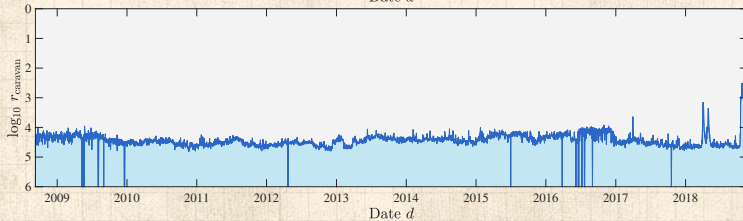
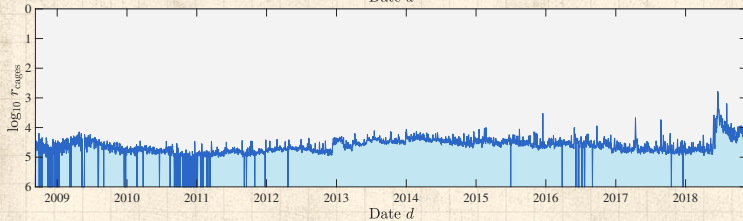
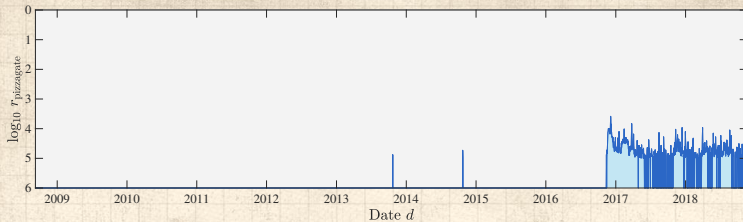
Adjacent Narratives

Extras

Memory & Turbulence

References





PoCS  
@pocsvox

Computational  
History

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

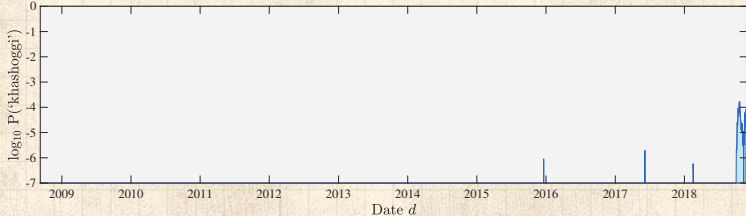
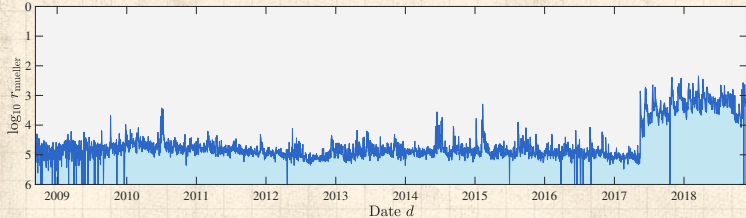
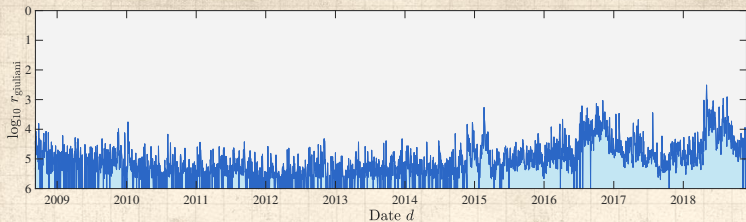
Sociotechnical time series  
Adjacent Narratives

Extras

Memory & Turbulence

References





Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series

Adjacent Narratives

Extras

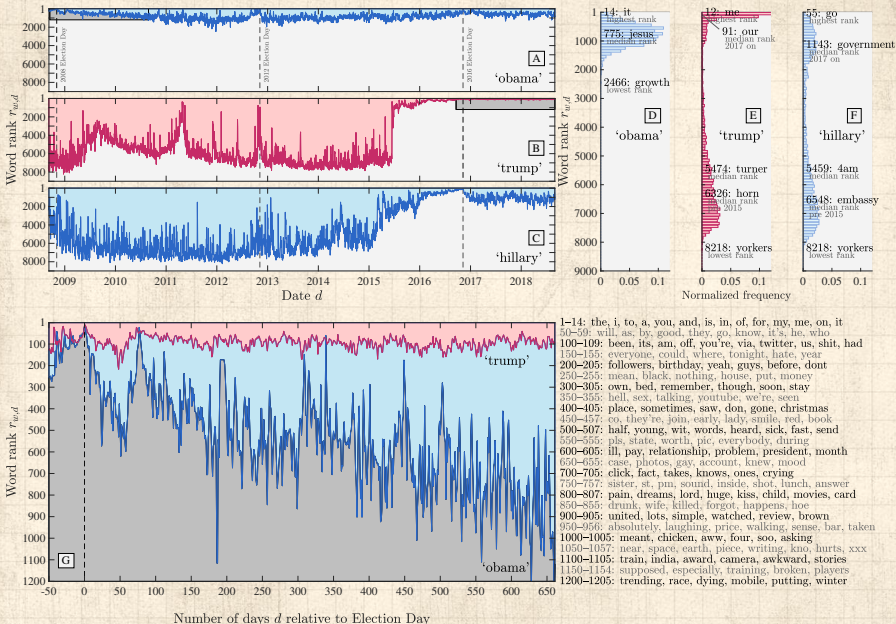
**Memory & Turbulence**

References

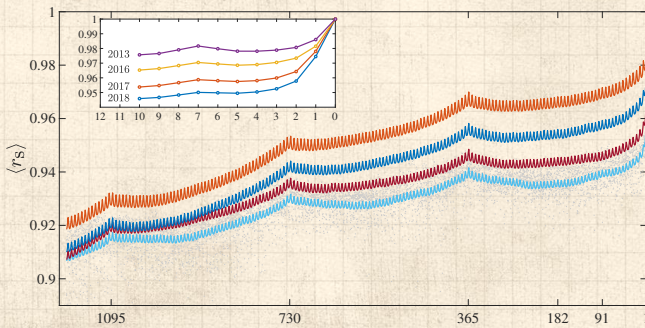
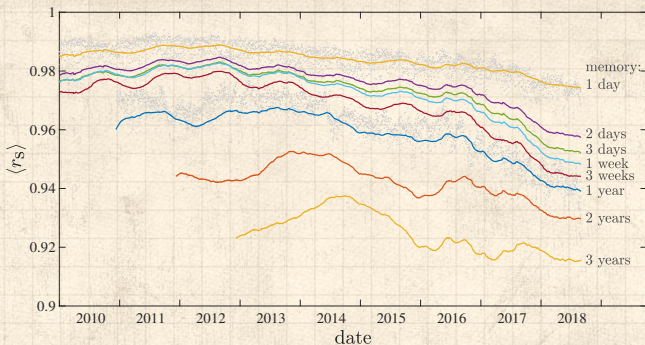




# Lexical fame of POTUSes and possible POTUSes:



# Story turbulence:



PoCS  
@pocsvox

Computational  
History

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series

Adjacent Narratives

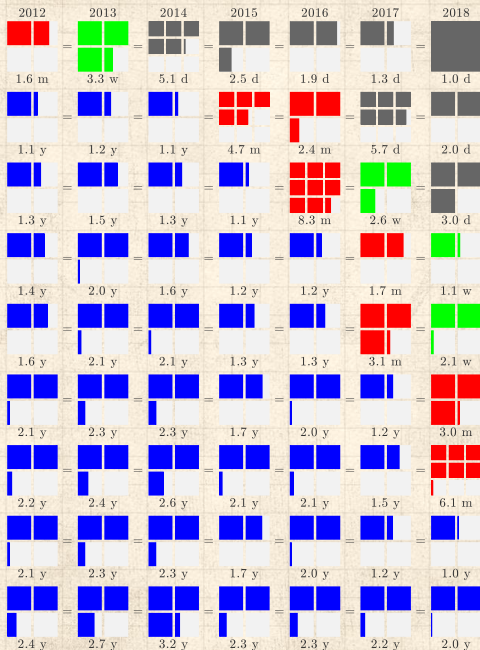
Extras

Memory & Turbulence

References



# Story turbulence:



PoCS  
@pocsvox

Computational  
History

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series

Adjacent Narratives

Extras

Memory & Turbulence

References



# References I

- [1] P. E. Auerswald.  
The Code Economy: A Forty-Thousand Year History.  
Oxford University Press, 2017.
- [2] P. Bak, K. Christensen, L. Danon, and T. Scanlon.  
Unified scaling law for earthquakes.  
Phys. Rev. Lett., 88:178501, 2002. pdf ↗
- [3] B. Boyd.  
On the Origin of Stories: Evolution, Cognition, and Fiction.  
Belknap Press, 2010.
- [4] E. Cheng.  
How to bake pi: An edible exploration of the mathematics of mathematics.  
Basic Books, 2015.



# References II

- [5] K. Christensen, L. Danon, T. Scanlon, and P. Bak. Unified scaling law for earthquakes. [Proc. Natl. Acad. Sci., 99:2509–2513, 2002.](#) pdf ↗
- [6] B. Christian and T. Griffiths. [Algorithms to Live By.](#) Macmillan, 2016.
- [7] P. S. Dodds, J. R. Minot, M. V. Arnold, T. Alshaabi, J. L. Adams, D. R. Dewhurst, A. J. Reagan, and C. M. Danforth. Fame and Ultrafame: Measuring and comparing daily levels of ‘being talked about’ for United States’ presidents, their rivals, God, countries, and K-pop, 2019. Available online at <https://arxiv.org/abs/1910.00149>. pdf ↗





# References III

- [8] P. S. Dodds, J. R. Minot, M. V. Arnold, T. Alshaabi, J. L. Adams, A. J. Reagan, and C. M. Danforth. Computational timeline reconstruction of the stories surrounding Trump: Story turbulence, narrative control, and collective chronopathy, 2020.  
<https://arxiv.org/abs/2008.07301>. pdf ↗
- [9] M. Erwig.  
Once Upon an Algorithm.  
MIT Press, 2017.
- [10] J. Gottschall.  
The Storytelling Animal: How Stories Make Us Human.  
Mariner Books, 2013.

PoCS  
@pocsvox

Computational  
History

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series

Adjacent Narratives

Extras

Memory & Turbulence

References





# References IV

- [11] E. Katz and P. F. Lazarsfeld.  
Personal Influence.  
The Free Press, New York, 1955.
- [12] T. Kuran.  
Now out of never: The element of surprise in the  
east european revolution of 1989.  
World Politics, 44:7–48, 1991. pdf ↗
- [13] J. R. Minot, M. V. Arnold, T. Alshaabi, C. M.  
Danforth, and P. S. Dodds.  
Ratioing the President: An exploration of public  
engagement with Obama and Trump on Twitter,  
2020.  
Available online at  
<https://arxiv.org/abs/2006.03526>. pdf ↗

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series

Adjacent Narratives


Extras

Memory & Turbulence

References



# References V

- [14] R. Munroe.  
Thing Explainer: Complicated Stuff in Simple Words.  
Houghton Mifflin Harcourt, 2015.
- [15] M. I. Norton and D. Ariely.  
Building a better America—One wealth quintile at a time.  
Perspectives on Psychological Science, 6:9–12,  
2011. [pdf](#) 
- [16] W. H. Press, S. A. Teukolsky, W. T. Vetterling, and B. P. Flannery.  
Numerical Recipes in C.  
Cambridge University Press, second edition, 1992.

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series  
Adjacent Narratives



Extras

Memory & Turbulence

References



# References VI

- [17] M. Puchner.  
The Written World: How Literature Shaped  
Civilization.  
Random, 2017.
- [18] M. J. Salganik, P. S. Dodds, and D. J. Watts.  
An experimental study of inequality and  
unpredictability in an artificial cultural market.  
Science, 311:854–856, 2006. [pdf](#) 
- [19] D. J. Watts and P. S. Dodds.  
Influentials, networks, and public opinion  
formation.  
Journal of Consumer Research, 34:441–458, 2007.  
[pdf](#) 

Statistics of  
Surprise

Stories

Mechanics of  
Fame

Superspreading

Lexical Ultrafame

Turbulent times

Extras

Sociotechnical time series

Adjacent Narratives

Extras

Memory & Turbulence

References



- [20] G. K. Zipf.  
Human Behaviour and the Principle of  
Least-Effort.  
Addison-Wesley, Cambridge, MA, 1949.

