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In Medias Res

Last updated: 2022/08/29, 09:45:50 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

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What's the Story?

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Productions

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What's the Story?

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Special Guest Executive Producer

 On Instagram at pratchett_the_cat ⧉

Outline

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What's the Story?

THE CONFUSION OF CONTAGIONS

Contagion

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A confusion of contagions:

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A confusion of contagions:

- Did Harry Potter spread like a virus?

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A confusion of contagions:

- 🎲 Did Harry Potter spread like a virus?
- 🎲 Can disinformation be "infectious"?

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A confusion of contagions:

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- 🎲 Can disinformation be "infectious"?
- 🎲 Suicide, Violence, Stupidity?

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- 🎲 Did Harry Potter spread like a virus?
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- 🎲 Morality? Evil? Laziness? Stupidity? Happiness?

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A confusion of contagions:

- Did Harry Potter spread like a virus?
- Can disinformation be "infectious"?
- Suicide, Violence, Stupidity?
- Morality? Evil? Laziness? Stupidity? Happiness?
- Religion?

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- 🧊 Morality? Evil? Laziness? Stupidity? Happiness?
- 🧊 Religion?
- 🧊 Democracy ...?

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A confusion of contagions:

- ♣ Did Harry Potter spread like a virus?
- ♣ Can disinformation be "infectious"?
- ♣ Suicide, Violence, Stupidity?
- ♣ Morality? Evil? Laziness? Stupidity? Happiness?
- ♣ Religion?
- ♣ Democracy ...?
- ♣ Language? The alphabet? [1]

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A confusion of contagions:

- Did Harry Potter spread like a virus?
- Can disinformation be "infectious"?
- Suicide, Violence, Stupidity?
- Morality? Evil? Laziness? Stupidity? Happiness?
- Religion?
- Democracy ...?
- Language? The alphabet? [1]
- Stories?

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For novel diseases:

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For novel diseases:

1. Can we predict the size of an epidemic?

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For novel diseases:

1. Can we predict the size of an epidemic?
2. How important is the reproduction number R_0?

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For novel diseases:

1. Can we predict the size of an epidemic?
2. How important is the reproduction number R_0?

R_0 approximately same for all of the following:

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For novel diseases:

1. Can we predict the size of an epidemic?
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R_0 approximately same for all of the following:

♣ 1918-19 "Spanish Flu" $\sim$ 75,000,000 world-wide,
500,000 deaths in US.

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For novel diseases:

1. Can we predict the size of an epidemic?
2. How important is the reproduction number R_0?

R_0 approximately same for all of the following:

♻ 1918-19 "Spanish Flu" $\sim$ 75,000,000 world-wide, 500,000 deaths in US.

♻ 1957-58 "Asian Flu" $\sim$ 2,000,000 world-wide, 70,000 deaths in US.

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For novel diseases:

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- 1918-19 "Spanish Flu" $\sim$ 75,000,000 world-wide, 500,000 deaths in US.
- 1957-58 "Asian Flu" $\sim$ 2,000,000 world-wide, 70,000 deaths in US.
- 1968-69 "Hong Kong Flu" $\sim$ 1,000,000 world-wide, 34,000 deaths in US.

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For novel diseases:

1. Can we predict the size of an epidemic?
2. How important is the reproduction number R_0?

R_0 approximately same for all of the following:

- 🧊 1918-19 "Spanish Flu" $\sim$ 75,000,000 world-wide, 500,000 deaths in US.
- 🧊 1957-58 "Asian Flu" $\sim$ 2,000,000 world-wide, 70,000 deaths in US.
- 🧊 1968-69 "Hong Kong Flu" $\sim$ 1,000,000 world-wide, 34,000 deaths in US.
- 🧊 2003 "SARS Epidemic" $\sim$ 800 deaths world-wide.

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Resurgence—example of SARS

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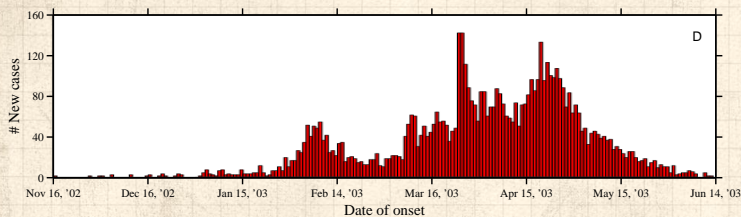
References

Resurgence—example of SARS

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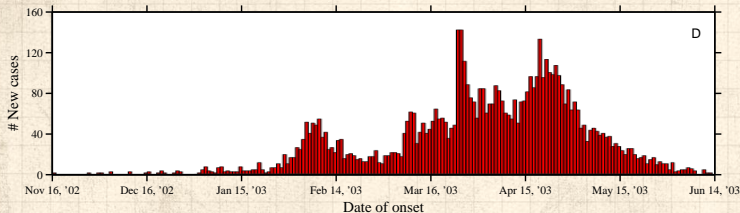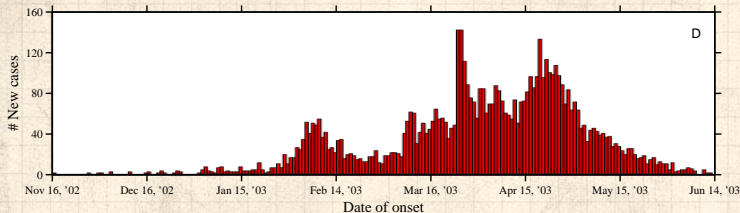Previously on
PoCSverse ...
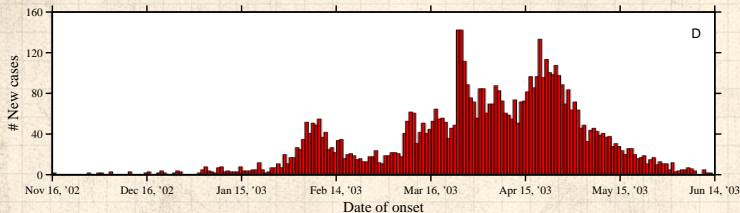
References

Epidemic slows...

Resurgence—example of SARS

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References
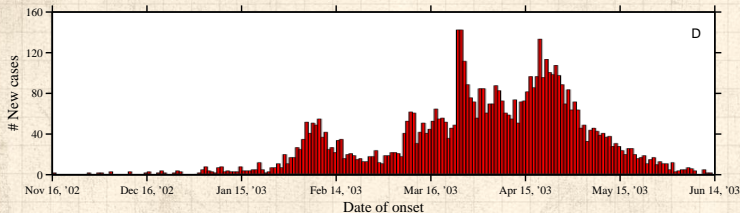
Epidemic slows…
then an infective moves to a new context.

Resurgence—example of SARS

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- Epidemic slows…
  then an infective moves to a new context.
- Epidemic discovers new 'pools' of susceptibles:
  Resurgence.

Resurgence—example of SARS

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- Epidemic slows...
  then an infective moves to a new context.
- Epidemic discovers new 'pools' of susceptibles:
  Resurgence.
- Importance of rare, stochastic events.

Mistake 2:
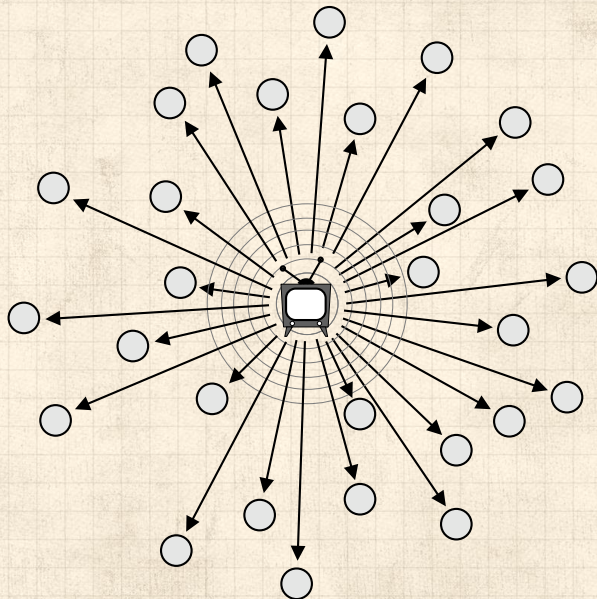# Seeing success is 'due to social' and wanting to say 'all your interactions are belong to us'

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The hypodermic model of influence:

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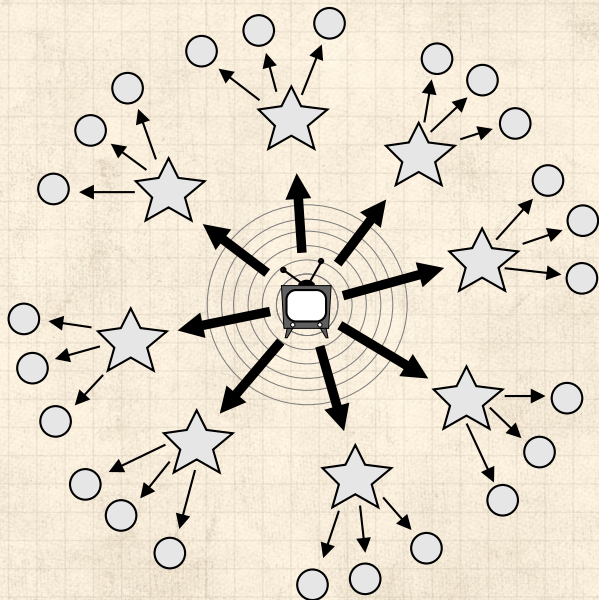10 of 26

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The two step model of influence: [2]

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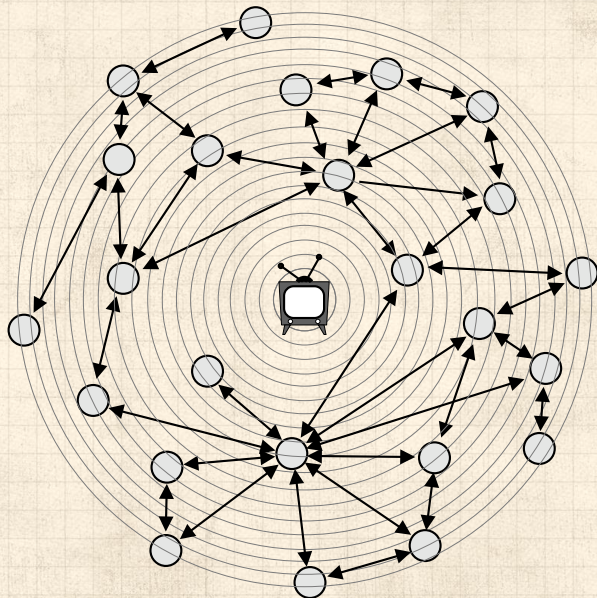Previously on
PoCSverse …

References
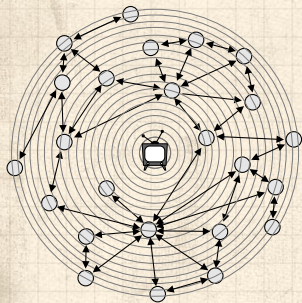
The network model of influence:

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The network model of influence:

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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" ⬚
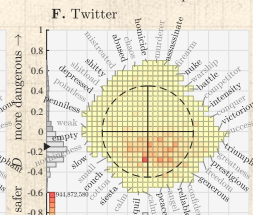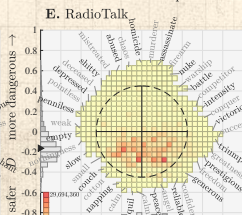Watts and Dodds,
J. Consum. Res., **34**, 441–458, 2007. [3]

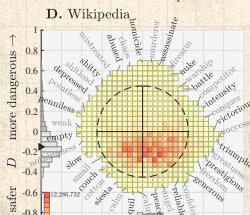The PoCSverse
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And of course:

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A special thing has happened:

The PDS framework emerged only from analyzing a lexicon (types).

A. Jane Austen

B. Sherlock Holmes

C. The New York Times

D. Wikipedia

E. RadioTalk

F. Twitter

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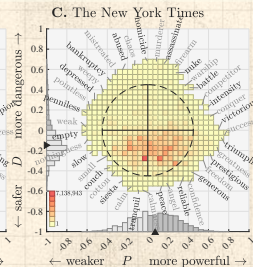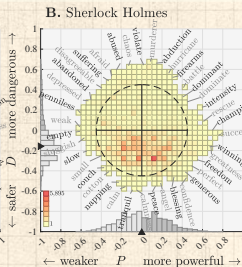
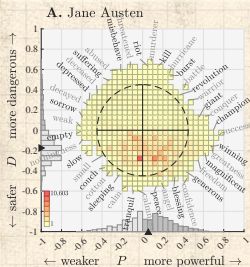# A special thing has happened:

- The PDS framework emerged only from analyzing a lexicon (types).

- Applying PDS framework to disparate corpora (tokens) reveals a linguistic 'safety bias'.

A. Jane Austen · **B.** Sherlock Holmes · **C.** The New York Times · **D.** Wikipedia · **E.** RadioTalk · **F.** Twitter
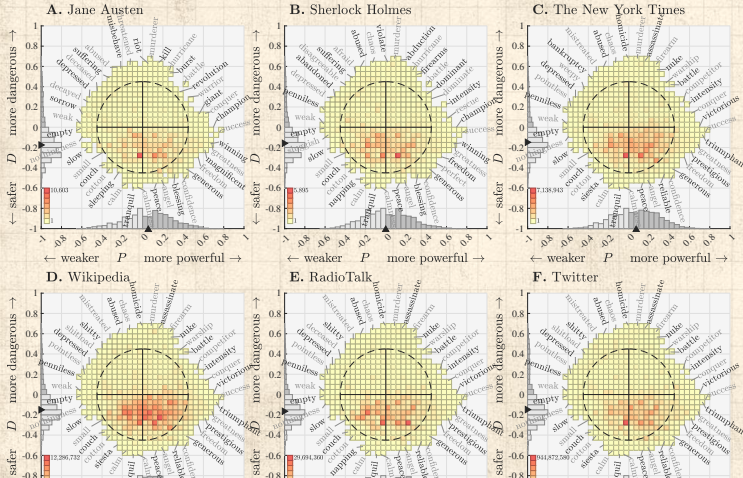
800 characters, 200+ semantic differentials:

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Power-Danger space across the multi-storyverse

$N_{\text{lexicon}} = 800$
$N_{\text{types}} = 800$

← more of a zero   power P more of a hero →

danger D
more of a sinner →
← more of a saint

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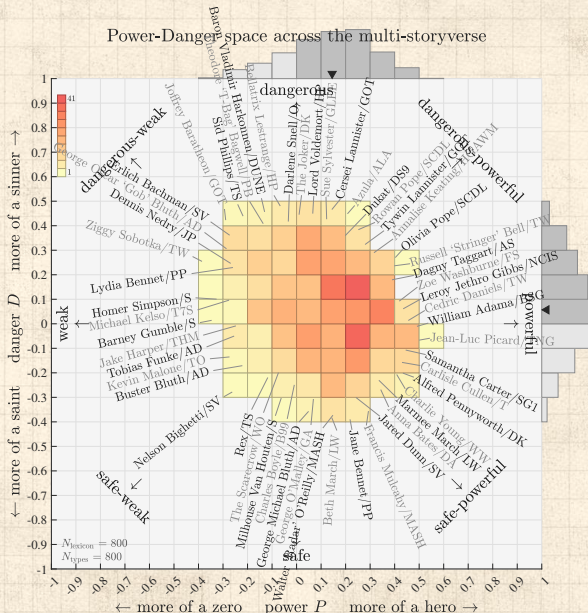
Power-Danger space for Community

danger
↑

more of a sinner →
danger D
← more of a saint

dangerous-weak
↖

Pierce Hawthorne
Ben Chang

dangerous-powerful
↗

Britta Perry

Jeff Winger

Ian Duncan

Craig Pelton

weak
←

→ powerful

Troy Barnes

Abed Nadir

Annie Edison

Shirley Bennett

safe-weak
↙

safe
↓

safe-powerful
↘

$N_{\text{lexicon}} = 800$
$N_{\text{topes}} = 800$

← more of a zero   power P more of a hero →

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A few fictional characters most like Pratchett the Cat:

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A few fictional characters most like Pratchett the Cat:

1. Elizabeth Swann (Pirates of the Caribbean): 83%
2. Daenerys Targaryen (Game of Thrones): 82%
3. Margaery Tyrell (Game of Thrones): 82%
4. Francisco d'Anconia (Atlas Shrugged): 82%
5. Dr. Hannibal Lecter (Hannibal): 82%
6. Audrey Horne (Twin Peaks): 81%
7. Princess Anna Karenina (Anna Karenina): 81%
8. Danny Ocean (Ocean's 11): 81%
9. Ragnar Lothbrok (Vikings): 81%
10. Olenna Tyrell (Game of Thrones): 80%

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Some fictional characters most like the Deliverator:

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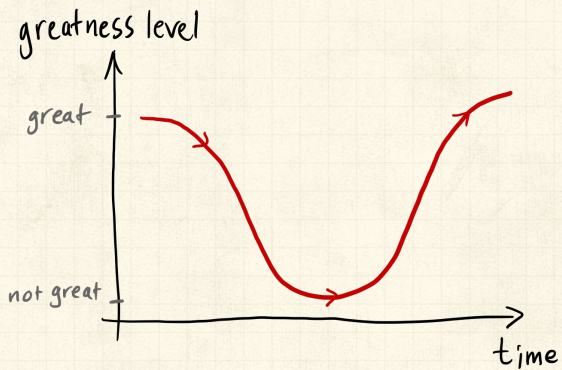19 of 26

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Some fictional characters most like the Deliverator:

1. Ava (Ex Machina): 89%
2. Dolores Abernathy (Westworld): 87%
3. Dom Cobb (Inception): 86%
4. Maeve Millay (Westworld): 84%
5. Patrick Jane (The Mentalist): 84%
6. Wyldstyle ⧉ (The Lego Movie): 84%
7. Daisy 'Skye' Johnson (Agents of S.H.I.E.L.D.): 84%
8. Black Widow (Marvel Cinematic Universe): 83%
9. Elizabeth Swann (Pirates of the Caribbean): 83%
10. Jason Bourne (The Bourne Identity): 83%
11. Mystique (X-Men): 83%
12. Juliana Crain (The Man in the High Castle): 83%
13. Arya Stark (Game of Thrones): 82%
14. Gamora (Marvel Cinematic Universe): 82%
15. Sherlock Holmes (Elementary): 82%

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Stories matter: ⬈

greatness level

great

not great

time

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How we got here: It's going to be tropes all the way down[1]

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[1] Three weeks earlier ... 🗗 [?]

About 100 days earlier in the PoCSverse … ⬀

The complex dynamics of course reviews:

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The Information: A History, A Theory, A Flood.
Pantheon, 2011.

[2] E. Katz and P. F. Lazarsfeld.
Personal Influence.
The Free Press, New York, 1955.

[3] D. J. Watts and P. S. Dodds.
Influentials, networks, and public opinion
formation.
Journal of Consumer Research, 34:441–458, 2007.
pdf ⬀