COGS 303

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UBC

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- Then, we'll apply the tools we've acquired this semester to evaluate conspiratorial beliefs

Two tasks for a philosophy of conspiracy theories

What do we want from a philosophy of conspiracy theories?

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What do we want from a philosophy of conspiracy theories?

- Define conspiracy theories
- Give a framework for evaluating belief in conspiracy theories

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- So, a conspiracy theory would be a theory that proposes a conspiracy as an explanation for some phenomenon
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- But that is not how the term is typically used today...

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- Curiously, this usage seems to have originated with our old acquaintance, Karl Popper

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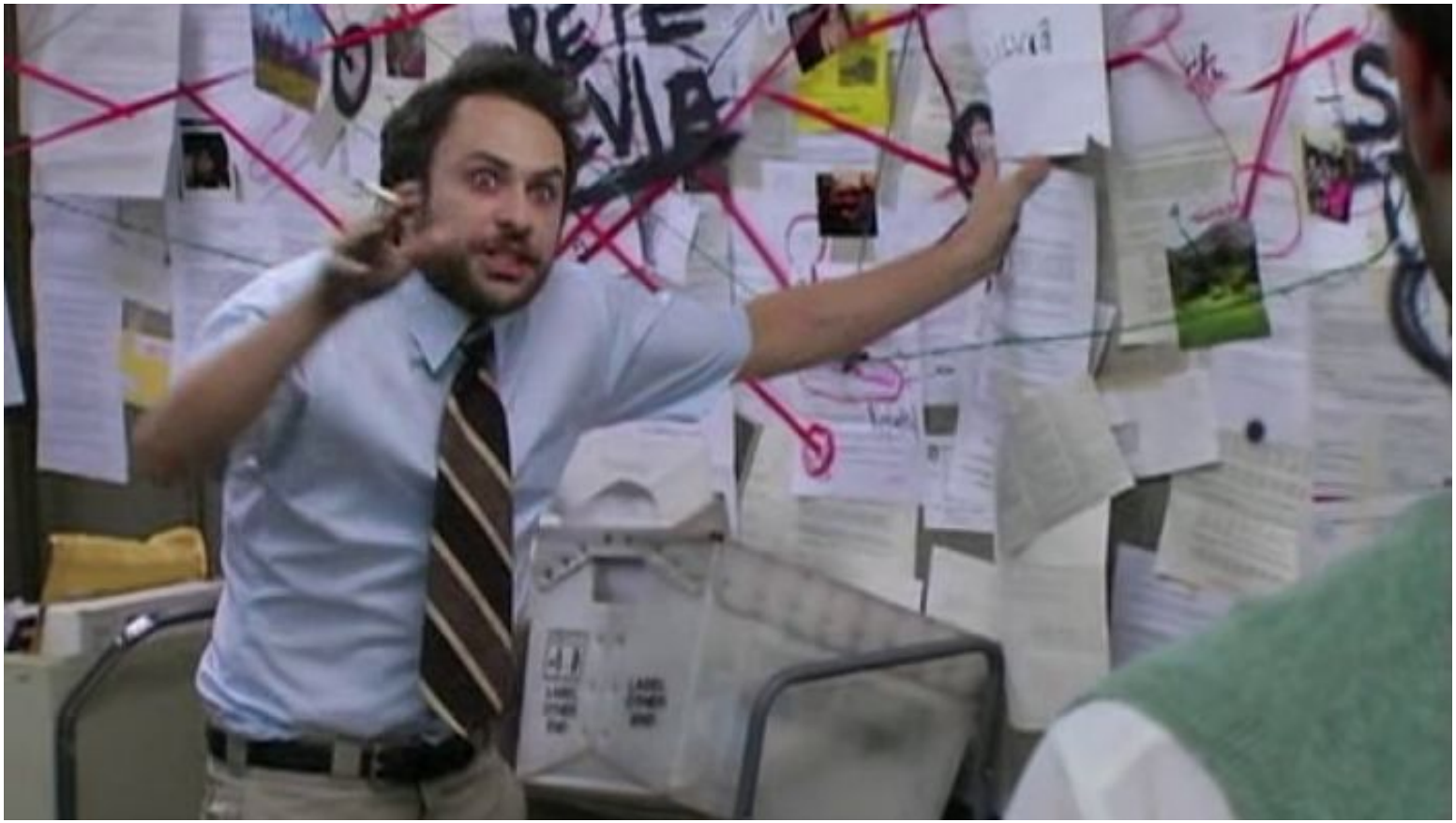
- The broad approach to the definition question is a natural fit with the particularist approach to evaluation question
- Part of the difficulty here is that if we're not in agreement on the definition question, we're not really talking about the same thing when we move onto the evaluation question

Let's look at some examples!



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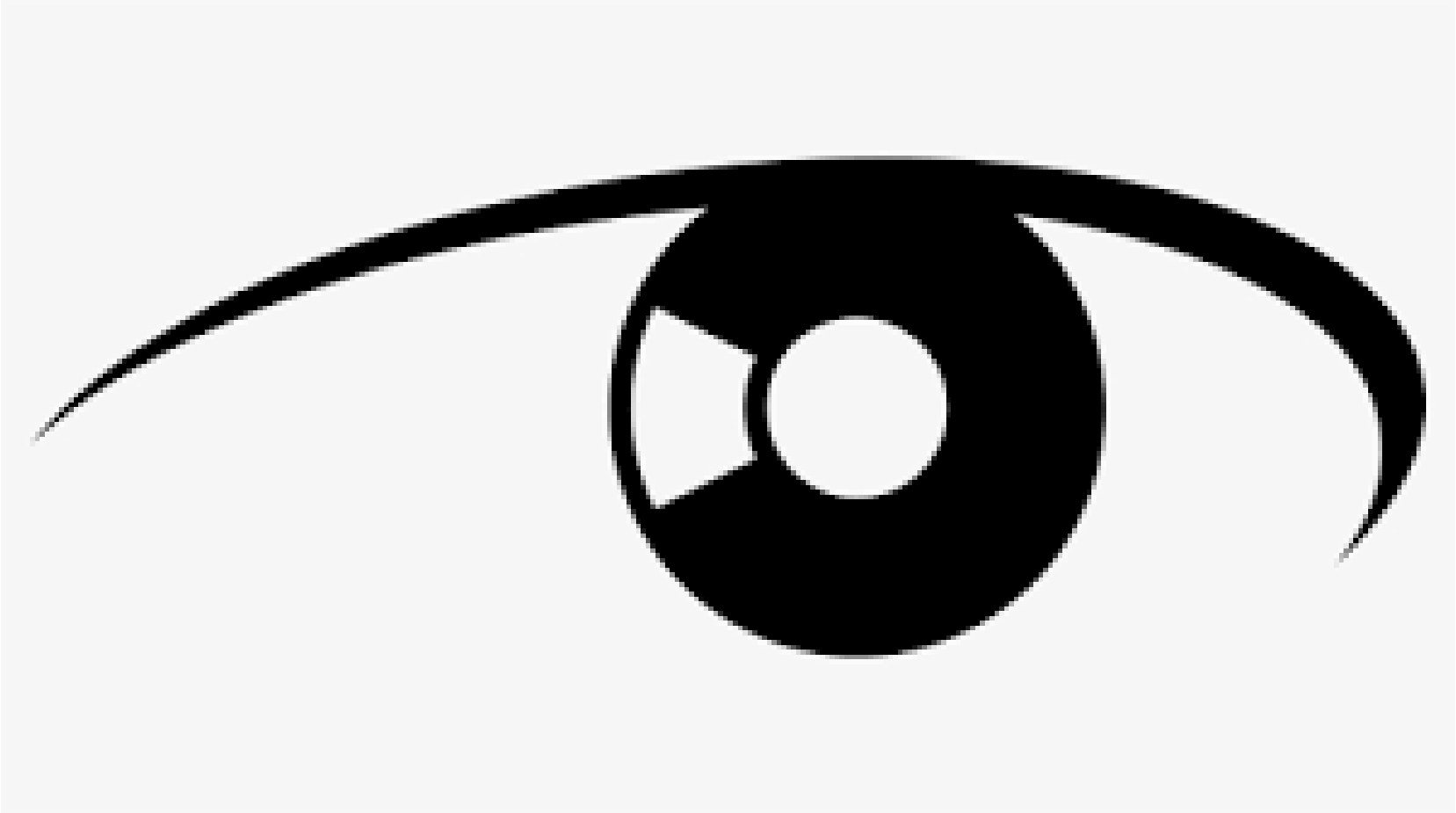
- Nixon resigns August 9, 1974

NSA Prism Scandal



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- These were published in *The Guardian* and *The Washington Post* June 6, 2013

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- Despite the lack of evidence, this one still gets a lot of attention

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The
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SOCIETY

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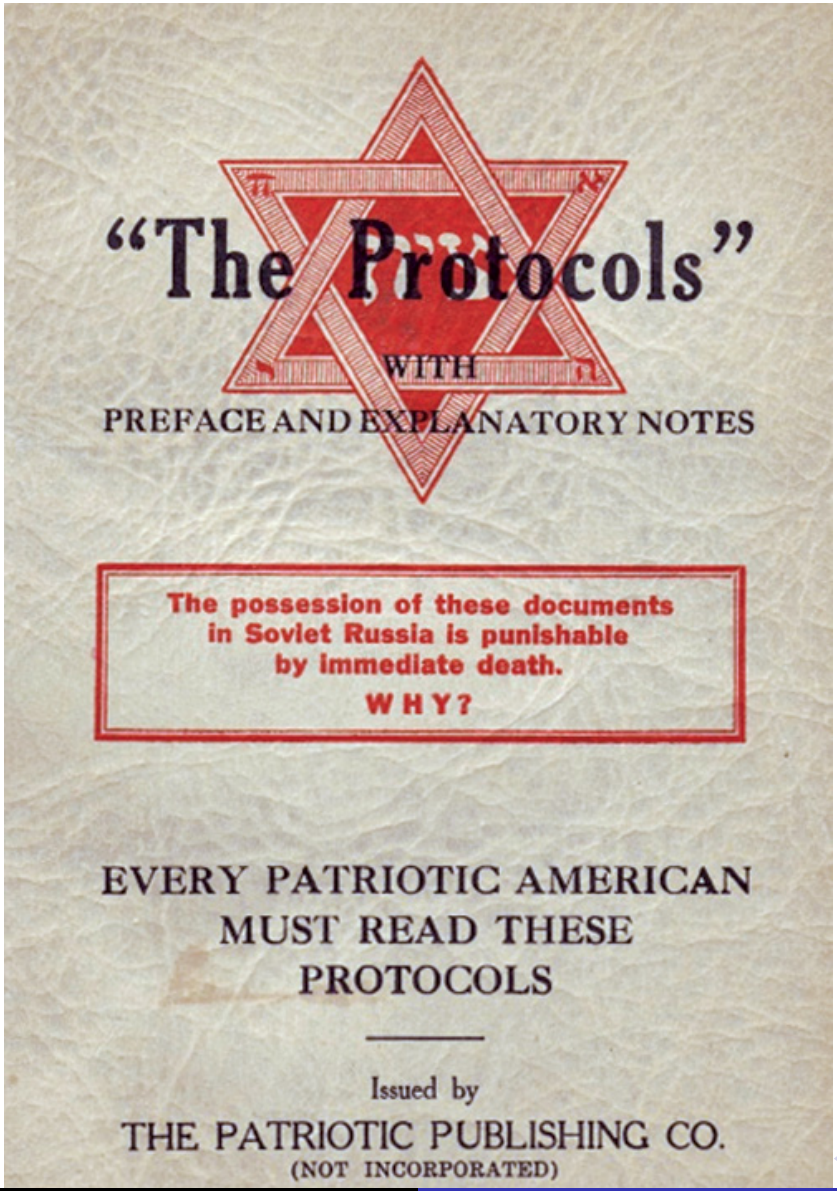
- Furthermore, what's the evidence for the claim that NASA has been systematically misleading us?

Ant-Semitic Theories



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- It still echoes today; Anti-Semitism has been on the rise in recent years, and some of the themes from this hoax are repeated (eg. Q-anon)

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- So, what might a neutral definition of the term look like?

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- By straying so far from ordinary usage, we risk being misunderstood

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- Now, let's turn the the evaluation question...

Evaluating Conspiracy Theories

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- Can we model this with Bayes' Theorem? If so, which form?

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$$\frac{P(C|E)}{P(O|E)}$$

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- Consider the Odds form of Bayes' Theorem:
- $$\frac{P(C|E)}{P(O|E)}$$
- $$\frac{P(C|E)}{P(O|E)} = \frac{P(C)}{P(O)} \cdot \frac{P(E|C)}{P(E|O)}$$

A Bayesian Framework

- Consider the Odds form of Bayes' Theorem:
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- $$\frac{P(C|E)}{P(O|E)} = \frac{P(C)}{P(O)} \cdot \frac{P(E|C)}{P(E|O)}$$
- This decomposes into evaluating the prior odds and the likelihood ratio

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- What about science? Consider the secrecy of private sector funded scientific studies

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- Your prior odds for a conspiracy theory are impacted by your level of trust in the official story

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- This difference in standpoint affects the prior odds someone might reasonably assign to a conspiracy theory that resembles their background knowledge

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- Let's suppose these companies misrepresented these drugs as being safer than they actually were, precipitating a crisis that killed hundreds of thousands
- Further, let us suppose that this was all well-known by the time of the pandemic
- How might this affect ones prior for "Big Pharma's" assurance that this new vaccine is safe?

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- Secrecy and conspiratorial behaviour is commonplace, which relates to a non-negligible prior for a conspiracy theory
- Thus, the prior odds are non-negligible
- Certainly not low enough to dismiss all conspiracy theories as inherently implausible, even if one takes a narrower approach to the definition question than Dentith & Keeley do

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- So, as N and t increase, the likelihood ratio diminishes

Conspiracy theories have an expiry date

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- The game then becomes estimating the rate at which conspiracies leak

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- He uses past whistle-blowing activity to estimate the proportion of potential whistle-blowers
- Then, it's just a matter of estimating how many people are involved in any given conspiracy

Grimes' results

Table 3. Maximum time to imminent failure ($L > 0.95$).

Conspiracy	Failure Time
Moon-landing Hoax (Sustained / Constant)	3.68 years
Moon-landing Hoax (Single event / Gompertzian)	3.68 years
Climate-change fraud (Scientists only)	26.77 years
Climate-change fraud—including scientific bodies	3.70 years
Vaccination Conspiracy—CDC/WHO only	34.78 years
Vaccination Conspiracy—including drug companies	3.15 years
Suppressed Cancer cure	3.17 years

doi:10.1371/journal.pone.0147905.t003

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- The upshot: after 3.7 years, the value of the posterior odds is 0.05 times the value of the prior odds
- Suppose that 4 years ago someone thought it 10 times more likely that climate-change was a fraud than that it was true
- Just the passage of time should mean that they should now think it's twice as likely that climate-change is true than that it is fraudulent

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  - A conspiracy theorist will often postulate more conspirators to explain why the conspiracy hasn't been exposed
  - But, that sort of hypothesizing just reduces the expected time it would take for the conspiracy to be exposed

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- How do we avoid getting sucked in by misinformation in the first place?

Avoiding the rabbit hole..

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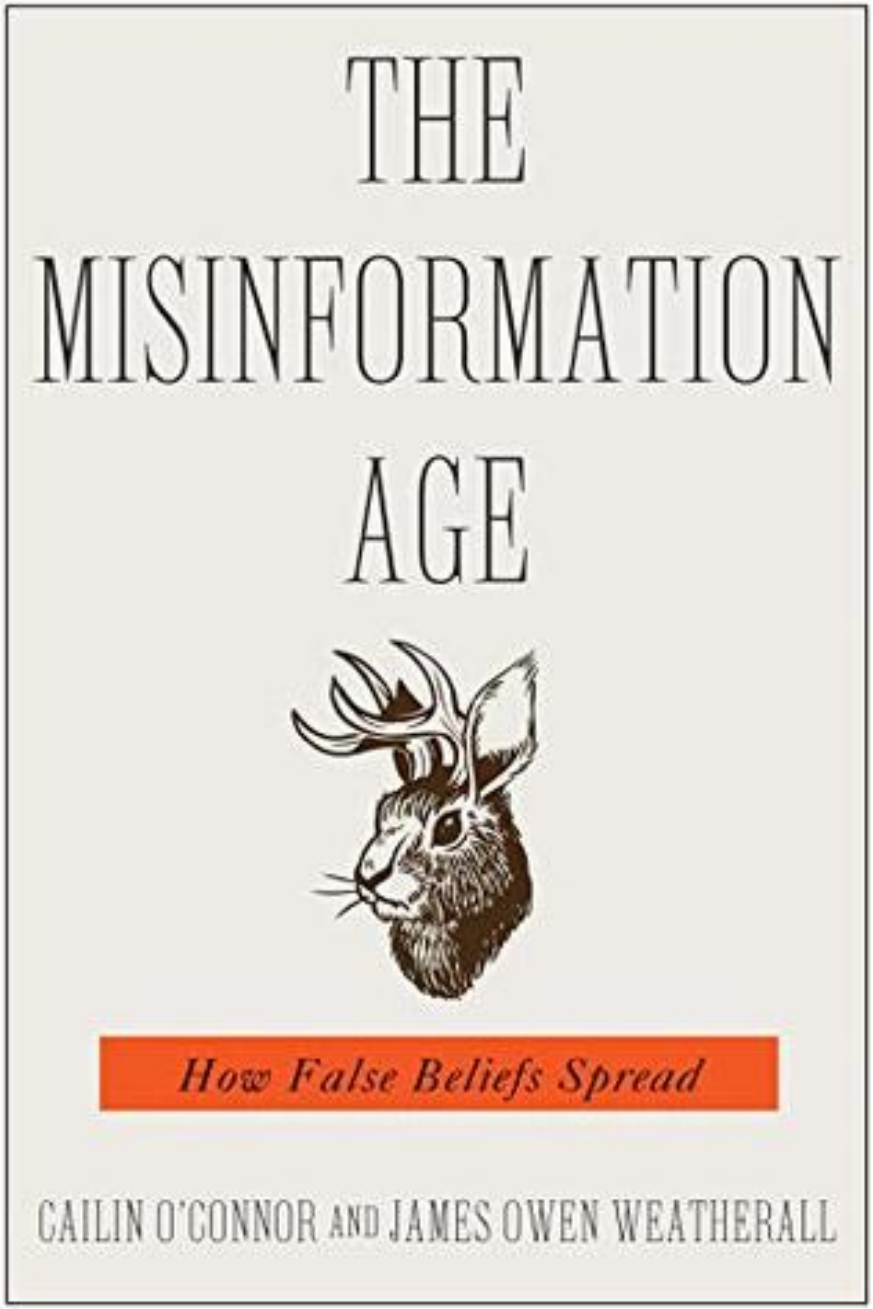
- Let's take a look at how some of this works:


THE
MISINFORMATION
AGE
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- Their models can be applied to the scientific community, but also to society at large

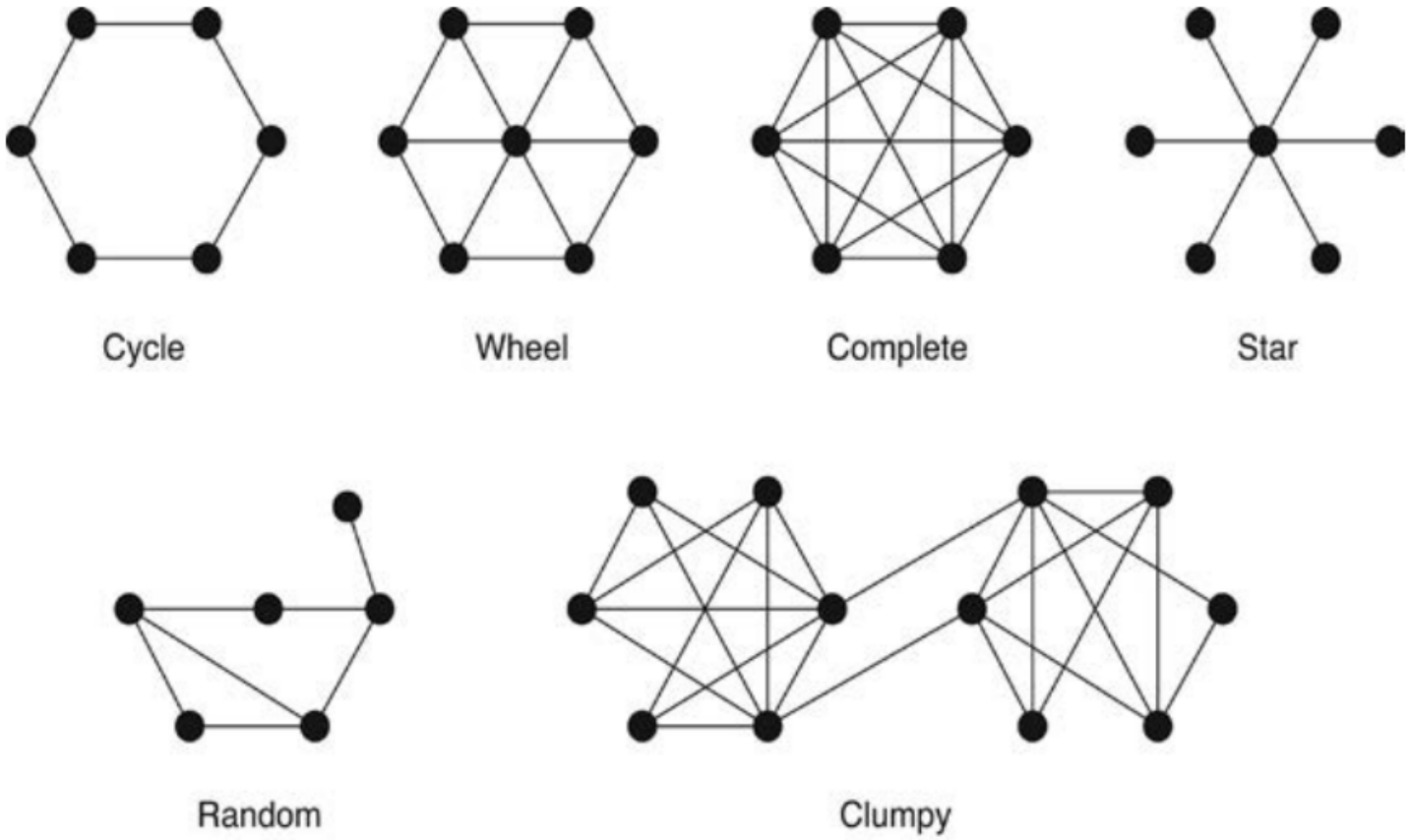

Figure 1. A collection of communication networks. In each network, the nodes represent individuals, or agents, and the connections between them, called edges, represent social ties. Some networks, like the complete, are more densely connected, and others, like the cycle, are more sparse. The clumpy network involves cliques. In the star and wheel networks, some individuals are more central than others. These structures influence how beliefs spread through the network.

Note: previous slide was taken from p. 56, this one from p.58

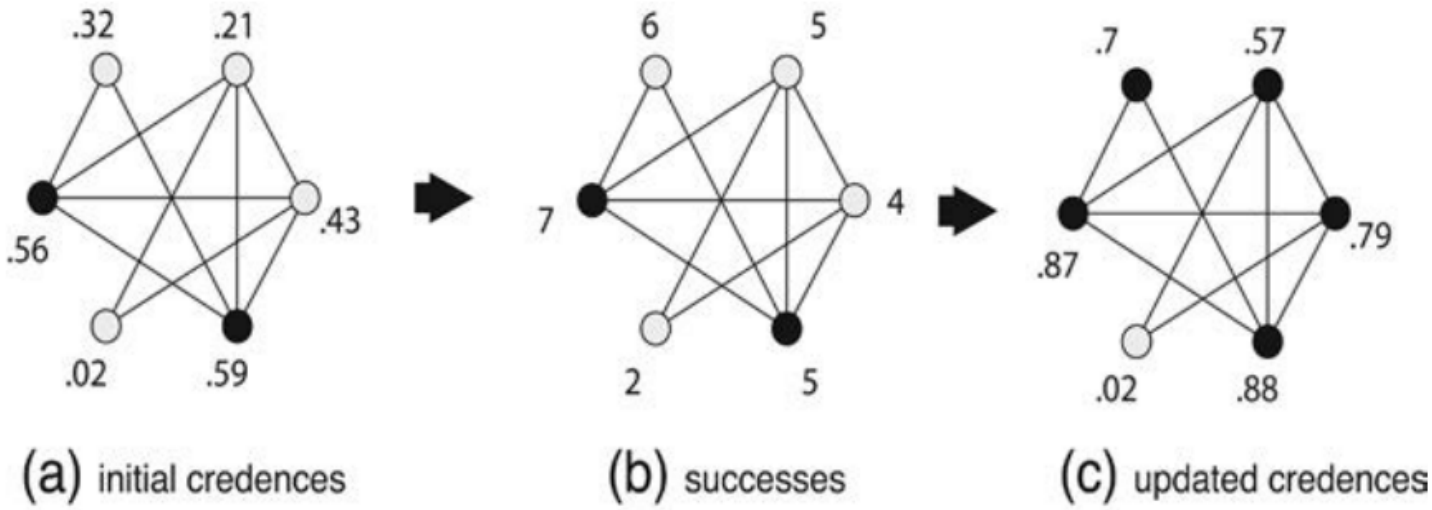

Figure 2. An example of updating and experimentation in a Bala and Goyal–style model. Scientists start with initial credences (a) and use these to decide how they will test the world (b). Light nodes represent those taking action A, and dark nodes, B. In (c) we see that scientists who observe tests of action B update their credences.

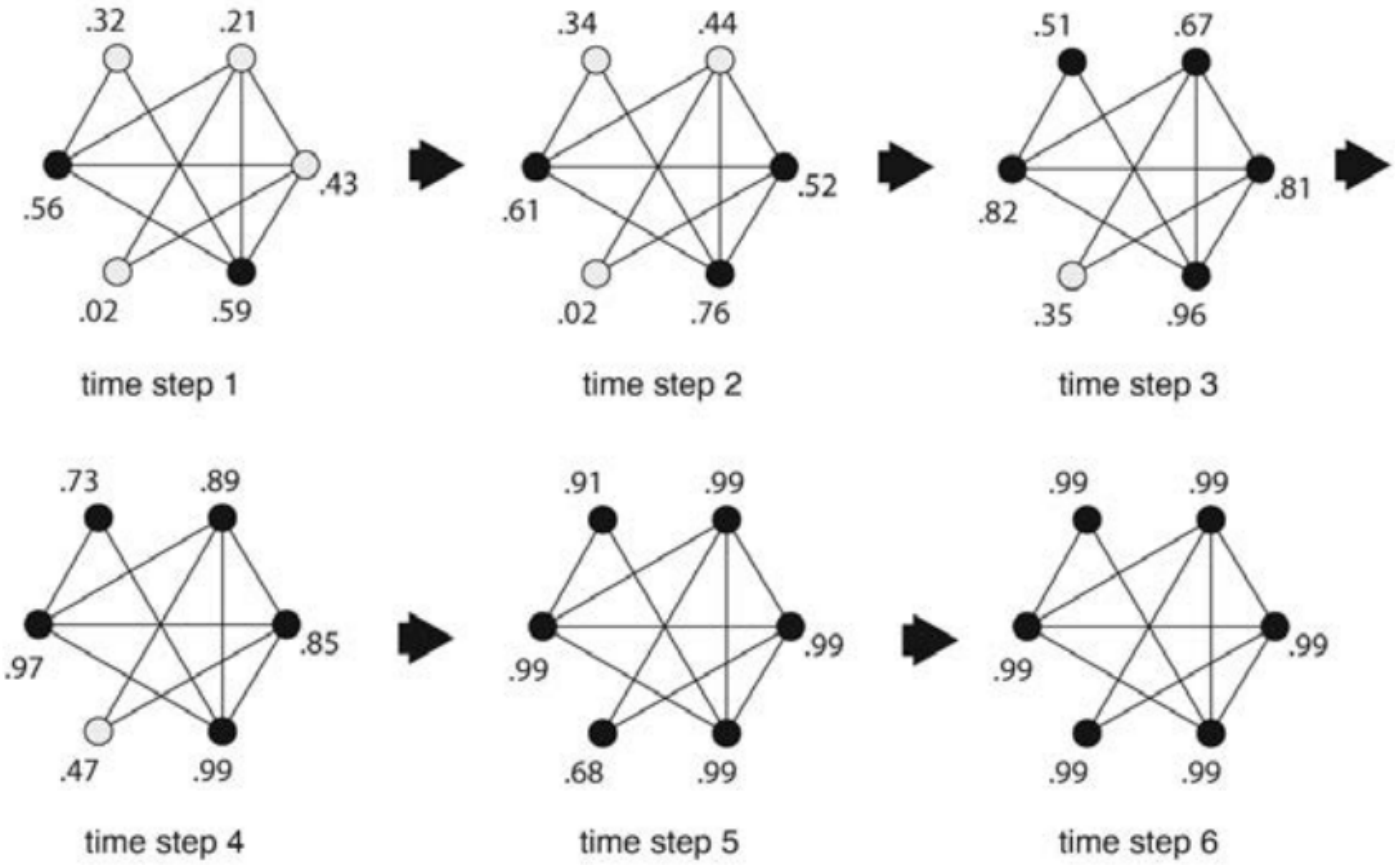

Figure 3. An example of a network that achieves convergence on true beliefs. Light nodes represent belief in A and dark nodes belief in B. In each time step agents are testing their beliefs and updating their credences on the basis of their results and their neighbors' results. As time goes on, more agents have high credences in the true belief until the entire network becomes essentially certain that action B is better.

Note: previous slide was taken from p.73, this one from p.87

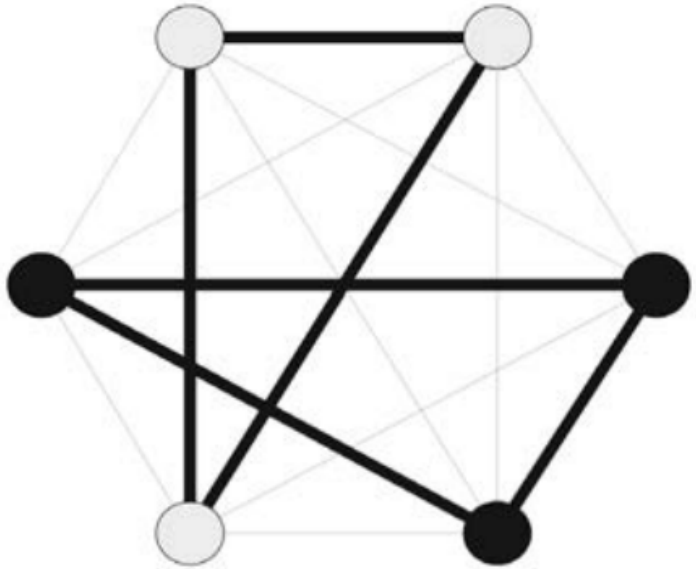

Figure 4. A complete, that is, fully connected, network in which agents are polarized in that they have stable, opposing beliefs. Light nodes represent those taking action A, and dark nodes, B. The weights of the connections between the nodes represent trust between agents—which translates into belief that other agents share real data. Within each group, agents trust others' data, but they do not trust data from the other group.

Effects of distrust

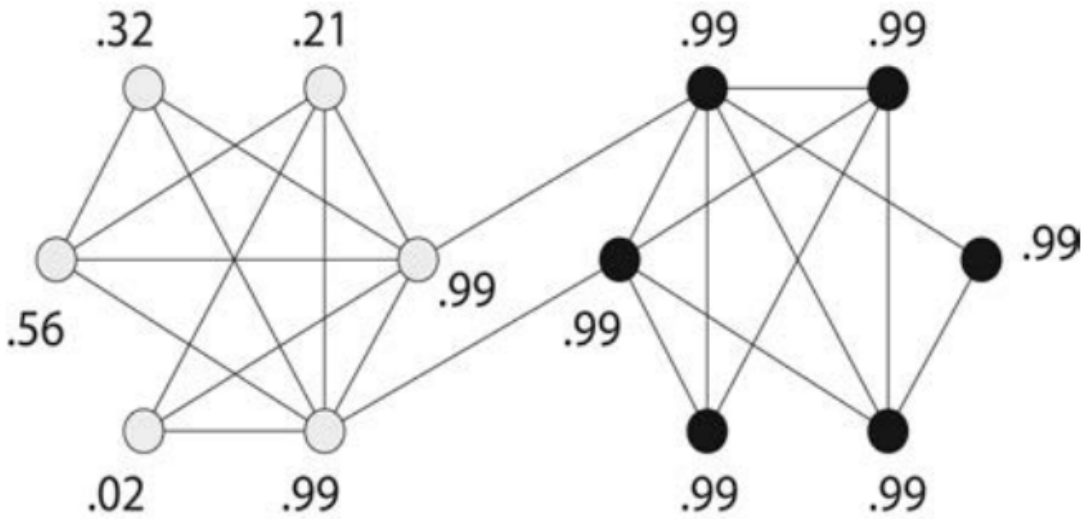

Figure 6. A cliquish arrangement of scientists with stable, opposing beliefs due to conformity. Light nodes represent individuals taking action A, and dark nodes, B. Within the A group, some individuals have accurate credences, that is, they believe B is better. Because they conform with the actions of their clique, this accurate belief is not transmitted to colleagues in that clique.

Effects of peer pressure

Note: taken from p. 87

The upshot:

- This sort of modelling illustrates how group structures affect how evidence/knowledge is distributed

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- Suppose we are modelling a group of scientists who are genuinely motivated by a desire to know the truth
- Group structure dynamics can interrupt that motivation
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- What about if we consider even less optimal circumstances?

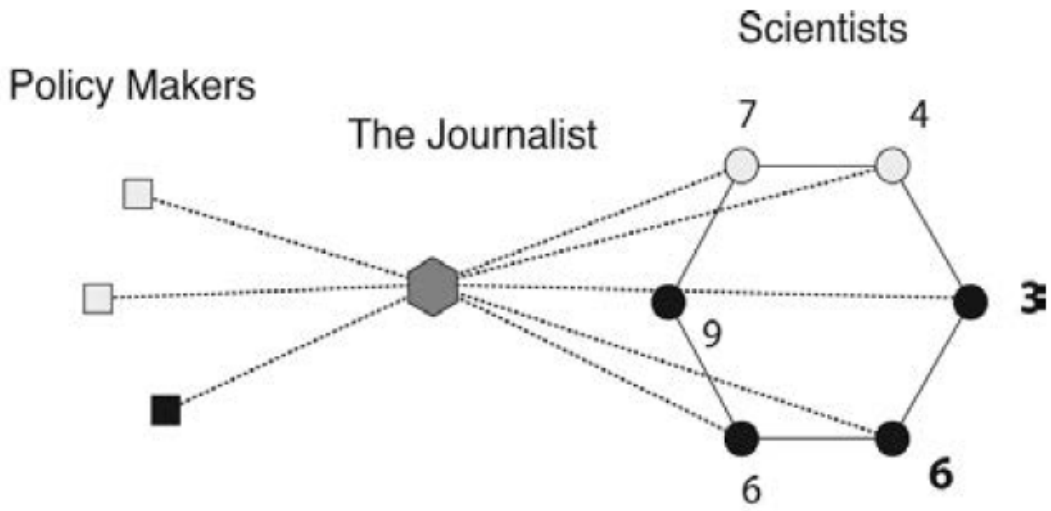

Figure 16. Communication in a model with a "fair" journalist who chooses two results to report to policy makers. Upon observing results from scientists, the journalist communicates one that supports theory B and one that spuriously supports A (bolded) to policy makers. This has the effect of biasing the set of data available to policy makers. Light nodes represent individuals who favor action A, and dark nodes, B.

Effect of false equivalence

Note: taken from p.159

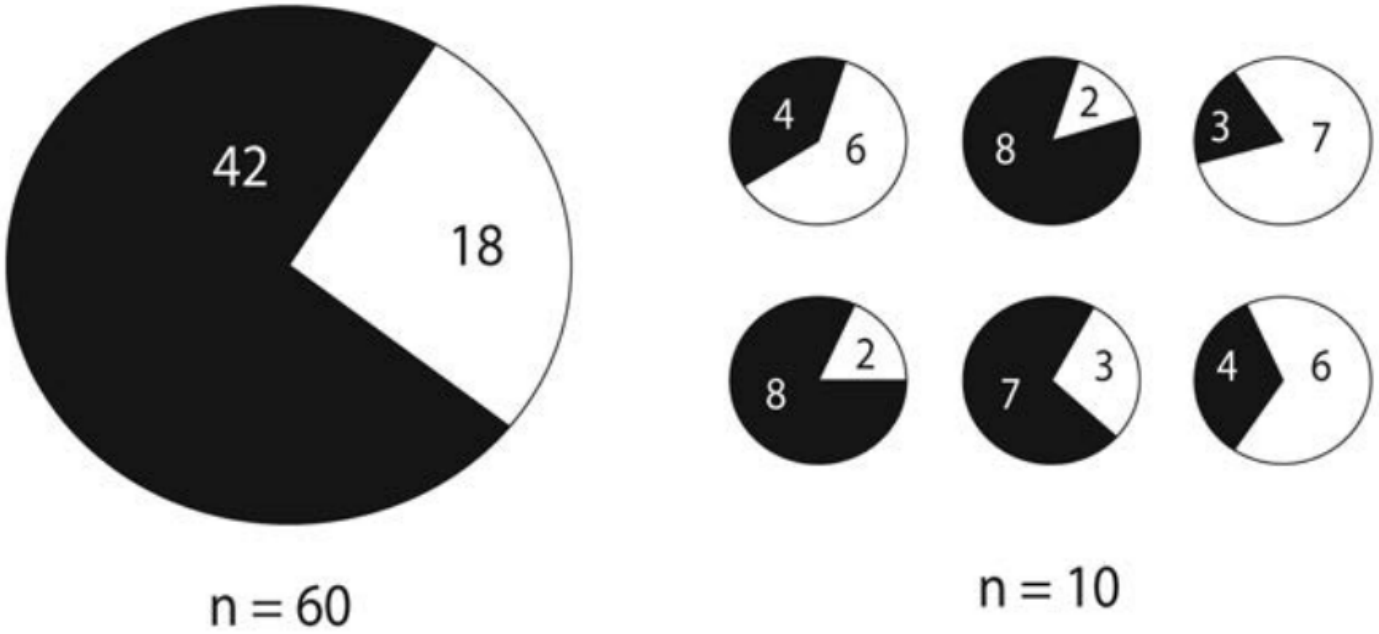

Figure 11. Breaking one large study into many smaller ones can provide fodder for propagandists. On the left we see a trial with sixty data points, which reflects the underlying superiority of action B (dark). On the right, we see the same data points separated into six trials. Three of these spuriously support action A (light). A propagandist can share only these studies and mislead policy makers, which would not be possible with the larger study.

Importance of aggregation

Note: taken from p.109

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What are some best practises for consuming information?

- Learn to be comfortable with uncertainty–at best we have incomplete information that gestures at the truth

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- Go straight to the source when it comes to scientific reporting–don't take a journalist's word for it
- Now that you are more aware of some scientific best practices, judge scientific studies by how strong their evidence is

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- Avoid polarization–have friends who disagree with you on key issues
- Don't automatically think the worst of someone who sees things differently than you do.
- There's a lot of pressure to "take a side" very quickly on minimal information...be aware of this and the potential for anchoring bias

Readings for next week

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- If you're presenting next week, don't forget to **email** me your preference for your slot in the presentation order (these are first come, first served)