

# Experts and Truth

*Quote of the day:*

**“Science is a way of thinking much more than it is a body of knowledge.”**

**-- astronomer and science communicator Carl Sagan**

## **Readings for next time**

**Today's class will have more of a Smith imprint than most of the others**

**Both modernists and postmodernists challenge authority, albeit in different ways. The “argument from authority” is a well-known fallacy.**

**How can someone take an appropriately skeptical attitude toward authority without either becoming a nihilist or gravitating toward outlandish beliefs? One possibility is to shift the conversation from authority to expertise.**

**expert: a person who has comprehensive knowledge of or skill in a particular area. Expertise is a kind of acquired authority.**

**However, this doesn't really solve our problem, because experts can get things wrong. How can you figure out whether to believe what an expert is saying?**

**Let's consider five possible means by which you could assess an expert's claims.**



**1. Evaluate the expert's evidence and reasoning for yourself?**

- **This is easier if you have general knowledge, expertise in a related field, and the ability to invest substantial time investigating the matter. In effect, you become an expert.**
- **Increasing specialization and technical sophistication makes this strategy difficult if not impossible in many fields. Nevertheless, many people think they know just as much as the experts in a given area (Tom Nichols).**

## 2. Consider the expert's credentials?



- Weak credentials are a red flag.

However, there are card-carrying experts with good credentials who hold beliefs that the vast majority of their colleagues reject. The mere fact that you can find a credentialed expert for a position proves nothing.

### **3. Consider the expert's interests and biases?**

- Everyone has interests and biases, which may or may not influence their judgments. It is hard to know for sure how much difference their interests and biases make.**

**4. Use your own or other people's experiences with an expert (through word of mouth, Yelp, etc.) to evaluate their track record.**

- **Examples from your own lives?**
- **This strategy often works well for service providers (hairdressers, doctors, mechanics, therapists, plumbers, general contractors, etc.), but there's no easy way to implement it for scientific experts.**

**Which brings us to what might be the best strategy for an average person to evaluate the claims of a scientific expert:**

**5. Put your stock in a community of scientific experts—i.e., look for an scientific consensus (if it exists) rather than the opinion of a single scientist.**

**Scientific consensus is no guarantee of correctness, but a rational non-expert will usually be better served by accepting than rejecting a scientific consensus.**

**Note that a scientific consensus is merely provisional. It could be overturned.**

**Note also that when there isn't a scientific consensus, a rational non-expert will hold their beliefs on the matter with a higher degree of uncertainty.**

**For the purposes of this class, scientists are the most important kind of experts. The expert consensus of service providers rarely becomes a political controversy that people routinely reject. Scientific matters, however, sometimes do lead to widespread denial.**

**It will thus be worthwhile for us to investigate how science works as an enterprise, how to learn about a scientific consensus, and why people often refuse to accept a scientific consensus.**

**Before digging more deeply into science as an enterprise, let's examine a concrete example.**

**homeopathy: “a system of treating diseases using very small amounts of the substance that causes the disease or condition.” Can involve dilution to one part per billion or less.**

**The scientific consensus is that homeopathy doesn't work beyond placebo, and can't work. It violates the known laws of chemistry, where the dose makes the poison or treatment.**

# Lee McIntyre, Naomi Oreskes, and others: what makes science distinctive as a way of knowing?



- 1. Not the “scientific method,” which is better described as “scientific methods.”**
- 2. Instead, it’s the scientific attitude—putting your claims into the form of hypotheses that can be tested against evidence, and then revising your beliefs accordingly.**
- 3. Such an attitude includes (but goes beyond) falsifiability—the idea that scientific claims can be refuted through evidence. Ideally, a person identifies the evidence that would convince them they’re wrong.**

**4. The scientific attitude also relies on appeals to the scientific community. Individual scientists are fallible human beings. Through a rigorous process of checking each other's work, the community can arrive at provisional truth even though each scientist is flawed as a truth seeker.**

**The consensus on a given matter arises through the dialogue among scientists based on formal rules, accepted methods, sharing of data, multiple investigations of the same question, peer review, etc.**

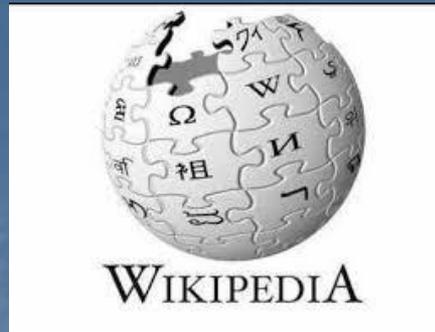
**How can we find out the current scientific consensus on a particular subject?  
Beware of Google, which will often take you to the sites of interest groups, ideological news sources, and other non-experts—all of whom claim that the science is “on their side.”**





**The best ways to learn about a scientific consensus (if it exists):**

- 1. Systematic reviews of the published, peer-reviewed scientific literature. Textbooks serve a similar purpose. Information making it into a textbook usually has a strong consensus behind it.**
- 2. The statements of scientific associations**
- 3. Wikipedia**



**Communication researcher Danah Boyd: Many students are taught to avoid Wikipedia and to instead use Google to “do your own research.”**

<https://points.datasociety.net/did-media-literacy-backfire-7418c084d88d>

## **Smith: Why we should trust Wikipedia more than whatever sites someone finds through Google**

- **Google can be a vehicle for confirmation bias and motivated reasoning.**
- **Meanwhile, Wikipedia is a decentralized system of knowledge compilation (tens of thousands of contributors), without the opportunity for cherry picking by users because each subject has one article.**
- **Wikipedia has rules to avoid “anything goes” in writing and editing.**
- **“Neutral point of view” standard. Must cite authoritative sources. No original research in the Wikipedia article itself. Goal is to describe disputes (where they exist), not engage in them.**

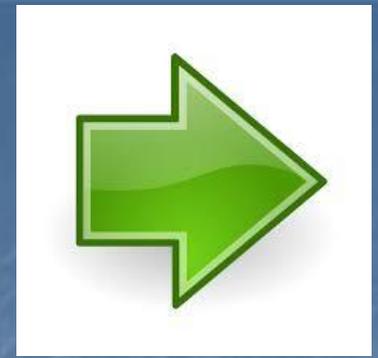
- **Wikipedia is open and transparent (can check history of every edit).**
- **Wikipedia indicates whether there is an expert or scientific consensus on a topic, or whether there are conflicting views. No false equivalence.**
- **Wikipedia changes as we gain new knowledge.**

## Some caveats:

- **Wikipedia contains only basic information. It's not a substitute for detailed study of a subject.**
- **Articles on obscure topics might have lower accuracy (fewer participants in writing and editing the articles).**
- **Articles on breaking news might have lower accuracy (it takes time for the back-and-forth that makes Wikipedia work).**
- **Wikipedia reflects the knowledge available in the wider society. It can only be as good as the knowledge that feeds into it.**



**Two important implications follow from the reliability—and limitations—of Wikipedia as an information source:**



**Implication 1A: If a Wikipedia article challenges your deeply held beliefs, you shouldn't immediately jump to the conclusion, "Wikipedia is biased." You should instead consider the possibility that *you're* biased and that you hold a false belief.**

**Implication 1B: Some of the information on Wikipedia is wrong (just like textbooks, or our best expert or scientific understandings of a subject). If you think Wikipedia is wrong on a particular matter, you could be right. But beware of our endless capacity for self-delusion.**

**Let's examine areas of scientific consensus that many people reject, starting (today) with those lacking a strong overlap with partisan and ideological orientations. Homeopathy is a prime example.**

**How do we know that homeopathic treatments do not work beyond placebo? A good source of information is Cochrane Library, which publishes systematic reviews and meta-analyses of the research on various medical treatments.**

<https://www.cochranelibrary.com/>

**We can also turn to Wikipedia for a quick summary of scientific knowledge about homeopathy.**

<https://en.wikipedia.org/wiki/Homeopathy>

**Other areas of scientific consensus that many people reject, and that don't have a strong overlap with partisan and ideological orientations:**

**alien abduction** [https://en.wikipedia.org/wiki/Alien\\_abduction](https://en.wikipedia.org/wiki/Alien_abduction)

**bigfoot** <https://en.wikipedia.org/wiki/Bigfoot>

**ESP** [https://en.wikipedia.org/wiki/Extrasensory\\_perception](https://en.wikipedia.org/wiki/Extrasensory_perception)

**astrology** <https://en.wikipedia.org/wiki/Astrology>

**AIDS not caused by HIV**

[https://en.wikipedia.org/wiki/HIV/AIDS\\_denialism](https://en.wikipedia.org/wiki/HIV/AIDS_denialism)

**mediumship** <https://en.wikipedia.org/wiki/Mediumship>

**For most of the above areas, you can find a small number of experts who reject the consensus.**

**psychics** <https://en.wikipedia.org/wiki/Psychic>

**ghosts** <https://en.wikipedia.org/wiki/Ghost>

**clairvoyance** <https://en.wikipedia.org/wiki/Clairvoyance>

**remote viewing**

[https://en.wikipedia.org/wiki/Remote viewing](https://en.wikipedia.org/wiki/Remote_viewing)

**telekinesis**

<https://en.wikipedia.org/wiki/Psychokinesis#Etymology>

**certain types of alternative medicine**

[https://en.wikipedia.org/wiki/Alternative medicine](https://en.wikipedia.org/wiki/Alternative_medicine)