

The Paradox of Consensus

June 2018

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There is no science – indeed, no knowledge generally speaking – ***without*** consensus.

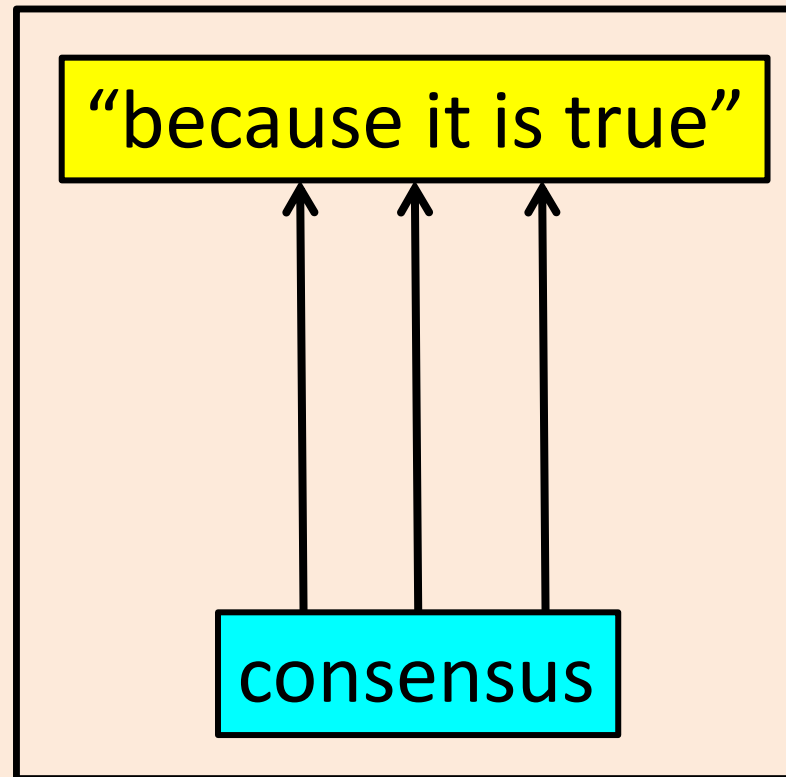
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The Paradox of Consensus

“consensus” (Latin: *consentire*,
“to feel with,” OED)

consensus: the *public expression* of belief
or opinion about some state of affairs,
assessed as the *majority view*
within a sampled population.

Why should “public expression” concern us?



Consensus as *publicly expressed* majority opinion may have causes *other* than truth.





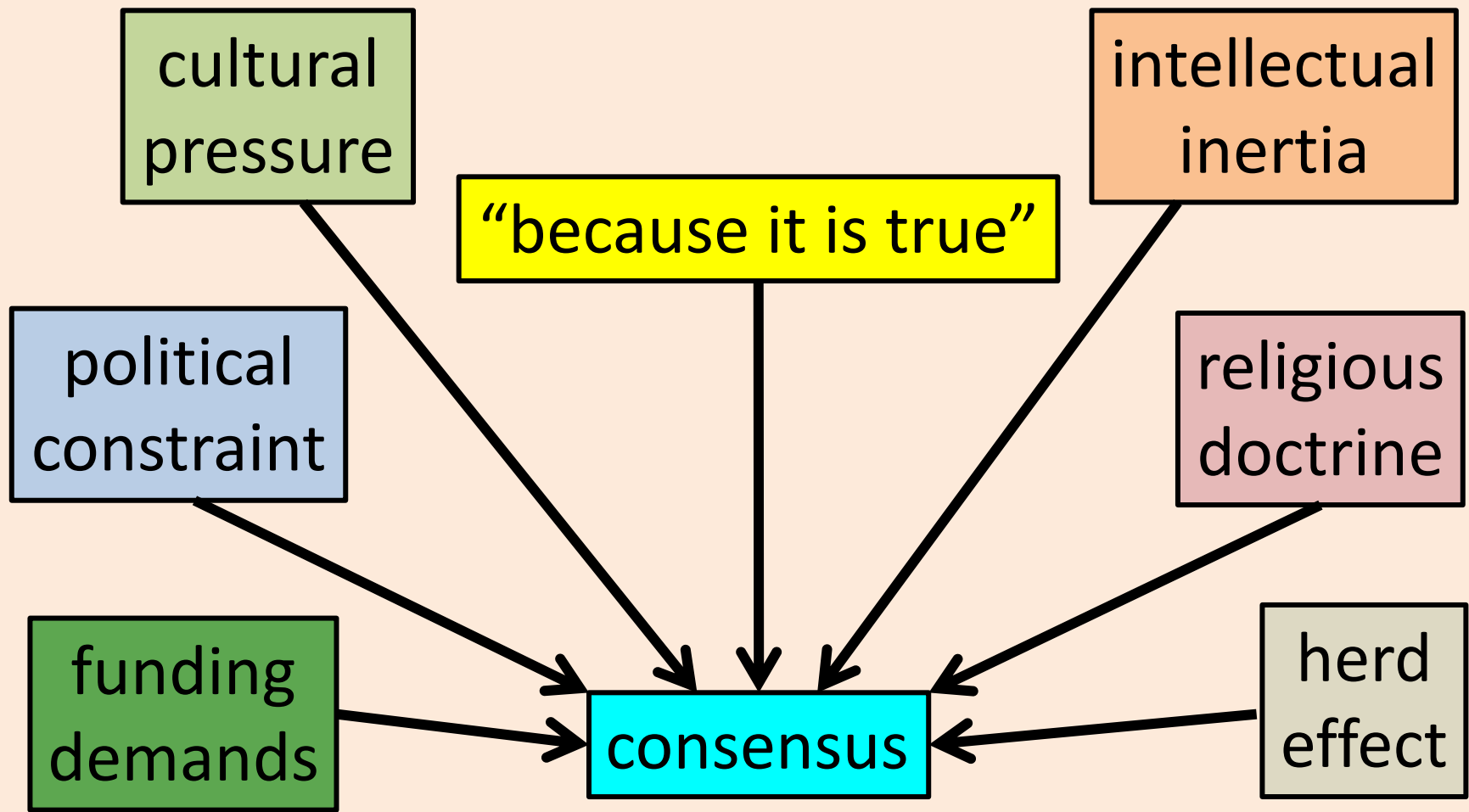




How likely is it that an epistemologist or philosopher of science, *circa* 2018, would begin his argument with this pointedly specific dedication?

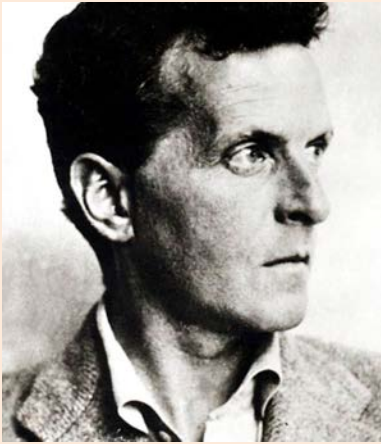
**“To the Wisest and Most Distinguished Men,
the Dean and Doctors of the Faculty of
Sacred Theology of Paris, René Descartes
Sends Greetings”**

Meditations on First Philosophy, 1641



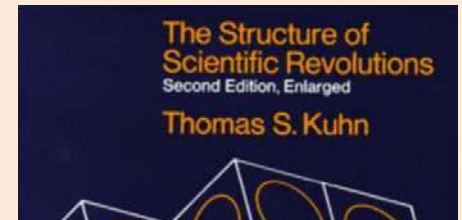
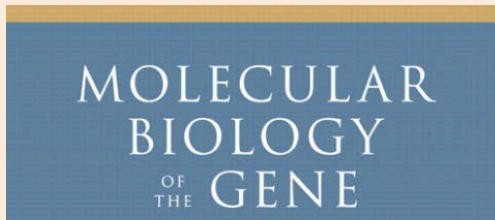
Consensus, because its possible causes are many, is at best an equivocal indicator of truth. Majority opinion is only that: what most people *think* about something.

And yet...

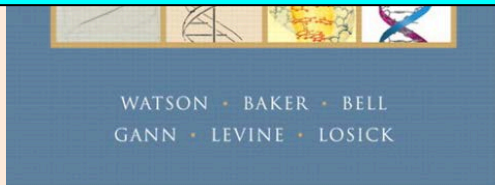


“Something must be taught us
as a foundation.”

L. Wittgenstein, *On Certainty* (449)



There is no science – indeed, no knowledge
generally speaking – ***without*** consensus.



“because X is true”

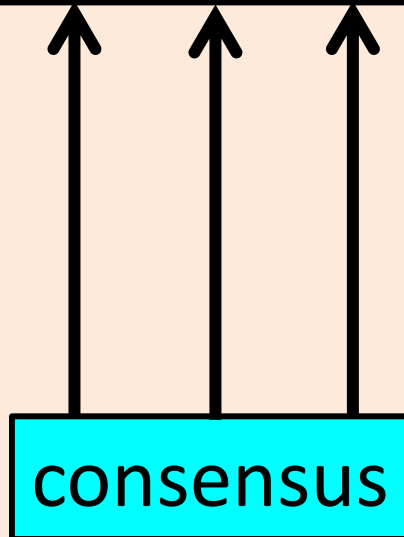


consensus

Ideally, consensus would represent the downstream social consequence of finding truth.

TRUST THE CONSENSUS:

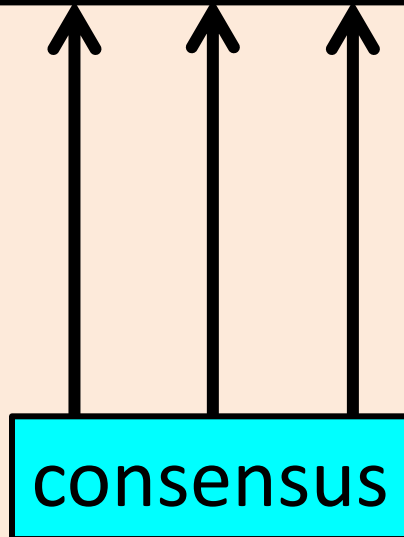
“Those who are smarter and better informed than you *know what is true.*”



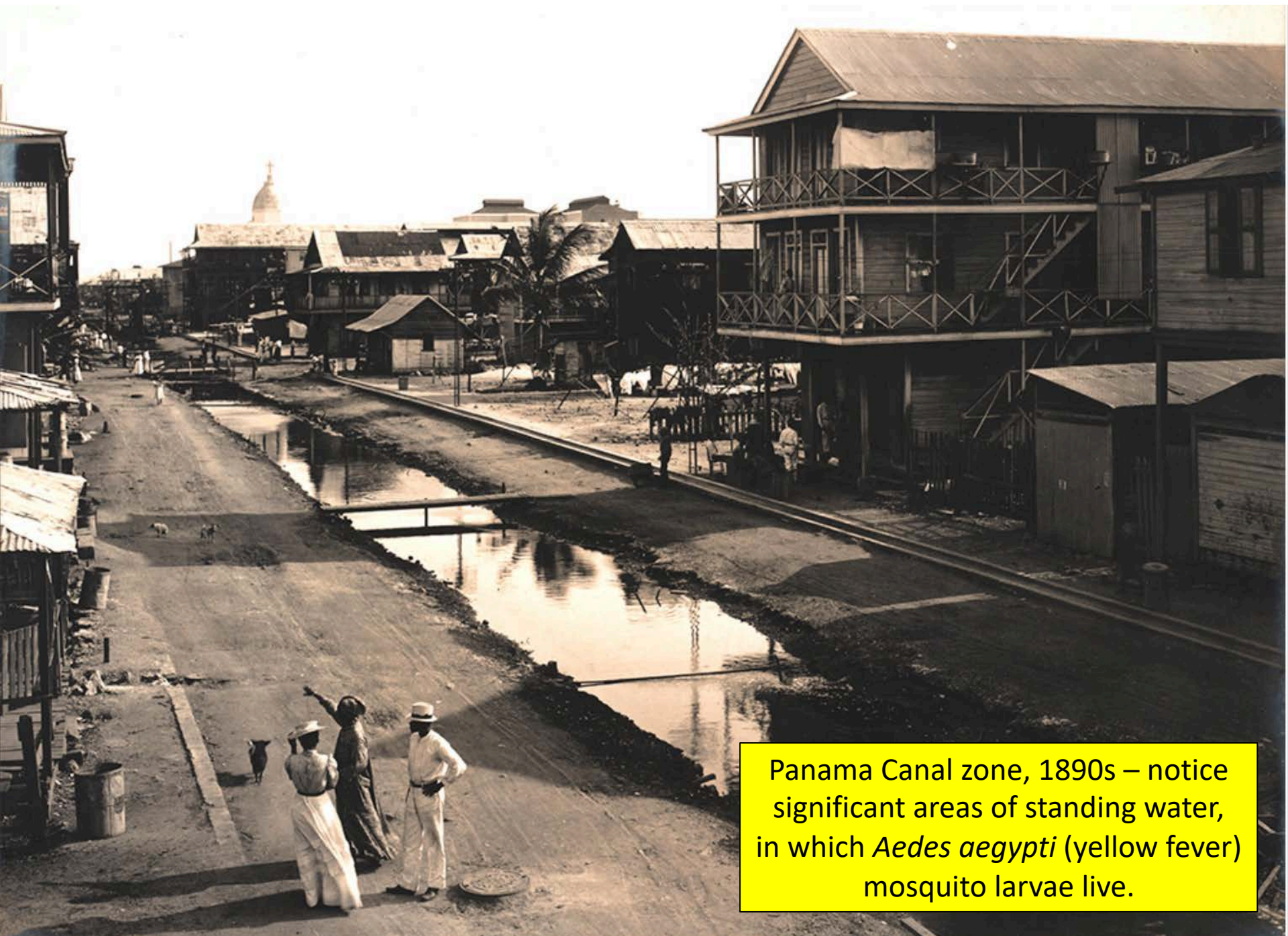
This arrow (direction) of epistemic support, however, *cannot be turned around* – to do so would be affirming the consequent, a fallacy.

TRUST THE CONSENSUS:

“Those who are smarter and better informed than you *know what is true.*”



There can be no science – indeed, no knowledge generally speaking – **with** consensus, *if finding new knowledge requires breaking with the consensus*, but one must “follow the consensus” or risk exclusion.



Panama Canal zone, 1890s – notice significant areas of standing water, in which *Aedes aegypti* (yellow fever) mosquito larvae live.

...when Reed presented the mosquito theory to a Public Health Association meeting...in November 1900 he was greeted by a stony silence, followed by scathing criticism. The *Washington Post* was condemning in its report of the new theory: “Of all the silly and nonsensical rigmarole about yellow fever that has yet found its way into print – and there has been enough of it to load a fleet – **the silliest beyond compare is to be found in the mosquito hypothesis.**”

Matthew Parker, *Panama Fever* (2009, 289; emphasis added)



Alfred Wegener (1880-1930)

Theory of continental drift (1912, 1929)





Alfred Wegener (1880-1930)

Theory of continental drift (1912, 1929)



George Gaylord
Simpson
(1902-1984)
American
Museum of
Natural
History

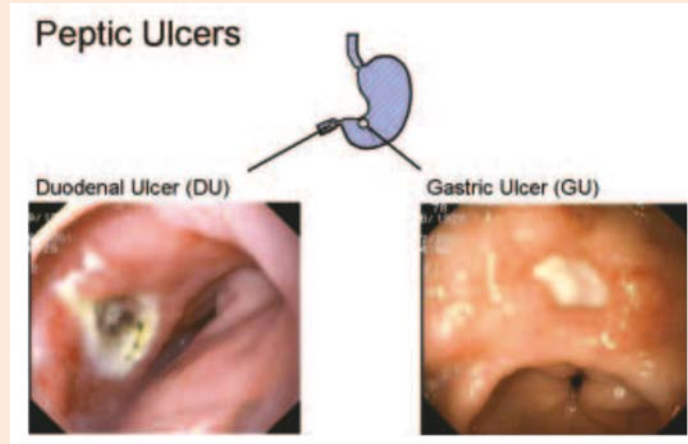
“The fact that almost all paleontologists say that paleontological data oppose the various theories of continental drift should, perhaps, obviate further discussion of this point and would do so were it not that the adherents of these theories all agree that paleontological data do support them. It must be almost unique in scientific history for a group of students admittedly without special competence in a given field thus to reject the all but unanimous verdict of those who do have such competence.”

G.G. Simpson, “Mammals and the Nature of Continents,” *American Journal of Science* 243 (1943):1-31.

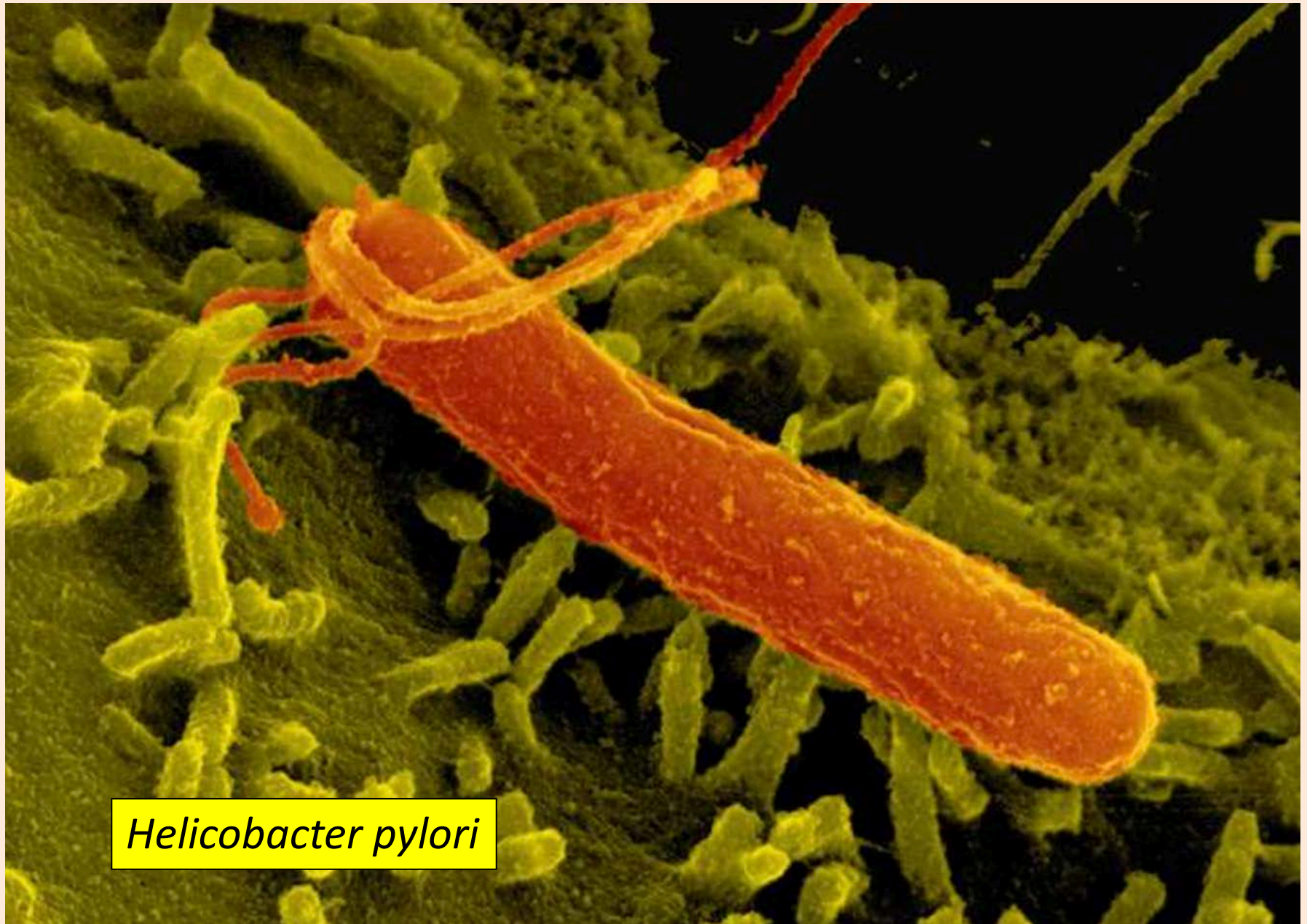


Barry Marshall, MD

“BUT WE ALREADY KNOW...”



“...in 1982 the cause of peptic ulcers was ‘already known’. Ulcers were caused by excessive amounts of acid secondary to personality, stress, smoking, or an inherited tendency.”

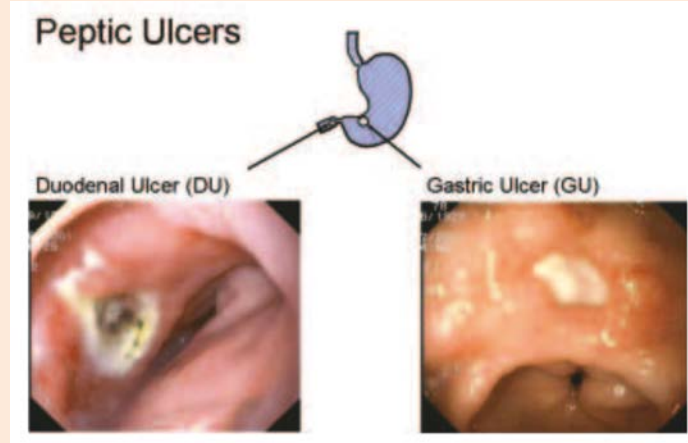


Helicobacter pylori



Barry Marshall, MD

“BUT WE ALREADY KNOW...”



“Thus, when *Helicobacter* was revealed, doctors were not looking for a new cause of peptic ulcers, *that territory had already been taken by the illusion of knowledge.*”



Barry Marshall, MD

“BUT WE ALREADY KNOW...”

“I realized then that the medical understanding of ulcer disease was akin to a religion. ***No amount of logical reasoning could budge what people knew in their hearts to be true.*** Ulcers were caused by stress, bad diet, smoking, alcohol and susceptible genes. ***A bacterial cause was preposterous.***”

B. J. Marshall, *Nobel Lecture in Physiology or Medicine*, 2005 (p. 267; emphasis added)

The promoter of the regulative role of consensus now raises his hand:

“Your citation from Barry Marshall on the last slide, Paul, yields up the game. *Marshall won the Nobel Prize in Medicine in 2005.* So how obstructive could the scientific consensus really have been?”

“For that matter, Walter Reed soon triumphed over his epidemiology opponents, and was honored by having his name given to a major federal hospital.”

“And, just 25 years after Simpson’s condemnation, continental motion via plate tectonics became the new orthodoxy in historical geology.”

Reed, Marshall, and the proponents of plate tectonics won their place in our knowledge, not *because* of the consensus, but *despite* it.

EVIDENCE

1. LEARN and understand the consensus (deeply).
2. WATCH for evidence contradicting the consensus.
3. DEFY the consensus, which may be personally costly.

**A troubling thought
experiment about
consensus – “the herd
effect” – from the late
Cornell physicist
Thomas Gold (1920-2004)**

**Or how being perfectly moderate
and reasonable can create
near-uniformity of opinion, in the
total absence of new evidence
or solutions to unsolved problems.**



“New ideas in science,” *Journal of Scientific Exploration* 3 (1989):103-112.

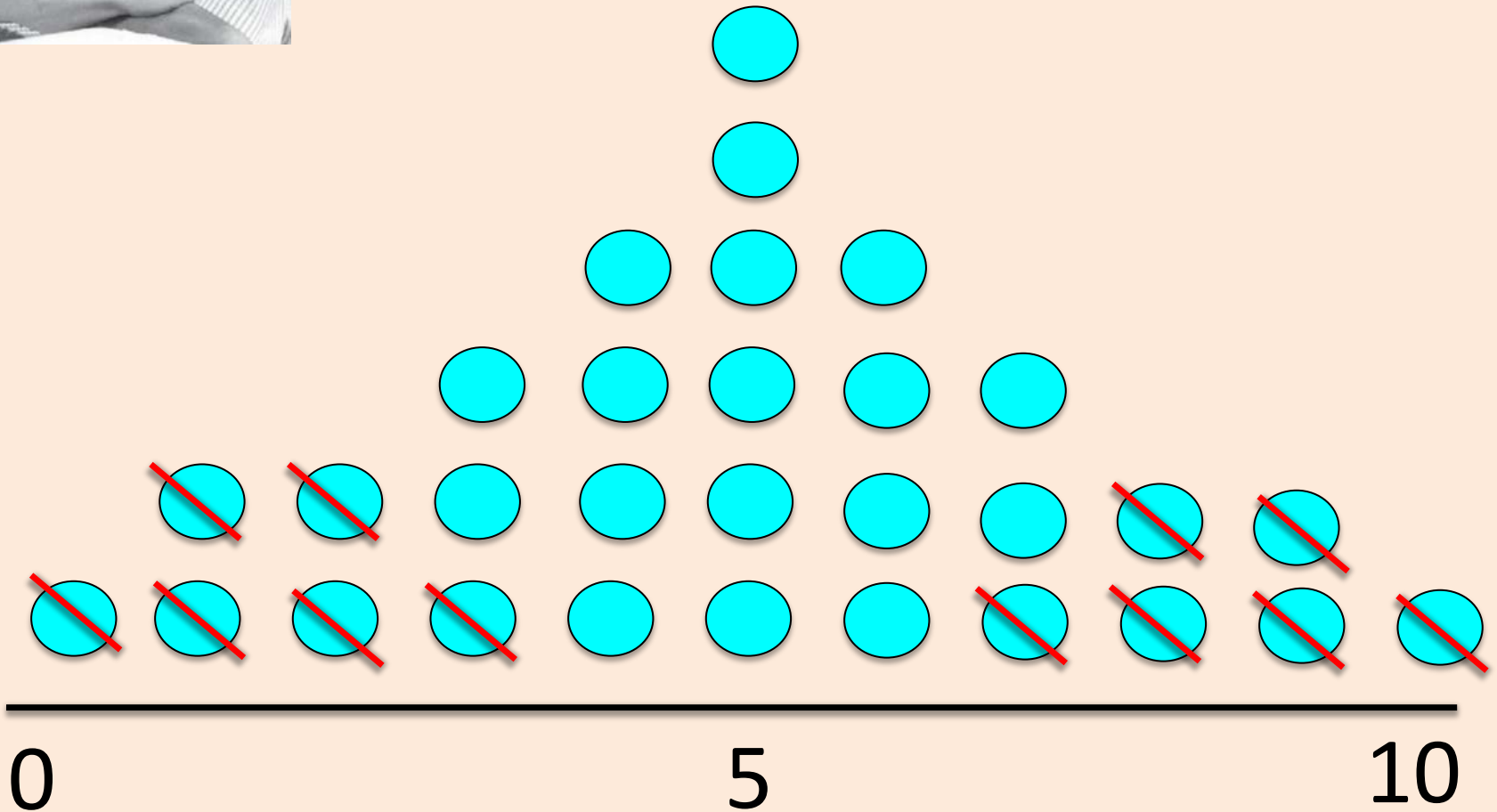
Thomas Gold (Physics, Cornell University)

Imagine answering the question, **“How likely is it that currently dominant theory *Y* will continue to govern the research conducted in scientific field *Z*?”**

Give your answer as a number between **0** (that is, *the pending total failure of *Y**) and **10** (i.e., *the confirmation of *Y* by all new data, indefinitely into the future*).



“New ideas in science,” *Journal of Scientific Exploration* 3 (1989):103-112.





“New ideas in science,” *Journal of Scientific Exploration* 3 (1989):103-112.

“Each round of decision making has the consequence of essentially taking the initial curve and multiplying it by itself. Now we understand the mathematical consequence of taking a shallow curve and multiplying it by itself a large number of times. What happens? In the mathematical limit it becomes a delta function at the value of the initial peak.”



“New ideas in science,” *Journal of Scientific Exploration* 3 (1989):103-112.

“If you go for long enough, you will have created the appearance of unanimity. It will look as if you have solved the problem because all agree, and of course you have got absolutely nothing.”



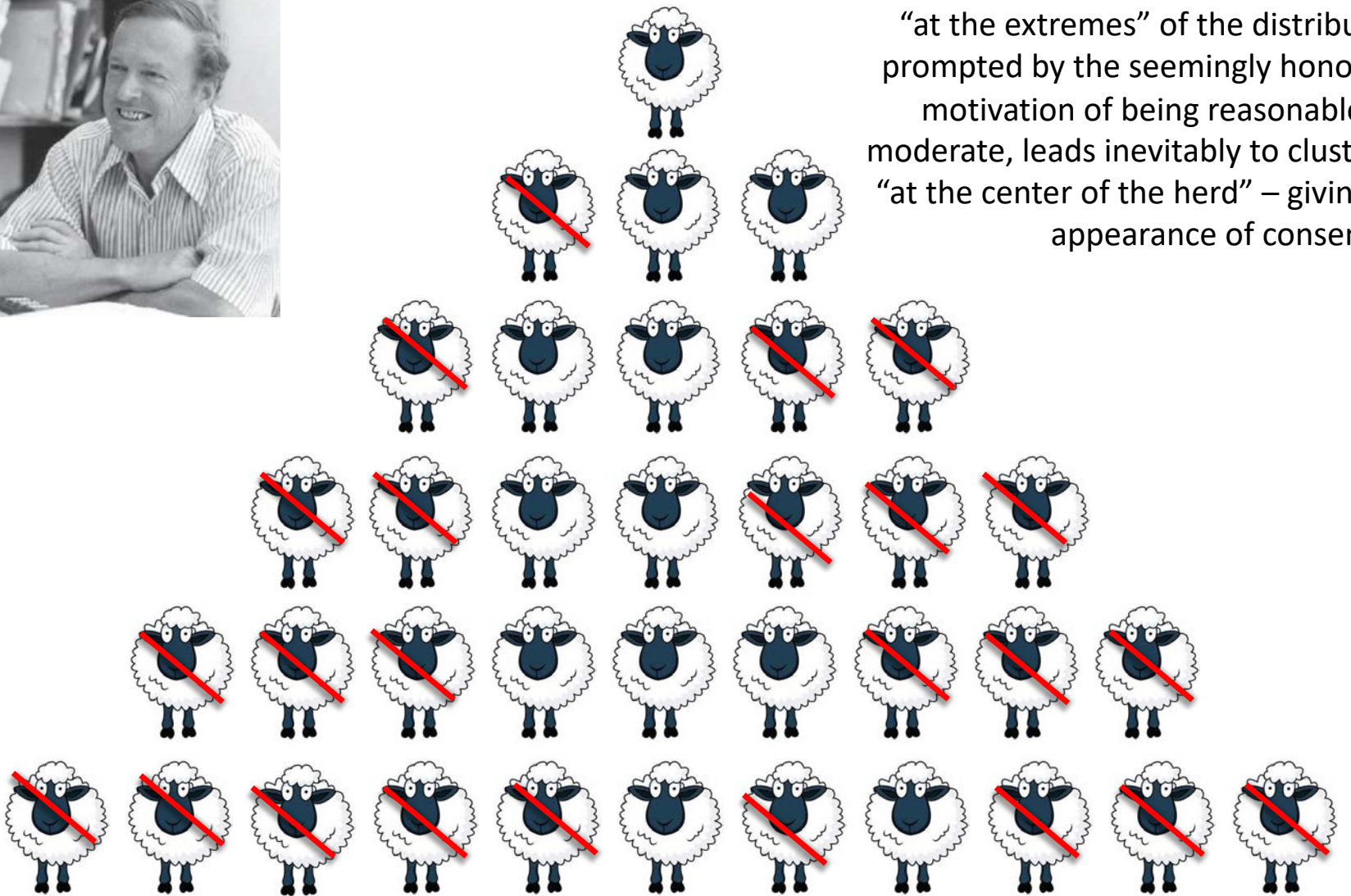
“New ideas in science,” *Journal of Scientific Exploration* 3 (1989):103-112.



**“If one stays with the herd, then mostly there is no [risk].
‘Yes, I believe that because *doesn't everybody else believe that?*’
That is enough justification. It isn't to me, but it is to very many
other people. The sheep in the interior of the herd are well
protected from the bite in the ankle by the sheep dog.”**



The gradual extinction of opinion
“at the extremes” of the distribution,
prompted by the seemingly honorable
motivation of being reasonable and
moderate, leads inevitably to clustering
“at the center of the herd” – giving the
appearance of consensus.



0

5

10

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