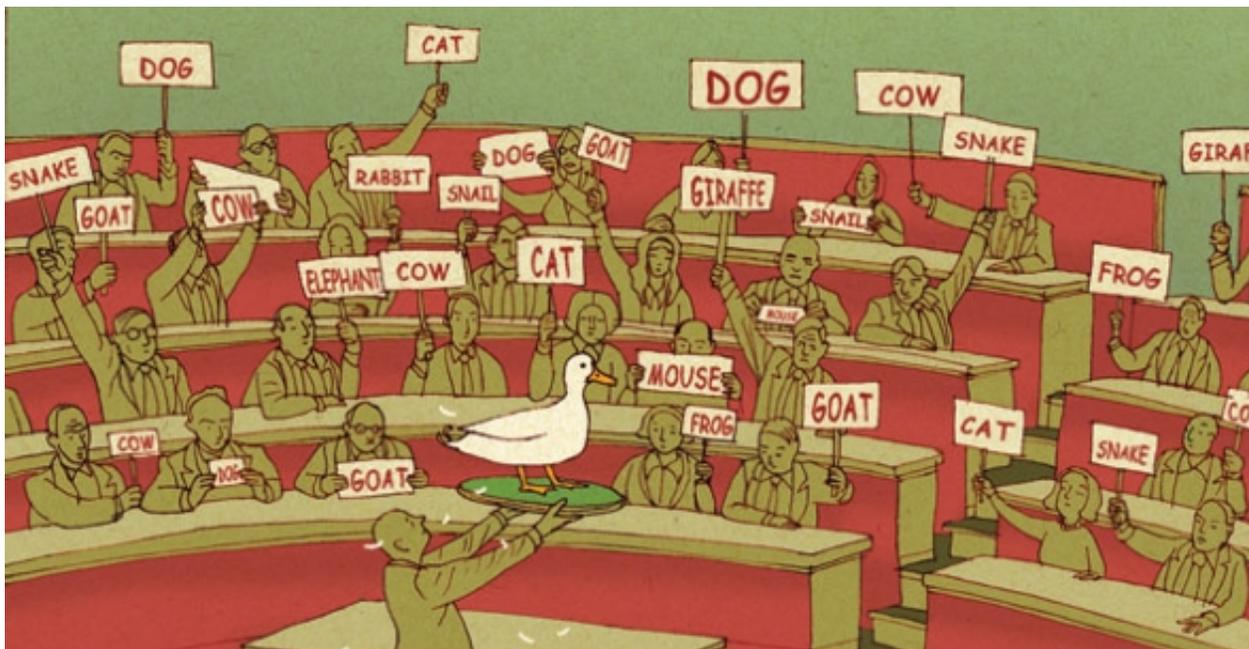


BEHAVIOR & SOCIETY

Why Climate Skeptics Are Wrong

Or why climate skeptics are wrong

By Michael Shermer on December 1, 2015





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At some point in the history of all scientific theories, only a minority of scientists—or even just one—supported them, before evidence accumulated to the point of general acceptance. The Copernican model, germ theory, the vaccination principle, evolutionary theory, plate tectonics and the big bang theory were all once heretical ideas that became consensus science. How did this happen?

An answer may be found in what 19th-century philosopher of science William Whewell called a “consilience of inductions.” For a theory to be accepted, Whewell argued, it must be based on more than one induction—or a single generalization drawn from specific facts. It must have multiple inductions that converge on one another, independently but in conjunction. “Accordingly the cases in which inductions from classes of facts altogether different have thus *jumped together*,” he wrote in his 1840 book *The Philosophy of the Inductive Sciences*, “belong only to the best established theories which the history of science contains.” Call it a “convergence of evidence.”

Consensus science is a phrase often heard today in conjunction with anthropogenic global warming (AGW). Is there a consensus on AGW? There is. The tens of thousands of scientists who belong to the American Association for the Advancement of Science, the American Chemical

Society, the American Geophysical Union, the American Medical Association, the American Meteorological Society, the American Physical Society, the Geological Society of America, the U.S. National Academy of Sciences and, most notably, the Intergovernmental Panel on Climate Change all concur that AGW is in fact real. Why?

It is not because of the sheer number of scientists. After all, science is not conducted by poll. As Albert Einstein said in response to a 1931 book skeptical of relativity theory entitled *100 Authors against Einstein*, “Why 100? If I were wrong, one would have been enough.” The answer is that there is a convergence of evidence from multiple lines of inquiry—pollen, tree rings, ice cores, corals, glacial and polar ice-cap melt, sea-level rise, ecological shifts, carbon dioxide increases, the unprecedented rate of temperature increase—that all converge to a singular conclusion. AGW doubters point to the occasional anomaly in a particular data set, as if one incongruity gainsays all the other lines of evidence. But that is not how science works. For AGW skeptics to overturn the consensus, they would need to find flaws with all the lines of supportive evidence *and* show a consistent convergence of evidence toward a different theory that explains the data. (Creationists have the same problem overturning evolutionary theory.) This they have not done.

A 2013 study published in *Environmental Research Letters* by Australian researchers John Cook, Dana Nuccitelli and their colleagues examined 11,944 climate paper abstracts published from 1991 to 2011. Of those papers that stated a position on AGW, about 97 percent concluded that climate change is real and caused by humans. What about the remaining 3 percent or so of studies? What if they're right? In a 2015 paper published in *Theoretical and Applied Climatology*, Rasmus Benestad of the

Norwegian Meteorological Institute, Nuccitelli and their colleagues examined the 3 percent and found “a number of methodological flaws and a pattern of common mistakes.” That is, instead of the 3 percent of papers converging to a better explanation than that provided by the 97 percent, they failed to converge to anything.

“There is no cohesive, consistent alternative theory to human-caused global warming,” Nuccitelli concluded in an August 25, 2015, commentary in the *Guardian*. “Some blame global warming on the sun, others on orbital cycles of other planets, others on ocean cycles, and so on. There is a 97% expert consensus on a cohesive theory that's overwhelmingly supported by the scientific evidence, but the 2–3% of papers that reject that consensus are all over the map, even contradicting each other. The one thing they seem to have in common is methodological flaws like cherry picking, curve fitting, ignoring inconvenient data, and disregarding known physics.” For example, one skeptical paper attributed climate change to lunar or solar cycles, but to make these models work for the 4,000-year period that the authors considered, they had to throw out 6,000 years' worth of earlier data.

Such practices are deceptive and fail to further climate science when exposed by skeptical scrutiny, an integral element to the scientific process.