

The material below concerning how scientific knowledge is determined was drawn from the report [Greenhouse Gases and Fossil Fuels Climate Science](#) (4/28/25).

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II. SCIENTIFIC KNOWLEDGE IS DETERMINED BY THE SCIENTIFIC METHOD, VALIDATING THEORETICAL PREDICTIONS WITH OBSERVATIONS, NOT BY GOVERNMENT OPINION, CONSENSUS, 97% OF SCIENTISTS' OPINIONS, PEER REVIEW, MODELS THAT DO NOT WORK, OR CHERRY-PICKED, FABRICATED, FALSIFIED OR OMITTED CONTRADICTIONARY DATA

A. Scientific Knowledge is Determined by the Scientific Method

As scientists, we totally agree with the Supreme Court: “‘scientific knowledge’ ... must be derived by the scientific method.” *Daubert v. Merrell Pharmaceuticals, Inc.*, 509 U.S. 579, 593 (1993).

What is the scientific method? Prof. Richard Feynman, a Nobel Laureate in Physics, provided an incisive definition:

"[W]e compare the result of [a theory's] computation to nature, ... compare it directly with observations, to see if it works. If it disagrees with experiment, it is wrong. In that simple statement is the key to science." *The Character of Physical Law* (1965), p. 150.

Agreement with observations is the measure of scientific truth. Scientific progress proceeds by the interplay of theory and observation. Theory explains observations and makes predictions of what will be observed in the future. Observations anchor understanding and weed out the theories that do not work. This has been the scientific method for more than four hundred years.

In short, "Progress often involves the killing of an exquisite theory by an ugly fact." Leon Lederman, a Nobel Laureate in Physics, *The God Particle* (1993), p. 256.

Historically, it is helpful to understand how 400 years ago the scientific method was invented and how it differed fundamentally from other common methods of thinking:

The scientific method "is a vehement and passionate interest in the relation of general principles to irreducible and stubborn facts. All the world over and at all times there have been practical men, absorbed in 'irreducible and stubborn facts;' all the world over and at all times there have been men of philosophic temperament who have been absorbed in the weaving of general principles. It is this union of passionate interest in the detailed facts with equal devotion to abstract generalization which forms the novelty in our present society." Alfred North Whitehead, *Science and the Modern World* (1925), p. 3.

Also by contrast, the scientific method totally differs from a method of analysis that is commonly used in climate science as shown below: ignoring contradictory facts and science, and

changing the facts to support a theory so it is not rejected. Both are egregious violations of the scientific method.

It is astounding that one of the most complex questions in physics (namely, the behavior of a multi-phase, radiatively active, turbulent fluid) should be labeled by the government — and funding agencies it controls — to be so settled that skeptics are silenced. The models supporting the climate-crisis narrative make predictions that utterly fail to match the observations of what they purport to predict. This failure means in science they should never be used. Unfortunately, this peculiar situation is particularly dangerous because many world leaders have abandoned the science and intellectual rigor bequeathed to us by the Enlightenment and its forebears.

Thus, the scientific method is very simple and very profound.

Does the theory work with observations? If not, it is rejected and not used.

B. Scientific Knowledge is Not Determined By Unscientific Sources

1. Government Opinion

Nobel physicist Richard Feynman put it unambiguously:

"No government has the right to decide on the truth of scientific principles."¹

The importance of the scientific principle that government does not determine science was chillingly underscored in Russia under Stalin and recently in Sri Lanka.

In Russia, Stalin made Trofim Lysenko the czar of Russian biology and agriculture. His false biology, which rejected well-established genetic science, prevailed for 40 years in the Soviet Union because Lysenko gained dictatorial control, providing one of the most thoroughly documented and horrifying examples of the politicization of science. Lysenko was strongly supported by "scientists" who benefitted from his patronage. Millions died because of his ruthless campaign against genetic science in agriculture.²

Recently in Sri Lanka, one of us (Happer) explained:

"Ideologically driven government mandates on agriculture have usually led to disaster...The world has just witnessed the collapse of the once bountiful agricultural sector of Sri Lanka as a result of government restrictions on mineral [nitrogen] fertilizer."³

2. Consensus and 97% of Scientists' Opinions

What is correct in science is not determined by consensus, and 97% of scientist's opinions⁴, but by experiment and observations. Historically, the consensus of scientists has often turned out

¹ Richard Feynman, *The Meaning of It All* p. 57 (1998).

² William Happer, Chapter 1, Michael Gould. *Politicizing Science* pp. 29–35 (2003).

³ William Happer, et al., *Nitrous Oxide and Climate*, CO2 Coalition (Nov. 10, 2022), p. 39 (emphasis added).

⁴ Importantly, note the 97% number is false. "The figure of 97% is entirely discredited." Andrew Montford, *Fraud, Bias and Public Relations: The 97% 'Consensus' and its Critics*, Global Warming Policy Foundation (2014), p. 12.

to be wrong. Many of the greatest scientists in history are great precisely because they broke with consensus. To quote the profoundly true observation of Michael Crichton:

"Historically, the claim of consensus has been the first refuge of scoundrels...If it is consensus, it isn't science. If it's science, it isn't consensus."⁵

In science, however, consensus and 97% of scientists' opinions are not the test. The test is the scientific method, testing theory with observations, and rejecting theories not validated by observations.

3. Peer Review

Peer review can be helpful in many areas of science, but it does not determine scientific validity.

In our decades of personal experience in the field, we have been dismayed that many distinguished scientific journals now have editorial boards that further the agenda of climate-change alarmism rather than objective science. Research papers with scientific findings contrary to the dogma of climate calamity are commonly rejected by peer reviewers, many of whom fear that their research funding will be cut if any doubt is cast on the looming climate catastrophe. Journal editors have been fired for publishing papers that go against the party line of the climate-alarm establishment.⁶

We also have been dismayed by the trillions of dollars that have been spent on one-sided research predicting catastrophic climate change. Dr. Harold Lewis, a distinguished physics professor, bluntly described this reality:

"The global warming scam, with the (literally) trillions of dollars driving it ... has corrupted so many scientists ... It is the greatest and most successful pseudoscientific fraud I have seen in my long life as a physicist."⁷

Peer-reviewed climate science publications should not be viewed as reliable science and do not determine scientific validity. All must be ultimately tested by the scientific method and rejected if their theories are not validated by observations.

4. Models That Do Not Work

Models are a type of theory; they predict physical observations. The scientific method requires models to be tested by observations to see if they work. If a model's prediction disagrees with observations of what it purports to predict, it is wrong and never used as science. The models supporting the climate-crisis narrative simply do not align with observations of the phenomena they are supposedly designed to predict. Instead, they consistently overestimate the warming effect of CO₂ emissions, often predicting two or three times more warming than has been observed, detailed below.

⁵ Michael Crichton, *Aliens Cause Global Warming*, Caltech Michelin Lecture (Jan. 17, 2003).

⁶ Richard Lindzen, *Climate of Fear*, *Wall Street Journal* (Apr. 12, 2006).

⁷ Harold Lewis, October 6, 2010 resignation letter to the American Physical Society.

5. Cherry-Picked, Fabricated, Falsified or Omitted Contradictory Data

Since theories are tested with observations, fabricating data, falsifying data, and omitting contradictory facts to make a theory work is an egregious violation of the scientific method.⁸

Richard Feynman stated this fundamental principle of the scientific method:

"If you're doing an experiment, you should report everything that you think might make it invalid – not only what you think is right about it.... Details that could throw doubt on your interpretation must be given, if you know them."⁹

In Albert Einstein's words: "The right to search for truth implies also a duty; one must not conceal any part of what one has recognized to be true."¹⁰

One of us (Lindzen) observes: "Misrepresentation, exaggeration, cherry-picking, or outright lying pretty much covers all the so-called evidence" marshalled in support of the Net Zero Theory.¹¹

In summary, scientific knowledge is determined by the scientific method, testing theory with observations, not by government opinion, consensus, peer review or cherry-picked, fabricated, falsified or omitting contradictory data.

⁸ David Goodstein, *On Fact and Fraud* p. 135 (2010). "Fabrication is making up data or results," "falsification is ... changing or omitting data or results."

⁹ Richard Feynman, *Surely You're Joking, Mr. Feynman!* pp. 311–312 (1985).

¹⁰ Albert Einstein, *The Ultimate Quotable Einstein* p. 480 (2010).

¹¹ Richard Lindzen, *Global Warming for the Two Cultures, Global Warming Policy Foundation* 10 (2018).