

The Integrity of Science: Identifying Logical Fallacies, Deceitful Tactics, and Abuse of the Public Trust

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Dr. Peter H. Gleick
Pacific Institute, Oakland,
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What is the role of science in policy?

- ◆ Good policy without good science and analysis is ... unlikely.
- ◆ Good policy with *bad* science is even more unlikely.
- ◆ The integrity of science is key.
- ◆ There is a long history of abuse or misuse of science.

Categories of Challenges to the Integrity of Science

- ◆ Logical Fallacies
- ◆ Abuse of the Scientific Process
- ◆ Funding Integrity and Independence

www.integrityofscience.org

Logical Fallacies

- ◆ A pattern of reasoning that is always -- or at least commonly -- wrong due to a flaw in the structure of the argument that renders the argument invalid.

Common Logical Fallacies

- ◆ Arguments from Ignorance
- ◆ Arguments from Error
- ◆ Arguments from Misinterpretation
- ◆ Arguments from Ideology
 - Personal Belief
 - Personal Incredulity
 - Tradition
- ◆ Arguments from Consensus
- ◆ Arguments from Appeal to Authority

Arguments from Ideology

- ◆ Very common.
- ◆ Often rooted in religious or political ideology.
 - Galileo
 - Modern literalists
 - Creationism
 - Intelligent design
 - Lysenkoism

Arguments from Consensus

- ◆ Is climate change a very serious problem because the vast majority of climate scientists believe that it is?

No, this is backwards...

- ◆ The vast majority of climate scientists think that climate change is a very serious problem because the science has convinced them that it is.

...and it could still be wrong: The consensus is not what gives power to the conclusion.

Arguments from Consensus

- ◆ “...over 17,000 scientists declare that global warming is a lie with no scientific basis whatsoever.”

Oregon Institute of Science and Medicine Petition project

Abuse of the Scientific Process

- ◆ Appeal to emotion
- ◆ Personal/ad hominem attacks
- ◆ Straw man arguments
- ◆ Misuse of facts; Selective use of facts
- ◆ Misuse of uncertainty
- ◆ Inappropriate generalizations
- ◆ Falsification; Suppression
- ◆ Manipulation of the scientific process
- ◆ Bullying of scientists

Appeal to Emotion; Ad Hominem and Personal Attacks

- ◆ Global warming is "unproven, at best, and liberal claptrap, at worst." **Congressman D. Rohrabacher (1995)**
- ◆ Global warming is "the greatest hoax ever perpetrated on the American people." **Senator J. Inhofe (2005)**
- ◆ Al Gore can't be trusted on climate change because he lives an energy-intensive lifestyle. **The National Center for Public Policy Research (2006)**
- ◆ "Scientists have ideologies. They are politicized." **Peggy Noonan, Wall Street Journal (2006)**

Misuse of Uncertainty

- ◆ “Should the public come to believe that the scientific issues are settled, their views about global warming will change accordingly. Therefore, *you need to continue to make the lack of scientific certainty a primary issue in the debate*”

“Winning the Global Warming Debate: An Overview”
2002 Memo for GOP Congressional Candidates,
Luntz Research Companies (*italics added*)

At What Point Does Science Become Sufficient for Policymaking? [Tobacco and Cancer]

- ◆ “Cigarette smoking is the chief, single, avoidable cause of death in our society, and the most important public health issue of our time.”



Report of the U.S. Surgeon-General. 1982. The Health Consequences of Smoking: Cancer, p. xi.

Tobacco: Argument from Ideology; Misuse of Uncertainty; Misuse of Facts;...

- ◆ “The view that smoking causes specific diseases remains an opinion or a judgement, and not an established scientific fact.”

Tobacco Institute of Hong Kong, **1989**

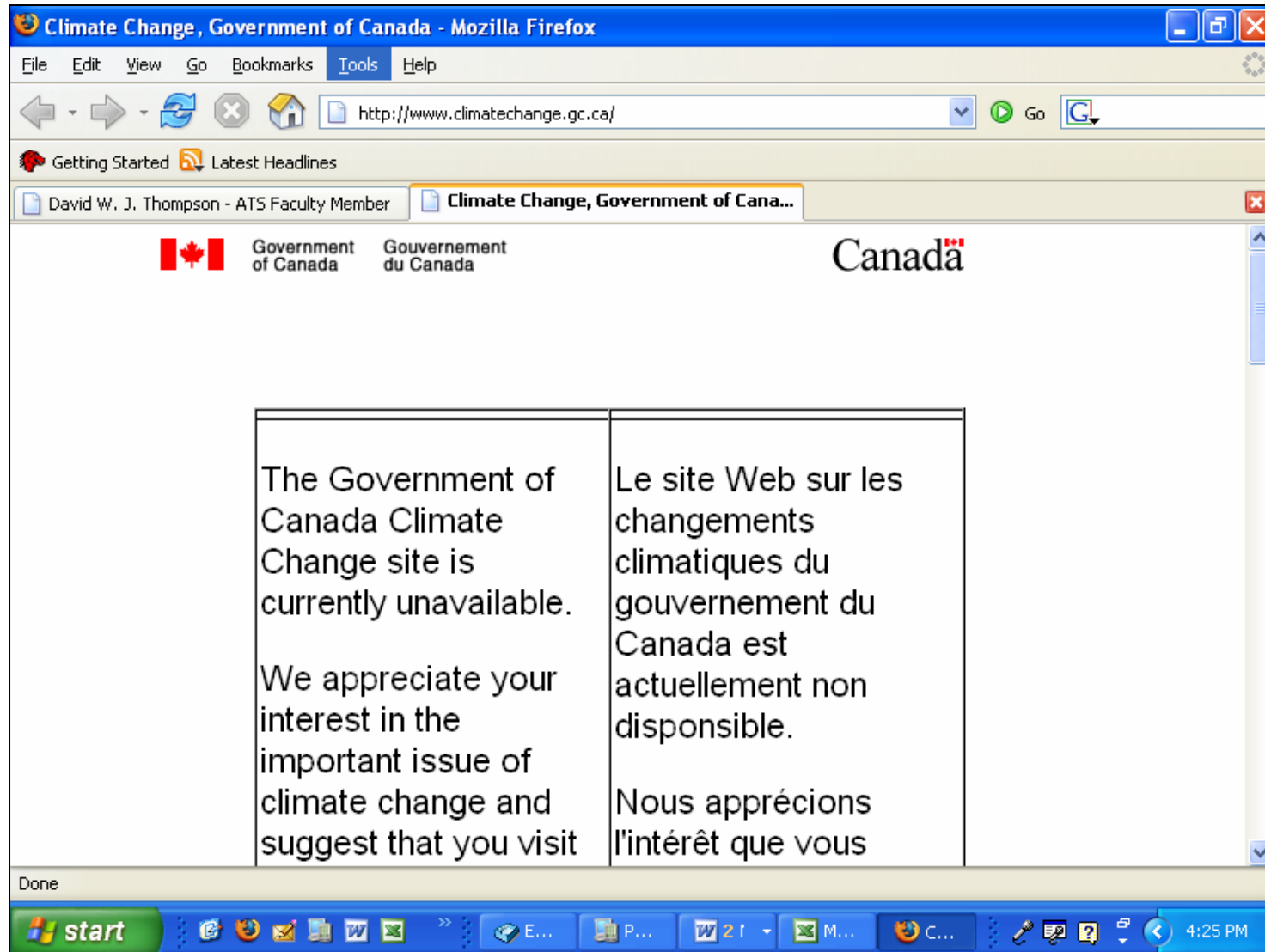
- ◆ “I'm unclear in my own mind whether anyone dies of cigarette smoking-related diseases.” Testimony of G. Bible, CEO Philip Morris, **1996**.

Science Policy Misconduct

- ◆ Packing, eliminating, or ignoring advisory boards
 - Abolishment of NNSA Advisory Board; sidetracking of EPA independent science review boards
- ◆ Imposing litmus tests
 - Demanding political affiliations, voting and donor records
- ◆ Suppressing information
 - The National Assessment on climate
- ◆ Bullying scientists
 - Galileo
 - Misplaced Congressional hearings
 - Threatening letters to critics of “skeptics”

Abuse of Scientific Process

Suppression of Information



Web page as of June 30, 2006, snapshot taken Jul 27, still unavailable Dec 8th.

Suppression of Information: The U.S. National Assessment reports

- ◆ Federal Law mandates scientific assessments of the potential consequences of global change for the United States “on a periodic basis (not less frequently than every 4 years).”

The "Global Change Research Act of 1990" (P.L. 101-606).

- ◆ The first Assessment was released in 2000.
- ◆ No new national assessment is underway.

Suppression of Information: The U.S. National Assessment reports

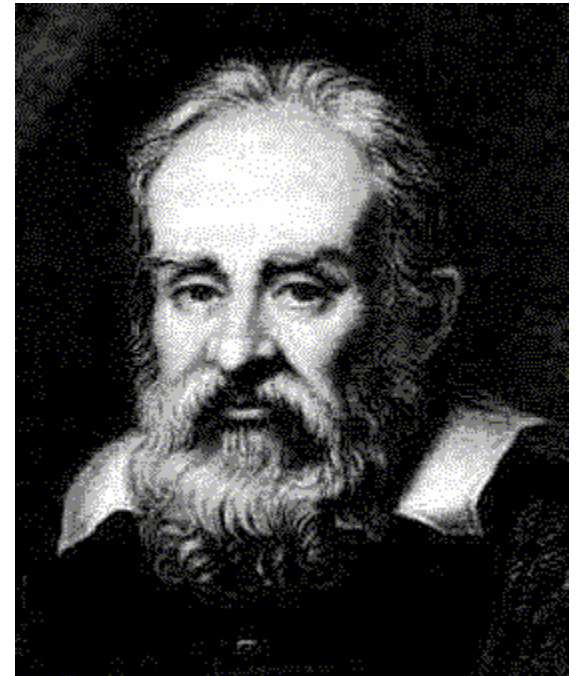
- ◆ The Competitive Enterprise Institute filed a lawsuit in 2003 in an attempt to suppress the 2000 U.S. National Assessment on climate. [*This suit was “dismissed with prejudice.”*]

Competitive Enterprise Institute v. George Bush, Complaint For Declarative Relief, *Stipulation of Dismissal with Prejudice*, No. 1:03CV1670 RJL (D.D.C. Nov. 4, 2003).

Political or Ideological Bullying of Scientists

- ◆ Galileo is ordered to:
“relinquish altogether the said opinion, namely, that the sun is the centre of the universe and immovable, and that the earth moves; nor henceforth to hold, teach, or defend it anyway, either verbally or in writing.”

Cardinal Bellarmine in the name of Pope Paul V (1550-1621)

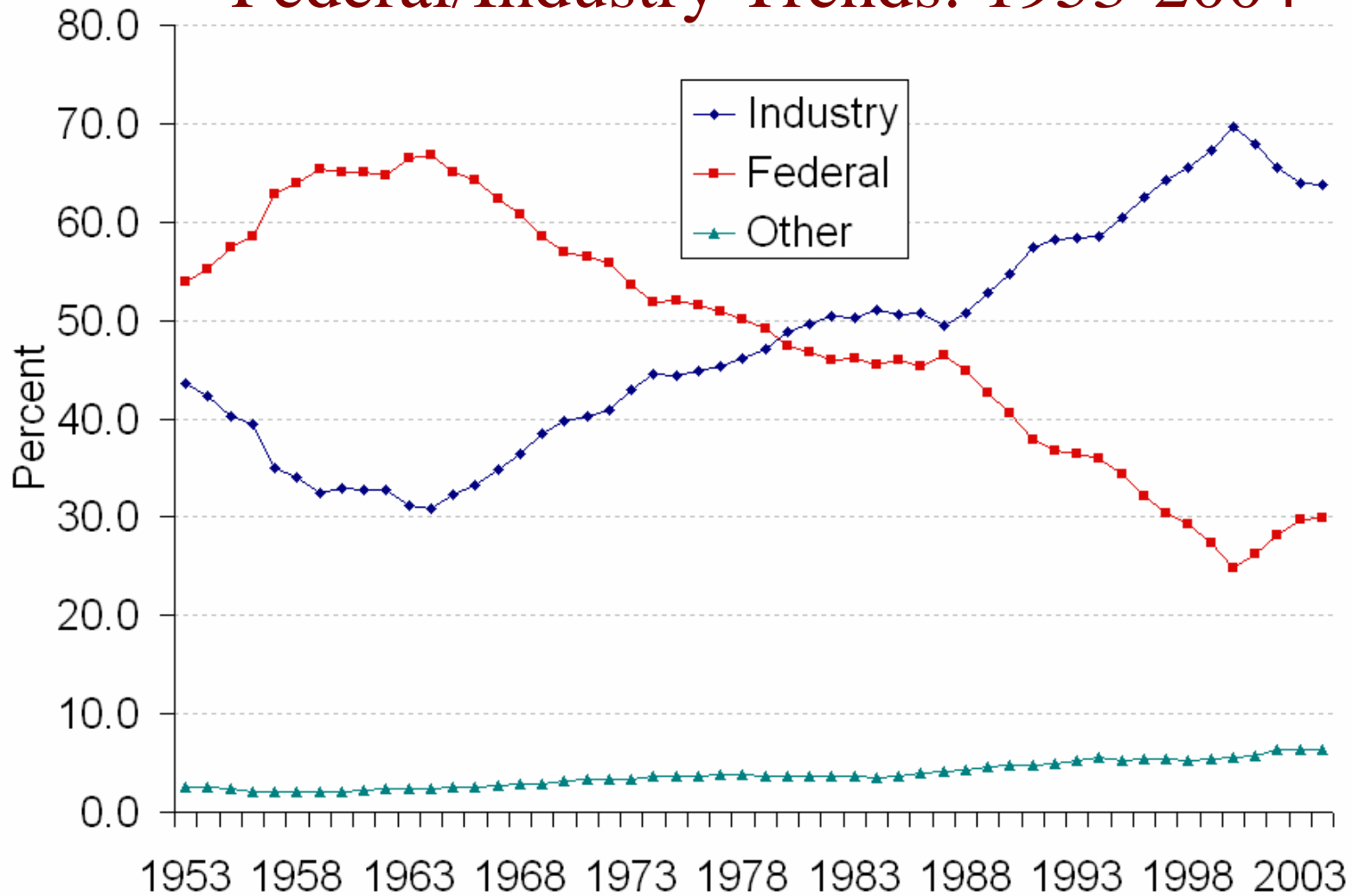


(photo courtesy NASA.gov)

Funding Issues

- ◆ Selective or biased funding (or de-funding)...
- ◆ Source of funding
- ◆ Independence of funding
- ◆ Transparency of funding

Source of U.S. R&D Funding: Federal/Industry Trends: 1953-2004



Source: NSF, Science and Engineering Indicators 2006

Solutions

- ◆ Scientists and the public must resist attempts to intimidate scientists who produce results inconsistent with political preferences.
- ◆ The scientific community needs to be aware of internal problems (peer review; fraud...)
- ◆ The scientific community needs to be aware of external problems (politics, funding...)

Solutions (cont.)

- ◆ Scientists and scientific organizations must be able and willing to speak out.
- ◆ Governmental policies must ensure independence of science advising and reviewing.
- ◆ Funding must be transparent.
- ◆ Scientific results must be independent of funding or the preferences of funders.

For more on the **Integrity of Science**

www.pacinst.org

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