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[Chair (2004), New England Section of the American Physical Society]

Please Note: As I indicated below, these remarks express my own considered opinion and should not be construed as representing any official position of the Executive Board of the New England Section of the American Physical Society. (L.I. Gould; January 9, 2008)

GLOBAL WARMING from a CRITICAL PERSPECTIVE

This Editorial was inspired by the global warming issue that has appeared over several years in the pages of the APS News and Physics Today (e.g., 1/07, p.72; 8/06, p. 74; 10/04, p. 37; 6/04, p. 60; 6/01, p. 19). Although I have seen many articles arguing for the reality and danger of anthropogenic greenhouse warming (AGW), I have rarely seen one that presents scientific arguments *against* the AGW claims; the salient exception being a Letter in Physics Today (March 2007, p. 14) by Petr Chylek of Los Alamos National Laboratory, wherein he mentions a distortion, by an editor of *Nature*, who changed the title and thus altered the meaning of a colleague's paper that was submitted for publication.

A few examples of the one-sided presentation, giving only the case for AGW, come to mind from the pages of the APS News. In the April 2006 issue there is an attack, by James Hansen, on the "Scientific Method" of Michael Crichton (and also, on Pat Michaels). Hansen argues that both Crichton (and Michaels) are treading close to "scientific fraud." What is disturbing about Hansen's article is that he gives no explicit references to works by Crichton or by Michaels to substantiate the accusations he makes against them. And even more disturbing is that I have seen no reply in the APS News from either Crichton or from Michaels.

In the February 2006 issue of the APS News there is an article "Changing the Climate... of Public Opinion" by Spencer Weart. In this article there appears the sentence: "In the present century, every *respectable* [my stress] panel has concluded that it ["greenhouse warming"] probably will be a severe problem, and soon." The implication seems to be that anyone who has a contrary argument is not "respectable" — yet there are many leading climatologists (such as Richard Lindzen of MIT) who have very good arguments disagreeing with Spencer Weart's position.

There is (I have found) a huge problem in getting to learn of *both* sides of the AGW debate. But this "debate" needs to be aired, regardless of what is being presented to scientists and to the public as the "truth" about AGW. As Leo Kadanoff wrote (though not about AGW *per se*), at the conclusion of his "reference frame" column in *Physics Today* (September 2006, p. 9):

In the long run, there is something in it for all of us. Education aimed at the evidence-based pursuit of truth can help the community gain tools for a better understanding of the world. Evidence-based argumentation can help scientists, engineers, business people, national leaders—everyone—make better decisions.

What follows are some critical-thinking issues about AGW and resources the reader can use to try avoiding methodological errors and see alternative explanations concerning global warming.

Topics & URLs to Facilitate Critical Thinking about Global Warming

Uncompleted as our theories may be, they all enjoy, in a sense, the benefits of due process of law. Dogmatism cannot enter, and unsupported demagoguery has a tough time with us. ... [dogmatists and demagogues] could not survive in a society which demands evidence which can be subjected to examination, to reexamination, to doubt, to questions, to cross-examination.

—Jerrold Zacharias

“the most significant scientist who initiated the effort to improve K-12 science education in the United States starting in the 1950s”; *Hands On!* A magazine for mathematics and science educators (TERC, Fall 2006), Vol. 29, Number 1, p. 4

The following pertains to the issue of AGW (Anthropogenic Global Warming). Some topics are presented for possible class/public-outreach discussion.

A short list of possible topics for class/public-outreach discussion:

1. What are some meanings that can be given to the term “consensus” in science? For each of those meanings, what is the role of “consensus” in scientific methodology and discovery? Is the “consensus” approach to doing science valid? What are some prominent examples from the history of science (consider, e.g., Galileo or Einstein or the Manhattan Project of WW II) to support or refute the “consensus” view?
2. What is meant by the claim that a “consensus” of scientists agree/disagree that humans are responsible for dangerous global warming? How do we know that there is a “consensus”? Are the “scientists” climatologists who have studied the issue? How can you tell whether there are any biases in their beliefs about whether there is/is not such warming?
3. Someone offers a scientific argument that AGW is true/false. Is it valid to say that someone else, who gives reasons why they disagree with the argument, should have their scientific argument for disagreement dismissed because they are being financed by a certain person or by a certain organization (such as an oil company or an environmental group or a government funding agency)? Is scientific truth dependent on how the research is financed?
4. Are scientists always “correct” about their scientific statements? Are they always “honest”? Do they always have “integrity”? Referring to scientific statements in the history of science: (a) Give examples where statements were (i) correct and (ii) incorrect. (b) Give examples where scientists were (i) honest and (ii) dishonest in their research. (c) Give instances where a scientist (i) displayed integrity and (ii) showed a

lack of integrity in the pursuit of knowledge. Explain what could be meant by those terms in the context of the science used to investigate global warming.

5. Read the Introduction and then Chapter 11 (about global warming) of Aaron Wildavsky's book, *But Is It True? A Citizen's Guide to Environmental Health and Safety Issues* (Harvard University Press, 1995). Are any of the issues raised there similar to the current (2007) issues about AGW? What are the similarities or differences?
6. What are the major "greenhouse gases"? To what extent is global warming a result of human influences through an increase of "greenhouse gases"? To what extent is it a result of natural influences such as the sun? How do you know? In what ways is water vapor/clouds a factor in global warming? How significant is it compared to carbon dioxide? Discuss the natural and human contributions to each of those gases. What are the uncertainties in the measurements of carbon dioxide and in water vapor/clouds? What part do climate models play in answering those questions? How do you determine the validity of such models?
7. Is an increase in (1) global temperature and (2) carbon dioxide bad/good? What are the arguments for each side? Would climate be constant without external "forcing"?
8. Is the current global warming unprecedented in the climate history of the earth? Have there been periods of greater global warming/cooling in past millennia? To what extent was the warming/cooling due to a natural cause? To what extent was the warming/cooling due to humans? Consider such periods as the Medieval Warm Period and the Little Ice Age in your investigations.
9. Has a global increase in carbon dioxide always been followed by a global increase in temperature? If so, what is the evidence? If not, what is the evidence?
10. Consider the Kyoto Protocol for reducing greenhouse gases: What is the estimated reduction in global temperature if suggestions of the Protocol were to be implemented? What are the estimated financial and other costs of such implementation?

What follows is a short list of URLs which offer a critical view of the widespread, and apparently dominant, claim (by some scientists, politicians, and the media) that AGW exists and is a very serious issue.

The first URL is for a video to stimulate discussion. Other video links are given below. The approximate playing time for those videos, in minutes and seconds, appears to the right of its link. [Easy access to the links: This document with clickable links, is available on my web site: <http://uhaweb.hartford.edu/LGOULD/> (under A Critical Look at "Global Warming"; L.I. Gould; 1/9/08) Note: There have been a number of videos critical of the AGW scenario, but some of them may not be currently available. If a web site is unavailable, particularly those with the URL beginning "http://www.youtube", this could mean that scheduled updates are being performed (try again later) or moved (search on title) or (as has often been the case) they

have, for some reason that is not quite clear, been deleted from that site. (Another possibility is that you may need to use a different browser — say, Firefox, instead of Safari. L.I. Gould; 1/9/08)]

- Videos — “The Great Global Warming Swindle” (contains critical statements by some leading climatologists as well as by social commentators, including one of the founders of Greenpeace; video can be purchased at the following website)

<http://store.demanddebate.com/great-global-warming-swindle-dvd.html> [158 min]

The main feature is about 60 min and the remaining 100 min includes supplementary interviews; these contain a lecture of about 30 mins on evidence for how various sun cycles play the dominant role in affecting climate and ecology in areas of North America’s northwest region]

Below are URLs which link to extensive critiques of Al Gore’s film/book, *An Inconvenient Truth: The Planetary Emergency of Global Warming and What We Can Do About It* -- (Rodale Press, May 2006), Paperback: 328 pages —

- Video — “On December 5, 2006, [Marlo] Lewis appeared in a brief pre-taped segment on a global warming themed episode of The Oprah Winfrey Show. After the segment, Al Gore responded to Lewis' comments. What follows is Lewis' rebuttal to Gore's response.”
(The rebuttal includes replies to some of Mr. Gore’s more personal attacks.)

http://www.cei.org/pages/ait_response.cfm 05:15

- Book — A Skeptic's Guide to *An Inconvenient Truth* by Marlo Lewis. This book (of about 140 pages, containing many colored charts), which critiques the Gore film/book, is broken down by chapters (with extensive, linked, scientific references) that can be individually accessed. I highly recommend this **very clear presentation** as a primary source for anyone who wants to see arguments criticizing, not only Gore’s film/book, but also most of the media claims about the seriousness of AGW

http://www.cei.org/pages/ait_response-book.cfm

More Videos, Articles, and a Book

- Critical-thinking Links —

Extensive educational links, about AGW and critiquing AGW, can be found at:

<http://www.junkscience.com> [often-updated site with many excellent critiques on a variety of topics related to AGW alarmist claims]

What Every Citizen Should Know About Global Warming, A Critique of Time Magazine's Special Report on Global Warming, and All Cost, No Benefit can be found at:

<http://www.cei.org/sections/subsection.cfm?section=3> 10:46

- Video — Michael Crichton, best-selling author, wrote a book about eco-terrorism. *State of Fear* (HarperCollins Publishers Ltd, 2004), Hardcover: 640 pages, contains many references to the scientific literature as well as an Appendix which discusses some of the significant distortions of science in the 20th century. Speech #2 (about misreporting facts and about engendering fear)

<http://www.youtube.com/watch?v=9qtgQXtrl4Q&mode=related&search=>
10:46

- Video — Michael Crichton. Speech #6 [the world is complex but remarkably robust]
<http://www.youtube.com/watch?v=BuUcBiToWg4&mode=related&search=> 10 mins
- Article — Ross McKittrick, expert reviewer from the current (2007) Intergovernmental Panel on Climate Change report, critiques the U.N.'s February 2007 IPCC "summary"

<http://ross.mckittrick.googlepages.com/#ar4> [new link; L.I.G. 1/9/08]

- Article — “Global Warming, the Politicization of Science, and Michael Crichton’s *State of Fear*” by David Deming.

<http://ff.org/centers/csspp/library/co2weekly/2005-03-10/deming.htm>

- Article — “Climate of Fear: Global-warming alarmists intimidate dissenting scientists into silence.” by Richard Lindzen (MIT) [a leading climatologist and member of the National Academy of Sciences, Professor Lindzen is one of the most prominent critics of AGW claims; his criticism is from a scientific standpoint as well as from one which argues against methodological errors]

http://www.opinionjournal.com/extra/?id=110008220&mod=RSS_Opinion_Journal&orss=frontpage

- Book — *Global Warming - Myth or Reality?: The Erring Ways of Climatology* by Marcel Leroux (Springer-Praxis Books, 2005), Hardcover: 536 pages; extensive references to the scientific literature. The early chapters explain how various governments have politicized the science of climatology.
- Article — “Gore Gored: A Science-based response to Al Gore’s Global Warming Commentary” (London’s Sunday Telegraph; 19 November 2006) by Christopher Monckton, 3rd Viscount Monckton of Brenchley. The PDF file can be obtained as one

of the articles listed on the left side of the Center for Science and Public Policy web page at:

<http://ff.org/centers/csspp/misc/library/globalwarming.html>

- Article — Polar bear extinction myth [report about document Dr. Mitch Taylor wrote for the U.S. Fish and Wildlife Service]

<http://www.cbc.ca/health/story/2006/05/15/polar-bears.html#skip300x250>

- US Senate Testimony — Harmful effects of “cap & trade” by Fred L. Smith, Jr.

<http://www.cei.org/gencon/027.05762.cfm>

- Debate — "This House believes that alarmism has replaced science in the global warming debate" [Benny Peiser's printed comments in favor of the proposition]

<http://www.staff.livjm.ac.uk/spsbpeis/OxfordUnionDebate.htm>

- Debate — "Global Warming is NOT a Crisis" Speaking for the motion: Michael Crichton, Richard S. Lindzen, Philip Stott. Speaking against the motion: Brenda Ekwurzel, Gavin Schmidt, Richard C.J. Somerville. Moderator: Brian Lehrer

<http://www.michaelcrichton.com/video-ig2debate-part1.html> [video]

<http://www.michaelcrichton.com/pdfs/GlobalWarmingDebate.pdf> [transcript]

- PowerPoint — Not a debate about AGW, but a presentation by four scientists (two arguing aspects of the case for AGW and two arguing against AGW; at the New England Section of the American Physical Society's Fall 2004 meeting at Pratt & Whitney (East Hartford, CT) [All NES APS Newsletters are also available on line through the link below. (L.I. Gould; 1/9/08)]

http://www.physics.ccsu.edu/aps-nes/fall_2004_highlights.htm

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