

AMERICAN PHYSICAL SOCIETY

New England Section Newsletter

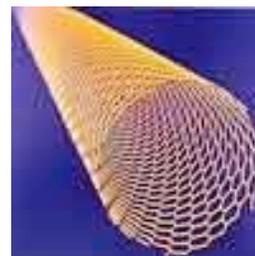
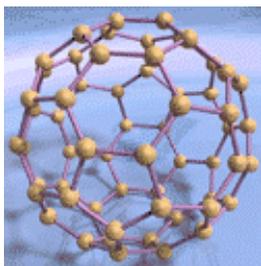
Volume 14 Number 1 Spring 2008

Paul H. Carr & Laurence I. Gould, Co-Editors

The Fall Joint Meeting of the APS and AAPT New England Sections October 19-20, 2007

The University of Connecticut at Storrs

<http://www.physics.uconn.edu/Conferences/nes07/>



CARBON IN THE 21ST CENTURY

“To discover the universe in a grain of soot.”

Adapted from William Blake

One hundred eighty-nine registrants and 73 students attended the Fall 2007 joint meeting of the NES-APS/AAPT, October 19-20, 2007, on the campus of the University of Connecticut in Storrs, CT. Invited speakers addressed different branches of physics with the common thread of modern day carbon, including carbon nanotubes, fullerenes, and graphene.

The AAPT program comprised of workshops, contributed speakers, and poster sessions, while the APS program includes contributed speakers and poster sessions in addition to the plenary sessions.

The Joint APS/AAPT Meeting was held in conjunction with the conference of Connecticut Nanotechnology Initiative (CNI) and the Nano-Biotechnology Research Group at the Institute of Materials Science, University of Connecticut. This conference was held the morning of Friday, October 19, 2007, just before the joint APS/AAPT Meeting.



**Drawing Conclusions from Graphene
Carbon in the 21st Century**

Prof. Larry Kappers welcomed us to the University of Connecticut & Introduced the 1st plenary speaker, Antonio Castro Neto, Boston University <http://physics.bu.edu/~neto/>



**Nanopatterned Epitaxial Graphene
A New Paradigm for Nanoelectronics**

Walter de Heer, Georgia Institute of Technology, <http://www.physics.gatech.edu/people/faculty/wdeheer.html>, described techniques for growing epitaxial graphene on single crystal silicon carbide. Epitaxial graphene shows quasi-ballistic transport and long coherence lengths. Epitaxial graphene can be patterned using standard lithographic techniques for interconnected room temperature ballistic devices for low dissipation high-speed nano-electronics.

Plenary Speakers:

Tony Heinz, Columbia University

<http://www.cise.columbia.edu/nsec/team/people/?subsection=heinz>

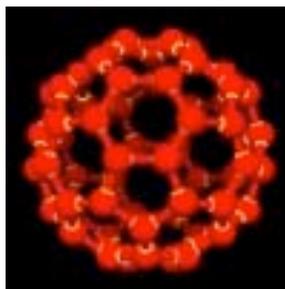
Optical Spectroscopy and Dynamics in Carbon Nanotubes

Philip Kim, Columbia University <http://www.columbia.edu/~pk2015/>

Relativistic Quantum Physics at Your Pencil Tips: Dirac Fermion in Graphitic Carbon

Lisa Pfefferle, Yale University <http://www.eng.yale.edu/faculty/vita/pfefferle.html>

Exploration of Nanotube Structure Selectivity Using Bimetallic Catalysts



Architecture in Nano-Space

Banquet Speaker:

Sir Harold (Harry) W. Kroto

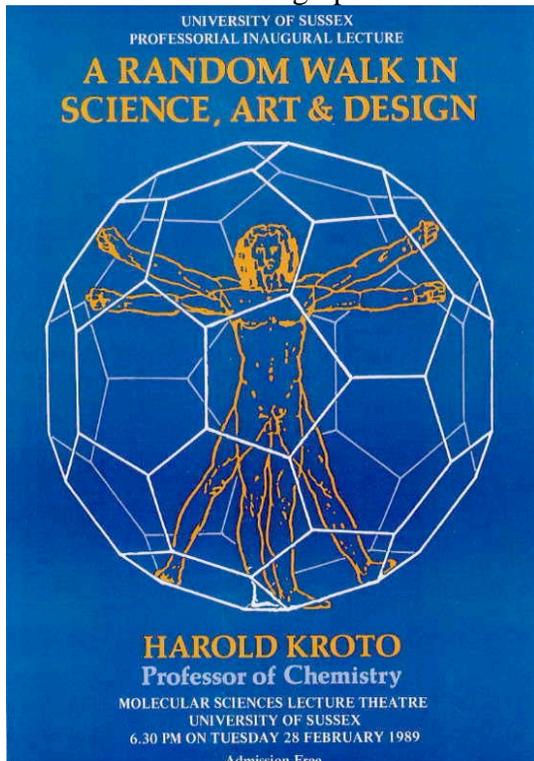
<http://www.kroto.info/>

Florida State University Tallahassee.

He won the Nobel Prize in Chemistry, 1996, with Robert F. Curl Jr. & Richard E. Smalley of Rice Univ, for the discovery of fullerenes

Harry Kroto discovered the carbon-60 molecule, named Buckminster Fullerene, serendipitously while trying to understand his earlier radio astronomy observations of the molecular constituents of dusty interstellar clouds, which are 100 light years in size. These clouds are 10^{28} larger than the one nanometer (10^{-9} m) diameter of the C_{60} molecule! This discovery together with its elongated cousins, carbon nanotubes, helped launch the new frontier

of Nanoscience and Nanotechnology, with Chemistry and Physics at one borderline and Chemistry and Biology on the other. New experimental approaches, which focused on how atoms cluster together, have led to the production of novel nanostructures and a general refocusing of research interests on controlling the self-assembly of these clusters. Carbon nanotubes, which are lighter and stronger than steel, are leading to a revolution in materials technology. These fundamental advances can lead to structures that can easily withstand powerful hurricanes and earthquakes. The quasi-ballistic transport of electronic excitations in carbon nanotubes and graphine can lead to faster and smaller computers.



This poster for Harold Kroto's lecture "A Random Walk in Science, Art & Design" illustrates his retirement dream of having his own scientific graphic design studio. This interest was reflected in the lively graphics used in his PowerPoint presentation, which also included startling sounds to "keep us awake." It is paradoxical that the C_{60} molecule he discovered makes a very attractive graphic, named for the visionary architect Buckminster Fuller.

Kroto is improving the public awareness and understanding of science and engineering through the Vega Science Trust website www.vega.org.uk. He wants to improve the public image of scientists. He is also involved with the Global Educational Outreach (GEO) initiative that uses new technology to provide outstanding Science, Engineering and Technology (SET) teaching material www.geoset.info. A key aim is to catalyze the creation of a global network of participating sites catering to the local and global need for much improved SET education.



Cool Cosmology:
“Whisper” Better than “Bang”

Poster Paper by co-editor
Paul H. Carr

Isn't the metaphor “whispering cosmos” a more accurate and aesthetic description than “big bang” for the very cool microwave background radiation that permeates the entire universe?

See his web page
www.MirrorOfNature.org

CNI Invited Speakers:

James Rusling, University of Connecticut
Alexander Star, University of Pittsburgh
Shirley Tang, University of Waterloo

AAPT had a variety of invited and contributed talks and workshops.

RESPONSES TO THE EDITORIAL
GLOBAL WARMING from a CRITICAL PERSPECTIVE
Published in the Fall 2007 issue of the New England Section Newsletter
<http://www.physics.ccsu.edu/aps-nes/News.htm>

Email LETTER to the Editor(s) by Alan Chodos —

26 Sep 2007

Dear Paul and Laurence,

As a member of the New England Section, who also happens to be the editor of APS News, I'm writing in response to the editorial about global warming that appeared in your Fall '07 newsletter. I do not want to enter into the debate about global warming per se, but I was distressed at your implication that APS News was somehow deliberately distorting the issue by only publishing one-sided articles.

We tried to get a Back Page by Michael Crichton in early 2004, well before we published the articles by James Hansen and Spencer Weart that you mention. We asked if we could reprint edited versions of either of two speeches he had given in 2003, but we were told that since he had a book coming out he was unwilling to allow reproduction of his speeches. I guess he was

worried about scooping himself. James Hansen and Spencer Weart are both well-qualified to write about climate change, and I have no apologies for publishing their work. You failed to refer to another Back Page (May 2007) by a colleague of Hansen's, Drew Shindell, whom I asked to contribute after I heard his testimony at a Congressional hearing. Although he is on the same side of the debate as Hansen and Weart, his article is not incendiary and sticks close to the science. Perhaps that's why you chose not to mention it.

You take us to task for not printing rebuttals by Crichton or Pat Michaels. These, of course, were never received, or we would have indeed printed them. We also did not receive dissenting comments from any APS members, including the editors of this newsletter. We would have been happy to print those as well.

The extensive bibliography at the end of your editorial includes nothing from the peer-reviewed literature. Should that not concern your audience, who are after all mostly practicing scientists, if they want to know whether the material is credible or not?

Alan Chodos
Editor, APS News

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Email LETTER to Alan Chodos by Paul Carr —

Dear Alan,

Thank you for your interest in Larry Gould's Editorial in the Fall 2007 issue of our NES-APS Newsletter below.

You should note that it is my co-editor Larry Gould's Editorial, not mine. I identify with the IPCC scientists who in 2007 issued the following statement.

“From new estimates of the combined anthropogenic forcing due to greenhouse gases, aerosols and land surface changes, it is *extremely likely (95 % probable)* that human activities have exerted a substantial net warming influence on climate since 1750.”

A Sigma Xi Expert Group has issued the following report “Confronting Climate Change: Avoiding the Unmanageable and Managing the Unavoidable.” (see www.sigmaxi.org)

Larry Gould's editorial can hopefully increase our interest in the national energy challenge. I hope a debate about whether humans are causing global warming will not divert this interest

from our national need to develop economical wind, solar, fission, fusion, and biomass energy, as well as to improve the efficiency of our present economy.

One third of our balance of payments deficit is due to imported oil from unstable foreign countries.

Americans and Canadians use 11 kW per capita, the highest in the world, which makes our economy vulnerable to price increases. European countries and Japan with an equal to higher standard of living use 5 kW per capita.

The price of oil and gas has doubled since 2000 due to the increased demand from developing countries for these limited resources.

In Walden, Thoreau depicted nature's intrinsic beauty and value as worthy of conservation, as per Chapter 9 "Nature's Beauty versus its Use: The Environmental Challenge" of my book Beauty in Science and Spirit.

With gratitude,

Paul H. Carr
Co-Editor, NES-APS Newsletter
www.MirrorOfNature.org

REPLY to Alan Chodos by Larry Gould —

Dear Alan,

I will comment on each of the issues that you put forth in the order, roughly, of its appearance.

Although I am glad to know that you attempted to get articles by Michael Crichton, even if you succeeded that would not address my criticism. As I said: "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." Although you mention that "These [replies], of course, were never received, or we would have indeed printed them," it is not clear that Crichton and Michaels were notified. What would have been fair play would be to have sent both Crichton and Michaels a copy of Hansen's attacks on them with the invitation to give a printed response. If either of them, after acknowledging the attacks, then declined to respond, that fact should have been made evident to readers of the APS News.

You mentioned that: "James Hansen and Spencer Weart are both well-qualified to write about climate change, and I have no apologies for publishing their work." I was not criticizing you for publishing their work since I believe that different views should be made known to your readers. And I was not addressing the qualifications of James Hansen or Spencer Weart. Their

qualifications are not at issue. I was criticizing Hansen for what was a gratuitous unsupported attack on both Crichton and Michaels. And I was criticizing Weart for a similar attack on scientists who do not agree with his views.

Given the prominence of the topic, it is certainly worthwhile to have the Back Page feature articles about global warming. And I am glad that you got Drew Shindell to write such an article. However, as you say, “he is on the same side of the debate as Hansen and Weart”; as a result, readers do not get the benefit of considering the views of an expert climatologist who strongly takes issue with the claims about dangerous anthropogenic global warming (AGW). There are many such experts. One is Richard Lindzen of MIT, who has for years been writing critical articles and speaking against the alarmist claims of AGW. Another expert, who has also written many critical articles and given talks against alarmist claims of AGW, is John Christy of the University of Alabama. Both of those scientists have been on the IPCC and continue to be actively engaged in climate research. Their views could have been very enlightening for your readers about the other side of the AGW issue. But I do not recall ever seeing any such serious scientific arguments presented in rebuttal of those printed in the pages of the APS News (or in the pages of Physics Today).

You mentioned: “The extensive bibliography at the end of your editorial includes nothing from the peer-reviewed literature.” My editorial (which I should have better titled as a “considered opinion” piece) does give references to articles I cited that have appeared in the APS News (and in Physics Today) and is followed directly by a longer article about Global Warming and Critical Thinking. I was intending that it would be read next so people could indeed see the many references from the peer-reviewed literature.

Laurence I. Gould
Co-Editor, NES-APS Newsletter
<http://uhaweb.hartford.edu/LGOULD/>

REPLY to Paul Carr by Larry Gould —

Dear Paul,

As you correctly mention, and as I indicated there, the “Editorial” is solely my considered position on the matter of anthropogenic global warming (AGW).

Regarding your quotation from the IPCC 2007 report: “... it is *extremely likely* (95 % *probable*) that human activities have exerted a substantial net warming influence on climate since 1750.” (I assume the stress is in the original.) From what I have read, this claim is strongly contested. One very recent argument against a similar claim is in the report, “Nature, Not Human Activity, Rules the Climate” (Science and Environmental Policy Project, edited by S. Fred Singer, March 2008; <http://heartland.temp.siteexecutive.com/pdf/22835.pdf>)

AR4 [p. 10] claims “most of the observed increase in global average temperatures since the mid-20th century is *very likely* due to the observed

increase in anthropogenic greenhouse gas concentrations” (emphasis in original). AR4's authors even assign a better-than-90 percent probability to this conclusion, although there is no sound basis for making such a quantitative judgment. They offer only scant supporting evidence, none of which stands up to closer examination. Their conclusion seems to be based on the peculiar claim that science understands well enough the natural drivers of climate change to rule them out as the cause of the modern warming. Therefore, by elimination, recent climate changes must be human-induced.

Note: As mentioned in the report, “AR4” stands for “The Fourth Assessment Report of the Intergovernmental Panel on Climate Change’s Working Group-1 (Science) (IPCC-AR4 2007), released in 2007.”

I am reading the Sigma Xi report that you mentioned: “Confronting Climate Change: Avoiding the Unmanageable and Managing the Unavoidable” (a more direct link to that document is: <http://www.docuticker.com/?p=11364>). The first sentence of the Executive Summary is: “Global climate change, driven largely by the combustion of fossil fuels and by deforestation, is a growing threat to human well-being in developing and industrialized nations alike.” The alarm expressed in that statement is not justified by the mass of scientific evidence to the contrary. I will explain this more in my Open Letter that follows.

I certainly believe that we should look for alternative sources of energy. And I am certainly opposed to defiling our planet with harmful wastes (even though CO₂ is not one of them). But we need to approach problems of energy and waste through an open and honest discussion of the scientific issues. That will give our policy makers information needed to make intelligent decisions.

I also love Nature. But I do not think that it has “intrinsic” beauty. For beauty (like value) is a relation between the “beholder” and the thing deemed beautiful (or valuable).

Larry

Laurence I. Gould
Co-Editor, NES-APS Newsletter
<http://uhaweb.hartford.edu/LGOULD/>

AN OPEN LETTER TO MEMBERS OF THE NEW ENGLAND SECTION OF THE AMERICAN PHYSICAL SOCIETY

Anthropogenic Global Warming Alarmism: A Corruption of Science

Laurence I. Gould

Physics Department, University of Hartford

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

Please Note: 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.

[Clickable links contained in this article can be accessed through the on-line version at the NES-APS website (<http://www.physics.ccsu.edu/aps-nes/News.htm>) or through my own website (<http://uhaweb.hartford.edu/LGOULD>)]

The world has been inundated with claims about dangerous anthropogenic global warming (AGW). Such claims continue to be advocated by a number of scientists, believed by frightened citizens, prominently featured in the mass media, urged to be acted on by many politicians, held to be true by a variety of business people, and spread through educational institutions. As a result, there has emerged a predominant AGWA [my acronym for AGW Alarmist (or Alarmism)] point of view. That point of view probably stems from a confluence of interactions explained through sociology, psychology, philosophy, politics, economics, the media, and science. Only a few of those issues can be treated here — and then, only briefly.

I think it urgent that members of the scientific community should know about some of the issues being propagated. It is urgent because of the dangers to physics in particular, and to science and, consequently, to civilization (depending so heavily as it does on science) in general.

BRIEF COMMENTS ABOUT POPULAR PERCEPTIONS

1. Alternative energy sources would decrease our reliance on oil. TRUE
2. Pollution is damaging to the environment. Also TRUE, depending on what's meant by "pollution" and considering the cost/benefit tradeoffs related to industrial emissions and standard of living. CO₂ is not in the category of "pollution."
3. Anthropogenic emission of CO₂ is causing dangerous global warming. FALSE, regardless of the widespread claims, because of the massive amount of scientific evidence and analysis which contradict such claims.
4. The existence of a range of climate changes\disasters support the AGWA belief. FALSE, even though it is a prevalent non sequitur that continues to be widely propagated.

ABOUT THE SCIENCE

5. The December 2007 issue of *Physics Today* (pp. 22-23) contains an article praising both Al Gore and the IPCC for being awarded the Nobel Prize. It does not, however, mention that the prize came from the Nobel Committee of Norway. The reader may therefore be misled to believe that it came from the Nobel Committee of Sweden; where the well-known science prizes, such as the one in Physics, are awarded.

The article shows a single graph plotting temperature versus years. Here are some problems with that graph:

(1) Playing games with lines — choosing the last 25 years to show that the slope of the line is largest and thus leading the reader to the belief that the temperature increase is most severe over that time interval. That conclusion ignores two important facts:

(a) Since about 2000 (about one-third of the 25-year interval) there has been no trend in temperature. Within the error bars, we don't know whether it's increasing or decreasing. This can be seen from the Hadley Met Office's own data (HadCRUT3). So to claim an increase, when for the last seven years there is no evidence of any, is just bad science (to say the least).

(b) The past 50 years has been one of the most active solar periods of the past 11,000 years. [SOLANKI, S.K., Usoskin, I.G., Kromer, B., Schüssler, M. and Beer, J. *Unusual activity of the Sun during recent decades compared to the previous 11,000 years.* Nature Vol. 436: 174 (14 July 2005) | doi: 10.1038/436174b]

(c) Over the 20th century there was about a 35-year interval (1940 –1975) where mean global surface temperatures decreased while CO₂ continued to steadily increase. During the later part of that time the media were trumpeting the possibility of climate catastrophes due to “global cooling.”

(d) The mean, with respect to which the temperature “anomaly” (difference between the mean and a particular temperature value) is measured, appears to be taken over a period so as to magnify that anomaly. The mean is taken from 1961 – 1990, an interval of 28 years. But there was a global *cooling* from about 1940 to 1975. Thus, over the years 1961 – 1975, or 50% of the time over which the mean was chosen, there was a global cooling! (For a reader not trained in science I would explain what's going on with the following example: Let's say there are temperature values, in °F, of 1, 2, 3, 4, 5. If I want to calculate the “anomaly” for the value of 5 °F, I can choose my average over the five numbers, giving a mean of 3 and an anomaly of 2. But if I choose my average over the numbers 1, 2, 3, then the mean is 2 and the anomaly goes up to 3.)

6. Al Gore's film/book *An Inconvenient Truth* (AIT) contains a fundamental error in logic (called “the fallacy of affirming the consequent”). It is also filled with pseudo-scientific exaggerations and scientific errors.

(a) A fundamental error in logic: I find it very surprising that more people

(particularly scientists) have not called attention to an elementary error in logic that suffuses *AIT*. By way of introduction: Say that someone puts forth the reasonable claim — “If it’s raining then the streets will become wet.” The consequent (“the streets will become wet”) reasonably follows from the antecedent (“it’s raining”). But it would not be reasonable to say, “If the streets became wet then it rained.” — and to do so would be an example of a simple error in logic: the *fallacy of affirming the consequent*. Loads of examples of the fallacy can be imagined, some of which would (if put into practice) destroy the justice system. Example: If X shot Y through the heart then Y would be killed by the bullet. Y is found dead with a bullet through his/her heart. Now, which X should be accused of the murder?!

Yet, that fallacy is repeatedly used, albeit in a more subtle form, throughout *AIT*. Here are some examples of that error in elementary logic: If the Arctic ice cap melts then it’s a result of global warming. If the sea levels rise to dangerous levels then it’s a result of global warming. If there are more intense hurricanes then it’s a result of global warming. If there are more frequent severe tornados then it’s a result of global warming. If the polar bears are threatened then that too is a result of global warming (melting the ice which the bears need for support).

The fallacy with regard to AGWA has propagated through the society and has even found its way into the Sunday comics! (See, e.g., the 3/16/08 Hartford Courant comic strip titled, aptly enough, *Non Sequitur*: there, two ice fishermen — one on each side of the “global warming” controversy — argue for their respective positions by referring to some local disaster as evidence for AGW. Each uses the same fallacy, but to produce a different conclusion.)

(b) There are multiple scientific errors in AIT. Here are some from “Errors covertly corrected by the I.P.C.C. after publication [such as a 10-fold exaggeration in the effect of melting ice-sheets on sea-level rise] *And Uncorrected Errors by Al Gore,*” by Lord Monckton of Brenchley (March 2007): (The references can be found in the document http://www.ff.org/centers/csspp/pdf/20070226_monckton.pdf)

- A referenced list of some of the dozens of fundamental scientific errors in Gore’s film:
- Gore, aiming to undermine the significance of previous warm periods such as that of the Middle Ages, promoted the 1,000-year “hockey stick” temperature chart (McIntyre & McKittrick, 2005).
- Gore showed heart-rending pictures of the New Orleans floods and insisted on a link between increased hurricane frequency and global warming that has no basis in scientific fact (IPCC, 2001, 2007).
- Gore asserted that today’s Arctic is experiencing unprecedented warmth while ignoring that Arctic temperatures in the 1930s and 1940s were as warm or warmer (Briffa et al., 2004).
- Gore did not explain that Arctic temperature changes are more closely correlated with changes in solar activity than with changes in atmospheric CO₂ concentrations (Soon, 2005).
- Gore did not explain that the Sun has been hotter, for longer, in the past 50 years than in any similar period in at least the past 11,400 years (Solanki et al., 2005).
- Gore said the Antarctic was warming and losing ice but failed to note, that is only true

of a small region and the vast bulk of the continent has been cooling and gaining ice (Doran et al., 2004).

- Gore mentioned the breakup of the Larsen B ice shelf, but did not mention that the maximum ice shelf limit may date only from the Little Ice Age 300 years ago. (Pudsey & Evans, 2001, 2006; Vaughan et al., 2001).
- Gore hyped unfounded fears that Greenland's ice is in danger of disappearing. In fact its thickness has been growing by 2 inches per year for a decade (Johannesen et al., 2005).
- Gore falsely claimed that global warming is melting Mt. Kilimanjaro's icecap, actually caused by atmospheric desiccation from local deforestation, and pre-20th-century climate shifts (Cullen et al., 2006).
- Gore said global sea levels would swamp Manhattan, Bangladesh, Shanghai and other coastal cities, and would rise 20ft by 2100, but the UN estimate is just 8in to 1ft 5in. (IPCC, 2007; Morner, 1995, 2004).

(c) Nine errors in the film were used in a UK court case against the showing of *AIT* as containing propaganda instead of being (as it was claimed) a documentary; Remarks about Judge Burton's ruling are as follows:

Burton ruled that the film could be shown to British students, but only on the condition it be accompanied by new guidance notes for teachers to balance Gore's "one-sided" views. Burton documented nine major errors in Gore's film and wrote that some of Gore's claims had arisen "in the context of alarmism and exaggeration."

[Investor's Business Daily, 11 October 2007]

<http://www.ibdeditorials.com/IBDArticles.aspx?id=276995581156478>

The Met Office (UK) made some brief comments on the ruling on one of their website pages. No mention is made there of the fact that the High Court found Nine Errors in the film.

The Met Office advised the Department for Children Schools and Families (DCSF) on the guidance that will now go with the film...

Director Climate Science John Mitchell said: "The Met Office is pleased that the evidence for climate change had been accepted in a British court of law in line with the IPCC findings that warming our planet is unequivocal, and that it is very likely that most of this warming is caused by man-made greenhouse gases.

"We welcome the fact that such an accessible film is being shown to schools so that young people will be informed on climate change and encouraged to engage with the issues that will affect their future."

11 October 2007

<http://www.metoffice.gov.uk/research/hadleycentre/news/inconvenient.html>

(d) Spreading a false claim through a children's book was done by Laurie David (co-producer of *AIT*) and her co-author Cambria Gordon in *The Down-to-Earth Guide to Global Warming* (Orchard Books, NY, 2007). On page 18 appears a cartoon graph displaying curves of temperature and carbon dioxide (vertical axis) versus time (of about 650,000 years along the horizontal axis). The vertical axis has the labels reversed so that instead of temperature peaking before carbon dioxide, it peaks after it. While this does

confirm Gore's suggestion about how such a plot could be interpreted, in his film/book of *AIT* ("the most important part of it is this: When there is more CO₂ in the atmosphere, the temperature increases because more heat from the Sun is trapped inside."), it contradicts the scientific evidence! See, e.g., the paper by Hubertus Fischer, *et al*, "Ice Core Records of Atmospheric CO₂ Around the Last Three Glacial Terminations" *Science* Vol. 283, 1712 (1999) wherein it is shown that temperature leads CO₂ over the last three glacial terminations from about 200 to 1,000 years. The book's graph even contradicts their own reference [Siegenthaler *et al*, *Science* Vol. 310, 1313-1317 (2005)]!

(e) Monckton details 35 errors in Gore's film ("35 Inconvenient Truths: The Errors in Al Gore's Movie") and comments on the court case just mentioned:

The judge had stated that, if the UK Government had not agreed to send to every secondary school in England a corrected guidance note making clear the mainstream scientific position on these nine "errors", he would have made a finding that the Government's distribution of the film and the first draft of the guidance note earlier in 2007 to all English secondary schools had been an unlawful contravention of an Act of Parliament prohibiting the political indoctrination of children.

<http://scienceandpublicpolicy.org/monckton/goreerrors.html>

(f) Marlo Lewis (*A Skeptic's Guide to An Inconvenient Truth*) goes even further by demonstrating that practically every single claim made by AIT is in error.

<http://cei.org/pdf/5820.pdf>

7. An excellent reference for seeing a lot of the topics treated by AGWA claims is the paper by R.M. Carter, "The Myth of Dangerous Human-Caused Climate Change" (July 2007). Some of the topics treated are: How does climate work? Is carbon dioxide a dangerous pollutant? Can computer models predict future climate? Is there a consensus? Can we measure average surface global temperature meaningfully? (This last topic should dispel a lot of myths about the significance of an "average surface global temperature."), and Is the IPCC a scientific or political body? How good is its scientific advice? Finally, I should mention the Recommended website URLs for those who really want to probe the issues.

http://scienceandpublicpolicy.org/images/stories/papers/reprint/CarterMyth/carter_myth.pdf

8. Significant failure of climate models has been shown in the recent papers by Richard S. Lindzen, "Taking Greenhouse Warming Seriously," *Energy & Environment*, Vol. 18, Numbers 78 (December 2007), pp. 937-950 and by Douglass *et al*, "A comparison of tropical temperature trends with model predictions" *Int. J. Climatology* (2007), DOI: 10.1002/joc.1651 <http://www.uah.edu/News/pdf/climatemodel.pdf>; the importance of this issue is described briefly in the Abstract:

We examine tropospheric temperature trends of 67 runs from 22 'Climate of the 20th Century' model simulations and try to reconcile them with the best available updated observations (in the tropics during the satellite era). Model results and observed temperature trends are in disagreement in most of the tropical troposphere, being

separated by more than twice the uncertainty of the model mean. In layers near 5 km, the modelled trend is 100 to 300% higher than observed, and, above 8 km, modelled and observed trends have opposite signs. These conclusions contrast strongly with those of recent publications based on essentially the same data.

ABOUT THE POLITICS

9. One of my colleagues told me (after a talk he heard me give) that I would be identified as a “conservative” for criticizing AGWA. I found his comment very strange because politics should have nothing to do with scientific truth. So I pointed out to him that although there are liberals who believe the AGWA claims, there are also liberals who severely criticize those claims. Here are two prominent examples:

(1) Claude Allegre, a leading French socialist, is (as reported by Lawrence Solomon, *Financial Post*, 3 March 2007) “a friend of former Socialist president Lionel Jospin, and, from 1997 to 2000, his minister of education, research and technology, charged with improving the quality of government research through closer co-operation with France's educational institutions.” Allegre is also a member of the prestigious French Academy of Science and the U.S. National Academy of Sciences. As reported by Solomon: “‘The cause of this climate change is unknown,’ he [Allegre] states matter of factly. There is no basis for saying, as most do, that the ‘science is settled.’”

<http://www.nationalpost.com/news/story.html?id=2f4cc62e-5b0d-4b59-8705-fc28f14da388>

[This link also has a reference to the periodical’s series of scientists (click there on “The full Deniers series”) who dispute AGWA claims and discuss scientific issues related to “global warming.”]

(2) Alexander Cockburn is a very prominent “liberal/leftist” intellectual whose commentaries have severely criticized AGWA claims. Some of his comments are:

There is still zero empirical evidence that anthropogenic production of CO₂ is making any measurable contribution to the world's present warming trend. The greenhouse fearmongers rely entirely on unverified, crudely oversimplified computer models to finger mankind's sinful contribution. Devoid of any sustaining scientific basis, carbon trafficking is powered by guilt, credulity, cynicism and greed, just like the old indulgences, ... [from Part 1]

Or take Dr. Habibullo Abdussamatov, of St. Petersburg's Pulkovo Astronomical Observatory. He says we're on a warming trend but that humans have little to do with it, the agent being a longtime change in the sun's heat. He predicts solar irradiance will fall within the next few years mainly based the well documented sunspot cycle, and therefore we may well face the beginning of an ice age very shortly, as early as 2012. The Russian scientific establishment is giving him a green light to use the nation's space station to measure global cooling. [from Part 2]

Cockburn’s three-part article appeared in *Counterpunch* (“From Papal Indulgences to Carbon Credits: Is Global Warming a Sin?,” 4/28-29; “Source and Authorities: Dissidents Against Dogma,” 6/9-10; “Explosion of the Fearmongers: The Greenhousers Strike Back and Out,” 5/26-27/07)

http://nzclimatescience.net/index.php?option=com_content&task=view&id=41&Itemid=30

10. On Politics and Science: I have also heard comments from others who are self-primed to accept or reject claims about AGWA depending on what side of the *political fence* those claims originate. Whether and to what extent AGW is true is, however, *not* a political

issue. And it is likewise irrelevant as to whether more “liberals” believe in AGWA than do “conservatives” (or any other political group). The truth or falsity of AGW is a *scientific* issue. And it is through the means of the *scientific method* that decisions about the truth or falsity of AGW should be made. Scientific truths ought to cut across political lines. That they currently do not is to the serious detriment of science. In order to prevent this from happening again the advice I would give to scientists (and others) is: When you enter the “global warming”-science conference room Leave Your Political Guns Outside!

11. Rhetorical ploys to deflect attention from the science: In the paper by Robert M. Carter, “Public Misperceptions of Human-Caused Climate Change: The Role of the Media” was given in Testimony before the Committee on Environment and Public works (December 6, 2006), the section titled “Playing the man and not the ball” illuminates techniques that have been used to convince the public of AGWA. Carter notes that:

the combined alarmist activities of the IPCC, crusading environmental NGOs, some individual leading climate scientists and many science academies can only be termed a propaganda campaign. But because all of these interest groups communicate with the public primarily through the press, it is the press that carries the prime gatekeeper responsibility for the unbalanced state of the current public view.

... it is vanishingly rare for any ensuing press discussion to be primarily about the science question at issue. Rather, rhetorical devices are used to negate the doubts or the doubter. Assertions commonly made about skeptics or their views include the following.

1. *“The science is settled”; or, there is a “consensus” on the issue.*

... science is about facts, experiments and testing hypotheses, not consensus; and science is never “settled”. [Indeed, Einstein’s relativity theories weren’t wrong at the time he created them because he did not have a consensus... And those same theories aren’t right today because he does have a consensus.]

2. *He is paid by the fossil fuel industry, and is merely repeating their desired story.*

Science discussions are determined on their merits, by using tests against empirical or experimental data. Who paid for the data to be gathered and assessed is simply irrelevant.

3. *She works for a left wing/right wing think tank, so her work is tainted.*

Think tanks serve an invaluable function in our society. On all sides of politics they are the source of much excellent policy analysis. They provide extended discussion and commentary on matters of public interest, and have made many fine contributions towards balancing the public debate on climate change.

4. *He is just a climate skeptic, a contrarian, a denialist.*

... all good scientists are skeptics: that is their professional job. To not be a skeptic of the hypothesis that you are testing is the rudest of scientific errors, for it means that you are committed to a particular outcome: that's faith, not science.

5. *“Six Nobel Prize winners, and seven members of the National Academy of Sciences say”.*

Argument from authority is the antithesis of the scientific method.

6. *The “precautionary principle” says that we should limit human carbon dioxide emissions because of the risk that the emissions will cause dangerous warming. Thus the science argument should be subservient to the risk argument*

In order to take precautions, it is necessary to understand what one is taking them against. But at the moment global average temperature is flat-lining, and empirical predictions are for cooling. As Dick Lindzen recently pointed out in an article in the U.K. Telegraph: *“After all, like hurricane frequency or the price of oil, global mean temperature is as likely to go down as up”.*

12. The harm that has arisen from the political interference with science (see, in particular, Chapter 11, by S. Fred Singer on “The Revelle-Gore Story: Attempted Political Suppression of Science”) can be seen in the book *Politicizing Science: The Alchemy of Policymaking*, Edited by Michael Gough (Stanford, 2003). This can be purchased for about \$15 (excluding shipping); individual chapters can be downloaded for free.

<http://www.hoover.org/publications/books/3003781.html>

13. A very recent publication (bolstered by 167 scientific references and a list of 41 books) argues the science and exposes the flaws in the IPCC. The report is titled, “Nature, Not Human Activity, Rules the Climate: Summary for Policymakers of the Report of the Nongovernmental International Panel on Climate Change” — Science and Environmental Policy Project, Edited by S. Fred Singer

<http://heartland.temp.siteexecutive.com/pdf/22835.pdf>

The report's Foreword begins:

In his speech at the United Nations' climate conference on September 24, 2007, Dr. Vaclav Klaus, president of the Czech Republic, said it would most help the debate on climate change if the current monopoly and one-sidedness of the scientific debate over climate change by the Intergovernmental Panel on Climate Change (IPCC) were eliminated. He reiterated his proposal that the UN organize a parallel panel and publish two competing reports.

The present report of the Nongovernmental International Panel on Climate Change (NIPCC) does exactly that. It is an independent examination of the evidence available in the published, peer-reviewed literature – examined without bias and selectivity. It includes many research papers ignored by the IPCC, plus additional scientific results that became available after the IPCC deadline of May 2006.

The IPCC is pre-programmed to produce reports to support the hypotheses of anthropogenic warming and the control of greenhouse gases, as envisioned in the Global Climate Treaty. The 1990 IPCC Summary completely ignored satellite data, since they showed no warming. The 1995 IPCC report was notorious for the significant alterations made to the text *after* it was approved by the scientists – in order to convey the impression of a human influence. The 2001 IPCC report claimed the twentieth century showed ‘unusual warming’ based on the now-discredited hockey-stick graph. The latest IPCC report, published in 2007, completely devaluates the climate contributions from changes in solar activity, which are likely to dominate any human influence.

The Foreword ends:

Our concern about the environment, going back some 40 years, has taught us important lessons. It is one thing to impose drastic measures and harsh economic penalties when an environmental problem is clear-cut and severe. It is foolish to do so when the problem is largely hypothetical and not substantiated by observations. *As NIPCC shows* by offering an independent, non-governmental ‘second opinion’ on the ‘global warming’ issue, ***we do not currently have any convincing evidence or observations of significant climate change from other than natural causes.*** [my stress]

Readers may recognize the author:

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Past President, American Physical Society
Chairman, Science and Environmental Policy Project

ABOUT DANGERS TO THE ECONOMY FROM CO₂ CUTBACKS

14. There have been various schemes for cutting back on United States use of CO₂ . Here is one of them, as explained in the *Global Warming Petition Project* document:

In 2006, the United States obtained 84.9% of its energy from hydrocarbons. ... Political calls for a reduction of U.S. hydrocarbon use by 90% (123), thereby eliminating 75% of America's energy supply, are obviously impractical. Nor can this 75% of U.S. energy be replaced by alternative "green" sources. Despite enormous

tax subsidies over the past 30 years, green sources still provide only 0.3% of U.S. energy. [p. 34]

<http://www.oism.org/pproject>

ABOUT DANGERS TO SCIENCE

The result of the current AGWA controversy is that science will get a “black eye,” as one of my colleagues in physics said. Indeed: What will happen when people begin learning more and more about the contradictions to AGWA misrepresentations and distortions and suppression of information? What will happen to the public support of science? What will happen to the funding of legitimate science? And what *is* happening to funding of climate science at the expense of the other sciences? Furthermore, what message is being given to students who would have gone into science had they not learned of the shoddy science, dishonesty and lack of openness that they found? And what will happen to science education in the U.S.?

Currently, the cumulative scientific evidence shows that **the AGWA claims have not been substantiated**. Those claims should, therefore, not be used as a guide to government policy and should not be supported by any scientific organizations, much less one as eminent as the American Physical Society, without further rigorous, open, and honest examination.

I am, therefore, particularly amazed and distressed to find the APS Council taking the stand (in their November 2007 meeting) that “The evidence is incontrovertible. Global warming is occurring...” and then going on to urge “governments, universities, national laboratories and its [APS] membership to support policies and actions that will reduce the emission of greenhouse gases.” (*APS NEWS*, Jan. 2008, Vol. 17, No. 1; front page) I urge the American Physical Society to make public, to all its members, the scientific arguments by expert climate scientists on *both* sides of the science (with responses by each) regarding “global warming” claims. And, for the reasons I have given earlier, I appeal to all who care about science to urge “governments, universities, national laboratories and... [the APS] membership to” OPPOSE “policies and actions that will reduce the emission of greenhouse gases” based on the AGWA claims. To do otherwise would be An Assault on Reason.

REFERENCES (details and augmented list)

Book — *A Skeptic's Guide to An Inconvenient Truth (AIT)* by Marlo Lewis. This free downloadable book (of over 140 pages, containing many colored charts) critiques almost every substantive statement which Gore makes in the book and (since it is essentially the same) the film as well. Lewis’ work is broken down by chapters with extensive, linked scientific references that can be individually accessed. (I have seen no references in *AIT*.)

<http://cei.org/pdf/5820.pdf>

Intermountain Rural Electric Association, which is trying to prevent the cost of electricity from escalating, has a variety of scientific critiques about AGWA claims:

<http://www.intermountain-rea.com/GlobalWarming.html>

The Science & Public Policy Institute (SPPI) has a large number of scientific papers devoted to a critical examination of AGWA claims:

<http://scienceandpublicpolicy.org/>

“Fallacies About Global Warming,” by John McLean, addresses seven common fallacies. In discussing the belief that “Temperature trends are meaningful and can be extrapolated,” he points out that “Any trend depends heavily upon the choice of start and end points. A judicious selection of such points... can create a wide variety of trends.”

http://scienceandpublicpolicy.org/sppi_originals/fallacies_about_global_warming.html

“35 Inconvenient Truths: The Errors in Al Gore’s Movie,” by Christopher Monckton of Brenchley (October 18, 2007)

http://scienceandpublicpolicy.org/images/stories/press_releases/monckton-response-to-gore-errors.pdf

“Errors covertly corrected by the I.P.C.C. after publication *And* Uncorrected Errors by Al Gore,” by Lord Monckton of Brenchley (March 2007)

http://www.ff.org/centers/csspp/pdf/20070226_monckton.pdf

From the Senate Minority website (please consider the science there) which has many reports and much news disputing AGWA claims. It also gives numerous “Examples of ‘consensus’ claims made by promoters of man-made climate fears.” And it supports its statement that: “Over 400 prominent scientists from more than two dozen countries recently voiced significant objections to major aspects of the so-called ‘consensus’ on man-made global warming. These scientists, many of whom are current and former participants in the UN IPCC (Intergovernmental Panel on Climate Change), criticized the climate claims made by the UN IPCC and former Vice President Al Gore.”

<http://epw.senate.gov/public/index.cfm?FuseAction=Minority.SenateReport>

Steve McIntyre gives links to temperature profile and CO2

<http://www.climateaudit.org/?p=2572>

A Layman's Guide to Man-Made Global Warming

<http://www.climate-skeptic.com/2007/09/table-of-content.html?gclid=CIm2ooCEg5ICFRciFQodTza29A>

<http://www.jennifermarohasy.com/blog/archives/002762.html>

<http://epw.senate.gov/public/>

www.carbon-sense.com

VIDEOS WHICH COUNTER AGWA CLAIMS

“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)

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

“Apocalypse? NO! Why 'global warming' is not a global crisis” (DVD)

From the Product Description: “Are Al Gore and the IPCC right about global warming being a planetary emergency? NO! ... says the Viscount Monckton of Brenchley in a devastating 2007 lecture delivered at Cambridge University.”

<http://store.demanddebate.com/apocalypse-no-why-39global-warmingquot-is-not-a-global-crisis-d.html>

**Future Joint Meetings
of the APS and AAPT New England Sections**

Spring 2008 — US Coast Guard Academy
Fall 2008 — University of Massachusetts in Boston
Spring 2009 — Northeastern University
Fall 2009 — University of New Hampshire
Spring 2010 — Southern Connecticut State University

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