

The Inconvenience of Truth

The Movie

I normally don't take notes in a movie theater. But when I saw Al Gore's *An Inconvenient Truth* on 18 June 2006, I did. Afterward I wrote the following reflections:

The film consists of alternate scenes of Al Gore's presentation of his "slide show" about global warming and flashback reflections of his own life. Some, like his son's brush with death from an auto accident, which taught him not to take things for granted, and his sister's death from lung cancer, which caused his family to stop growing tobacco, were very pertinent. Others, like footage of election coverage from 2000, seem less so. Perhaps these flashback "interruptions" are a device to "break things up."

But flashback interruptions notwithstanding, Gore's message about global warming comes through loud and clear. It begins from Gore's first learning about the problem from being in Roger Revelle's class. A plot of atmospheric carbon dioxide concentration and temperature for the past 650,000 years, reconstructed from analysis of ice cores, shows that, despite fluctuations, never did the atmosphere's carbon dioxide concentration exceed 300 parts per million. But since the advent of burning fossil fuels with the Industrial Revolution, a process which increases atmospheric carbon dioxide, atmospheric carbon dioxide concentration has steadily increased, with annual fluctuations due to difference in landmass and vegetation in the northern and southern hemispheres -- the larger amount in the northern hemisphere causes a lower carbon dioxide concentration from the vernal to the autumnal equinox. Yet the overall global temperature increase has already seen significant melting of the world's glaciers (Gore shows many "then" and "now" comparisons). Gore points out that 40% of the world's population depends on glaciers for drinking water and notes that their water supplies are in danger.

Gore devotes a lot of emphasis to the effect of global warming on weather. He displays a graph showing in increased number of storms with larger rainfall have accompanied recent global temperature increases and notes that Katrina gained strength on approaching New Orleans from encountering increased temperatures. Yet, while some areas have become more floodprone from more intensive rainfall, others will experience more drought, especially in Africa (he shows how Lake Chad has dried up). This results from the increased evaporation of water from soil that global warming brings.

Global warming brings many ecological changes. A decline in the number of days of frost has led to new and more invasive species. (Parenthetically, Gore noted that it also reduced the number of days that trucks can drive over Arctic tundra to deliver materials to construct oil-related facilities.) Another ecological consequence of global warming is the rising of the "mosquito line" (the altitude above which mosquitoes don't survive) -- and this specifically endangers African cities designed originally to be built above this line.

But an even more disruptive consequence of global warming is the melting of the two major land-based icecaps -- on Greenland and Antarctica. One consequence of the melting of the

Greenland icecap was already played out when an earlier infusion of fresh water from the St. Lawrence River shut off the Gulf Stream and plunged Western Europe into an Ice Age. The same could happen again.

But there is an even severer danger of melting such a large amount of land ice, which Gore is careful to distinguish from sea ice. When sea ice melts, it doesn't take up any more volume in the sea, just as a melting ice cube in a glass of water doesn't raise the water level. But melting either the Greenland or Antarctic icecap would raise sea level by twenty feet. The graphic display of the flooding this would cause to Florida, San Francisco Bay, the Netherlands, coastal cities of India and China, Bangladesh, and New York City is absolutely frightening. And China, one of the nations so to be endangered, also poses as an enhancer of global warming with its large coal reserves and a surging economy.

Rather than being moved to act to protect planet Earth from this consequence of global warming, there are still those, Gore laments, who don't believe it. They want to reposition global warming as a theory rather than a fact, much as "intelligent designers" want to reposition evolution. In addition to Philip Cooney's recent "editing" of a global warming report, *An Inconvenient Truth* also shows footage of government scientist James Hansen admitting to then Senator Al Gore in 1989 that the last paragraph of his testimony had been "added" by someone else.

The issue at stake, as Gore sees it, is to have a future for civilization to live on planet Earth, but at the present time he sees civilization on a collision course with the planet, with one problem being the threat of overpopulation, especially in poorer regions. Yet he does not remain without hope. In addition to wanting to get across the message that there is no uncertainty or controversy about the reality of global warming, he also seeks to dispel the notion that the environment and the economy require tradeoffs. All other nations, including China, have higher gasoline mileage standards for autos than the US. And, using Socolow "wedges" [*Science*, **305**(5686), 968-972 (13 Aug 04), reported in our Fall 2004 and Spring 2005 issues], he shows that we already have the technology to reverse the causes and consequences of global warming.

Now, what we need is political will, which, he adds, is a renewable resource. Noting that a frog will quickly jump out of water that is too hot but will remain in water that is gradually heated, Gore is concerned that we have not suffered a sufficient jolt to act. The world has already responded to one atmospheric crisis, Gore noted -- the depletion of stratospheric ozone by chlorofluorocarbons. In that case the whole planet saw the impending danger of losing our protective shield from solar ultraviolet light, which was pointed out by atmospheric scientists Sherwood Rowland and Mario Molina. But how do we react to warnings from atmospheric scientists like Hansen, he asked. Congressmen are less inclined to deal with issues not on the tips of the tongues of their constituents, he rues, and Gore's purpose of his message is to bring this issue to the forefront for action. The credits for his film are interspersed with various types of advice of things people can do to protect planet Earth from global warming, and throughout it all is displayed the URL for the film: .

There have been concerns by some that Gore has exaggerated scientific evidence to make his point, and it should be acknowledged that more than a correlation between global

warming and more intense hurricanes has yet to be established. The only glaring error that I saw was an animated portrayal of the cause of global warming, showing greenhouse gas molecules pushing a reflected sunbeam back to Earth. Gore's correct graphical presentation showed, rather, that the culprit is infrared radiation emitted by Earth after absorbing the sunbeam. While triatomic molecules in Earth's atmosphere (of which carbon dioxide is the most abundant) let sunlight pass through (in both directions), they absorb infrared radiation and re-emit about half of this back to Earth.

- John L. Roeder

The Book

Al Gore, *An Inconvenient Truth: The Planetary Emergency of Global Warming and What We Can Do About It* (Rodale, Emmaus, 2006). ISBN 1-59486-567-1. \$21.95 (paper). 328 pp.

Before seeing the movie of *An Inconvenient Truth*, I had caught a fleeting glance at the book version. Noting that the graphical display I had espied in the book was also shown in the movie, it occurred to me that the book would provide opportunity for greater reflection on the movie, so I bought a copy of the book the next day. There I learned that profits from both the book and the film are being contributed "to a nonprofit, bipartisan effort to move public opinion in the United States to support bold action to confront global warming."

The book indeed gave me a wonderful opportunity to reflect further on the film. The graphics of the film are colorfully displayed in the book, and this makes it a quick read. In fact, it would be ideally published in an enlarged, hardbound, cocktail table version. I was particularly struck by how Gore framed the issue: ". . . global warming is not just about science and . . . not just a political issue," he writes in his Introduction. "It is really a moral issue."

"The relationship we have to the natural world is not a relationship between 'us' and 'it.' It is us and we are of it. Our capacity for consciousness and abstract thought in now way separates us from nature. Our capacity for analysis sometimes leads us to an arrogant illusion that we're so special and unique that nature isn't connected to us." (p. 161) "We have a moral obligation to take into account . . . the relationship between our species and the planet." (p. 216)

"The fundamental relationship between our civilization and the ecological system of the Earth has been utterly and radically transformed due to the powerful convergence of three factors," Gore points out (p. 216): 1) "population explosion (p. 216), 2) "the scientific and technological revolution" (p. 232), 3) "our fundamental way of thinking about the climate crisis" (p. 254). ". . . many of our new technologies confer upon us new power without automatically giving us new wisdom," he adds (p. 247), "and those with the most technology have the greatest moral obligation to use it wisely." (p. 250) (Gore notes that the U.S. accounts for 30.3% of global greenhouse gas emissions.)

Using his sister's death from cigarette smoking-related lung cancer as an example, Gore likens coal and oil company "hype" about uncertainty about the relationship between carbon dioxide emission and global warming to "hype" from tobacco companies about uncertainty

between smoking and lung cancer. He uses this to deflate the first of "the 10 most common misconceptions about global warming" (see box).

He acknowledges the following problems in thinking about the climate crisis:

1. ". . . it seems easier not to think about it at all" (p. 254), like a frog in gently-heated water.
2. a disconnect between the consensus of scientists (according to peer-reviewed journals) and the publicly-perceived uncertainty (according to newspapers, which give skeptics equal coverage in reporting of a science story as if it's a "debate")
3. ". . . our false belief that we have to choose between a healthy economy and a healthy environment" (p. 270).
4. the feeling that ". . . we're helpless . . . so we might as well throw up our hands" (p. 276) -- which Gore cites as moving directly from the denial in problem #1 (which he notes is "not a river in Egypt") to despair (which he notes is "not a tire in the trunk").

In spite of all these problems, he also acknowledges the basis for the title of his book: ". . . the truth about the climate crisis is an inconvenient one that means we are going to have to change the way we live our lives." (p. 284) ". . . there's already enough data, enough damage, to know without question that we're in trouble. . . . There is only one Earth, and all of us who live on it share a common future. Right now we are facing a planetary emergency and it is time for action. . . ." (p. 287)

The last pages of *An Inconvenient Truth* are headed "What you personally can do to help solve the climate crisis," which includes a comprehensive list of websites to visit (for an outline, see box). This advice clearly shows that the key to controlling global warming is changing our present energy diet of fossil fuels. In *The World is Flat*, Thomas Friedman writes that by doing this, President Bush could "dry up revenue for terrorism, force Iran, Russia, Venezuela, and Saudi Arabia onto the path of reform -- which they will never do with \$50-a-barrel oil -- strengthen the dollar, and improve his own standing in Europe by doing something huge to reduce global warming." If President Bush *doesn't* do it, Friedman has clearly spelled out a platform of important political issues for 2008, and in *An Inconvenient Truth* Al Gore has clearly placed his feet firmly on that platform.

- John L. Roeder

**"What you personally can do to help solve the climate crisis,"
from Al Gore's *An Inconvenient Truth***

- I. "Save energy at home"
 - A. "Choose energy-efficient lighting"
 - B. "Choose energy-efficient appliances. . . ."
 - C. "Properly operate and maintain your appliances"
 - D. "Heat and cool your house efficiently."

- E. "Insulate your house."
- F. "Get a home energy audit."
- G. "Conserve hot water."
- H. "Reduce standby power waste."
- I. "Improve the efficiency of your home office."
- J. "Switch to green power."

II. "Get around on less"

- A. "Reduce the number of miles you drive by walking, biking, carpooling, or taking mass transit wherever possible."
- B. "Drive smarter."
- C. "Make your next vehicle . . . a more efficiently one"
 - 1. "Hybrids"
 - 2. "Alternative fuels"
 - 3. "Fuel-cell vehicles"
- D. "Telecommute from home."
- E. "Reduce air travel."

III. "Consume less, conserve more."

- A. "Consume less."
- B. "Buy things that last."
- C. "Reduce waste before you buy" [aka "Eliminate unnecessary packaging"]
- D. "Recycle."
- E. "Don't waste paper."
- F. "Bag your groceries and other purchases in a reusable tote."
- G. "Compost."
- H. "Carry your own refillable bottle for water or other beverages."
- I. "Modify your diet to include less meat."
- J. "Buy local."
- K. "Purchase offsets to neutralize your remaining emissions."

IV. "Be a catalyst for change"

- A. "Learn more about climate change."
- B. "Let others know."
- C. "Encourage your school or business to reduce emissions."
- D. "Vote with your dollars."
- E. "Consider the impact of your investments."
- F. "Take political action."
- G. "Support an environmental group."
 - 1. Natural Resources Defense Council
 - 2. Sierra Club
 - 3. Environmental Defense