

Understand Climate Science Before Making Climate Policy

A Discussion Featuring
Dr. William Happer and Dr. Roger Cohen

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On Friday, May 14, the George C. Marshall Institute hosted a Washington Roundtable on Science and Public Policy on climate science and policy, featuring Dr. William Happer and Dr. Roger Cohen. Dr. Happer is Cyrus Fogg Brackett Professor of Physics at Princeton University, member of the National Academy of Sciences, and Chairman of the Marshall Institute. Dr. Cohen is a Fellow of the American Physical Society and retired from ExxonMobil Research and Engineering Company.

A video of the event is available at <http://marshall.org/video/100514-climatescience.php>. The briefing slides used by Dr. Happer and Dr. Cohen can be found at <http://www.marshall.org/article.php?id=875>.

The Roundtable examined the scientific underpinnings of the current legislation aimed at controlling greenhouse gas emissions in an attempt to slow or stop the expected rise in global temperature predicted from those emissions. Because of the far-reaching effects of any such legislation, the science behind it must be as rigorous and unequivocal as possible, but, as the speakers noted, our current understanding of climate change has many serious lacunae.

Marshall Institute President Jeff Kueter opened the meeting by noting that many of the same questions about climate science that dominate the debate today had been identified by the Institute's founders, Dr. Frederick Seitz, Dr. Robert Jastrow, and Dr. William Nierenberg in their 1990 book, *Scientific Perspectives on the Greenhouse Problem*. He then noted the conclusions of a panel effort convened by the Institute in 2001 which assessed climate science and discussed its meaning for policymakers which concluded that:

Are calls about uncertainty in the state of scientific knowledge a call for no action? Nothing could be further from the truth. The message to policy makers is not to delay action until uncertainties are reduced.

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Rather, actions should flow from the state of knowledge, should be related to a long term strategy and objectives and should be capable of being adjusted—one way or the other—as the understanding of human influence improves. There is a sufficient basis for action because the climate change risk is real. Yet, it is equally true that actions must not be predicated on speculative images of an apocalyptic vision of life by 2100.¹

Dr. Cohen began the discussion by analyzing the arguments for significant anthropogenic global warming, which boil down to two assertions: the observed 20th century warming was exceptional in the climate record and was caused (mostly) by human CO₂ emissions, and that climate models predict that things will get much worse in the future. These arguments are based in part on flawed data and interpretation. He pointed to the “hockey stick” chart which purported to show unprecedented recent warming and to Climategate emails which admitted that temperature proxies often do not match the observed temperature record. The surface instrumental data diverge from satellite data; the surface appears to have highly exaggerated warming trend due to urban heat island effect, changes in land use, and the preferential dropout of cooler stations. There is constant back-correcting of past trends and this adjustment anomalously which makes the past look cooler, rather than favoring warming and cooling equally. Dr. Cohen also addressed the serious problem of data quality. Fifty-six proxies show Medieval Warm Period warmer than today, while nine show it cooler, but these nine are often given exceptional credence in discussing past climate. Since much of the raw data used in reconstructing thermometer temperatures has been lost or deleted, the value of results based on this data is questionable.

Climate models are the backbone of the case for anthropogenic warming: the models are calibrated against the observed warming of the 20th century and then used to forecast climate for future emissions scenarios. The premise naturally requires that we can correctly model natural variation and feedbacks in the climate system. (Feedbacks are changes which increase or decrease the warming effect of CO₂.) To obtain significant global warming, there must be large amplifying feedbacks. The climate models on which the IPCC relies say that feedback is strongly positive, but the geological history of the earth suggests that the climate is inherently stable.

The most important feedback is the cloud-water vapor feedback. Prof. Graeme Stephens noted that “[d]ifferent assumptions . . . produce very different conclusions about the magnitude and sign of feedbacks” and that existing analysis methods are “not mature,” which is to say, they are not reliable. Recent studies indicate that feedback factor is small and perhaps even negative. Natural variations such as solar variability and changes in ocean cycles play part in 20th century warming.

¹ James R. Schlesinger and Robert Sproull, *Climate Science and Politics: Making the Connection* (2001): <http://www.marshall.org/pdf/materials/86.pdf>.

The most fundamental tenet of science is that it must be tested by prediction. Existing climate models have failed to predict the course of global temperature or identify an observed greenhouse gas fingerprint. Counter to model predictions and in spite of increases in atmospheric CO₂, Dr. Cohen argued there has been no statistically significant global warming since around 1995 and in fact, the oceans have cooled slightly since 2004.

Another argument for human-caused warming is the appeal to authority: “all scientific societies agree that it is so.” Dr. Cohen argued that as the credibility of the IPCC has declined, the National Academy of Sciences leadership has stepped up to advocate for anthropogenic warming and the need for climate legislation, as seen in the American Physical Society Statement on Climate Change (2007), urging the reduction of greenhouse gases. But the leadership’s position is not held by all the members; so far, 265 physicists have endorsed a call for a new look at the science.

Serious emissions reductions will cost a great deal of money. To obtain 10-30 trillion watts of emission-less primary energy production, which is needed to stabilize CO₂ at twice the pre-industrial level, we could easily spend \$50 trillion over 40 years. Dr. Cohen cited work by economist William Nordhaus, who showed that if the IPCC’s assumption that temperature will rise 3°C if the amount of atmospheric CO₂ doubles is correct, the optimum policy is a gradually implemented carbon tax, but a 50-year delay in doing anything is almost as good. Draconian reductions in CO₂ will cost far more than they will benefit the climate or society. If the IPCC is wrong, the cost-benefit ratios are much too high.

Dr. Cohen concluded by observing that psychological research indicates that people who are invested in the possibility of climate disaster tend to exaggerate the threat and reject any contrary information, which flies in the face of scientific objectivity. Legislators are considering burdensome regulations which will cause great economic hardship, especially to the poor, and will fail in their stated objective, since they will make no difference to climate.

Dr. Happer opened his remarks with a quote from Schopenhauer: “There is no opinion, however absurd, which men will not readily embrace as soon as they can be brought to the conviction that it is generally adopted.”² He noted carbon dioxide is a naturally occurring, non-toxic gas which is emitted by all animal life and required by all plant life for photosynthesis; for that reason, the air’s CO₂ content varies significantly between the winter and the growing season. The CO₂ molecule itself also appears in different modes, only one of which contributes to warming.

He emphasized that the alleged catastrophic warming from CO₂ is due to a hypothesized positive feedback from water vapor and clouds, though observations suggest that the

² From “Die Kunst Recht zu Behalten.”

feedback is small or negative. Clouds have a great effect and can heat or cool much more than water vapor or CO₂, but are poorly described in climate models.

Dr. Happer disproved the belief that the earth's temperature is determined mainly by CO₂; paleoclimate records show that the temperature of the earth has been only weakly correlated with atmospheric CO₂, and temperature rises and falls precede rises and falls in atmospheric CO₂. Historical evidence and boreholes show that in Greenland, temperatures in the Medieval Warm Period (9th to 13th centuries AD) exceed those today. He dismissed the notion that we are above the "optimal level of atmospheric CO₂" since the term "optimal" is a value judgment unrelated to past climate history, when atmospheric CO₂ was often far higher than today. The claim that the earth's temperature has risen at an alarming rate in the last century is misguided; some of the temperature rise is natural, some is, in fact, bogus, and what is left is due to CO₂. The placement of temperature-monitoring stations has been the subject of recent study, which indicates that many are affected by encroaching development – the urban heat island effect – and so overstate recent warming. Dr. Happer illustrated how data has been progressively "realigned" to show dramatic warming as the GISS reinterpreted past temperature records. In spite of apocalyptic claims, we have not seen increases in storms, droughts or the rising rate of sea level, nor has there been an increasing or decreasing trend in sea ice.

Dr. Happer concluded that environmentalism has taken on many of the attributes of a secular religion, with fiercely held tenets, such as "any change is bad." Legislation intended to address climate change has many backers whose agendas may have nothing to do with protecting the environment, since it would provide increased funding for academic groups, new taxes for government, and higher profits for well-placed businesses.

Dr. Happer also argued for the creation of a Team B to reconsider climate science. Team B or Red Team processes are used regularly in the defense and intelligence world to critically review issues, systems, and programs. Comprised of experts from outside the establishment, the Team B is charged with performing a competitive critique of a specific topic. The end product provides policymakers with two independent assessments.