

## **A critique of Oreskes et al. 2008**

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### **Introduction**

Please note that this document is in response to the Oreskes et al paper posted at [www.lse.ac.uk/collections/CPNSS/projects/ContingencyDissentInScience/DP/DPOreskesetalChickenLittleOnlinev2.pdf](http://www.lse.ac.uk/collections/CPNSS/projects/ContingencyDissentInScience/DP/DPOreskesetalChickenLittleOnlinev2.pdf). We have posted this ourselves because the site that posted this article “Centre for Philosophy of Natural and Social Science” declined to allow a rebuttal to be posted to their site. This seems unreasonable to us, but that was their response.

We would have liked to have this rebuttal also to respond to the published version of the paper but Dr. Oreskes failed to notify us of its publication as she had promised to do. We will review that paper now that we are aware of it to see what changes might be needed.

### **Abstract**

Oreskes, Conway and Shindell published a non peer-reviewed paper “From Chicken Little to Dr. Pangloss: William Nierenberg, Global Warming, and the Social Deconstruction of Scientific Knowledge. In this paper, the authors focus on the role of Dr. William Nierenberg in the climate change debate. They make an attempt to portray him as a pivotal figure in keeping the scientific debate from reaching an earlier conclusion on the importance and urgency of climate change. Unfortunately, the authors resort to unsubstantiated claims without evidence; omit readily available evidence which does not support their thesis; paraphrase in ways that completely change the underlying meaning and most importantly they completely mischaracterize “Changing Climate”. Oreskes et al. achieves exactly what they accuse others of doing: discouraging open and free scientific debate in the field of climate change. In this paper they also deal mischief to the memory of a thoughtful and hardworking scientist.

### **Introduction**

In February 2008 Oreskes, Conway and Shindell published a non peer-reviewed paper “From Chicken Little to Dr. Pangloss: William Nierenberg, Global Warming, and the

Social Deconstruction of Scientific Knowledge”<sup>1</sup> (“Chicken Little...”). This paper is, to put it charitably, a work of fiction.<sup>2</sup> The core premise of the seventy-two-page paper is simple: The authors allege that Dr. William Nierenberg did not believe that CO<sub>2</sub> induced global warming was a serious issue that needed to be addressed. As a result Nierenberg used his role as chairman of the Carbon Dioxide Assessment Committee (CDAC) to cause the 1983 National Research Council report “Changing Climate” to conform to these views. They further claim that the report was completely out of step with the consensus views of the time including the scientific members of the CDAC. Nierenberg did this by handpicking the panel, and by writing the Executive Summary and the Synthesis in a way that essentially ignored the scientific conclusions contained in the body of the report. There is also the inference that Nierenberg was further motivated by a desire to appease the political leaders at that time.

### **Tactics of “Chicken Little...”’s Authors**

In order to make their case Oreskes et al. use the following tactics: (1) they make claims without evidence; (2) they ignore the available evidence; (3) they paraphrase in ways that completely change the underlying meaning (4) and most importantly they completely mischaracterize “Changing Climate”<sup>3</sup>. A reader of the Oreskes et al. paper who later read the actual 1983 National Research Council (NRC) report would find much of that report unrecognizable.

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<sup>1</sup> *“From Chicken Little to Dr. Pangloss: William Nierenberg, Global Warming, and the Social Deconstruction of Scientific Knowledge”*. Science Technical Report 02/08, Editor: Damien Fennell, Centre for Philosophy of Natural and Social Science Contingency and Dissent.

<sup>2</sup> The quality of the reviewed effort is presaged by its title: we fail to pick up the reason for “Chicken Little” in the title, but the reference to that Voltaire figure, Dr. Pangloss (dare we join the authors in uncited speculation, here?), was “lifted” with little doubt from the uncited work of Stephen Jay Gould and Richard Lewontin, who invented the term “panglossian paradigm.”

<sup>3</sup> National Research Council (U.S.). Carbon Dioxide Assessment Committee.: Changing Climate: Report of the Carbon Dioxide Assessment Committee/Board on Atmospheric Sciences and Climate, Commission on Physical Sciences, Mathematics, and Resources, National Research Council. Washington, D.C.:National Academy Press, 1983.

We offer no opinion as to whether or not the conclusions and recommendations contained in the NRC report were correct in light of the science and judgment of the time. We leave that to others to judge. What we do contend is the following: The Carbon Dioxide Assessment Committee (CDAC) was made up of some of the most distinguished scientists of the time<sup>4</sup>. Different authors wrote various chapters of the report, and those authors were largely responsible for the contents of those chapters. The Executive Summary and the Synthesis represented the joint findings and conclusions of all the members of the committee as clearly stated in the introduction. There is no evidence that Nierenberg unduly influenced the committee or that he had a hidden agenda as Chairman. There is also no evidence that the general scientific community considered the report out of the mainstream.

There is much evidence, including the report itself that all the statements in the paragraph above are true. Oreskes et al. fail to present any evidence that they are not. In the essay below, we address each of the major points Oreskes et al. try to make by direct claim or by innuendo.

So that the reader can draw his or her own conclusions as to its content we have included the executive summary to the “Changing Climate” report as an appendix. This executive summary was printed almost verbatim in the New York Times shortly after the full report was published.

### **Nierenberg’s “views” on global warming**

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<sup>4</sup> The members of the CDAC were; William A. Nierenberg (Chairman) SIO, Peter G. Brewer Woods Hole/NSF, Lester Machta NOAA, William D. Nordhaus Yale, Roger R. Revelle UCSD, Thomas C. Schelling Harvard, Joseph Smagorinsky Princeton, Paul E. Waggoner, Connecticut Agricultural Experiment Station, George M. Woodwell Marine Biological Laboratory, Woods Hole.

Oreskes et al. attempt to establish that Nierenberg did not consider CO<sub>2</sub> to be a serious issue. In order to establish this view throughout “Chicken Little...”, the authors use the methods described above. They make claims without evidence, alter evidence, and ignore evidence. Nierenberg was a very public figure, who wrote numerous articles and speeches during the relevant periods. A reasonable person would establish his views by quoting him completely and accurately from this extensive record.

In laying out the history of the CO<sub>2</sub> issue Oreskes et al. comment on an earlier report. A JASON panel chaired by Gordon MacDonald issued “The Long Term Impact of Atmospheric Carbon Dioxide on Climate” released in April 1979.<sup>5</sup> This report is interpreted in “Chicken Little...” to have clearly laid out the scientific concerns over the growth of CO<sub>2</sub> in the atmosphere.<sup>6</sup> At this point the authors are using this reference as an example of the emerging scientific consensus on CO<sub>2</sub>, but somehow they “neglect” to mention that Nierenberg was a member of that committee.

Later on, Oreskes et al. return to that same report for a different purpose. They object to the sentence: “The warming of the climate will not necessarily lead to improved living conditions everywhere.” Without providing any evidence, they simply assign responsibility for this sentence to Nierenberg with the statement. “The evidence suggests that it was Bill Nierenberg.”<sup>7</sup> The reader might think that this evidence will be forthcoming, but it is never provided.

Aside from the fact that there is nothing connecting Nierenberg to this particular statement the authors take this quote out of context. The cited sentence is in the abstract of the Jason report, where it is pulled directly from the body of the paper. The full quote is as follows:

“Viewed in the longer perspective and noting past historical events, changes in climate would not lead to improved living conditions everywhere. Any change

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<sup>5</sup> Gordon MacDonald et al., “The Long Term Impact of Atmospheric Carbon Dioxide on Climate,” JASON Technical Report JSR -78-07, prepared for the U.S. Department of Energy, 1989

<sup>6</sup> Oreskes et al. 11

<sup>7</sup> Ibid. 15

would produce stress and possibly disaster in some parts of the world since so many aspects of society have adapted, with very large investments in their infrastructures, to the climate of the past few decades.”<sup>8</sup>

Clearly the point in MacDonald et al. was that a naïve view that warm is good was incorrect, and that it would likely lead to a whole set of negative consequences. There is no evidence whatsoever that Nierenberg was any more responsible for this observation than any other member of the Jason committee.

In search of any direct evidence on Nierenberg’s views “Chicken Little...” lifts the following from a review of a Department of Energy Report. “There were lots of ‘man-induced perturbations’ in the environment, he (Nierenberg) suggested, and CO<sub>2</sub> was ‘not particularly different from others that have been dealt with’.”<sup>9</sup> By stringing together two sentence fragments, and not providing the subject of the four- page document the reader is led to believe that Nierenberg was referring to the consequences of CO<sub>2</sub> on society. But in fact the title of the document tells the story. It is a review of the “Comprehensive Plan for CO<sub>2</sub> Effects Research and Assessment.” The comments are specifically related to the problems of forecasting. Here is the more complete quote:

A large number of brilliant people have worked on this problem for a long time. Other than some limited prediction capability for a few months, it can be said that there have been no real advances made. The effect of CO<sub>2</sub> changes is not particularly different from others that have been dealt with (this is implicitly recognized in the Comprehensive Plan.)<sup>10</sup>

So Oreskes et al. lifted a comment on the state of climate modeling in general and its relationship to modeling the effects of increased CO<sub>2</sub> and turned it into an apparent comment on the problems society will face as a result of CO<sub>2</sub> increases. We find it highly unlikely that they did this by mistake.

The authors go on to select another couple of fragments out of comments sent to John Perry regarding a draft Summer Study CRB report.

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<sup>8</sup> Macdonald et al. 25

<sup>9</sup> Oreskes et al. 2008 page 17

<sup>10</sup> William A. Nierenberg, “Draft, August 11, 1978, Review of the May 1978 Comprehensive Plan for CO<sub>2</sub> effects research and assessment,” SIO WAN, MC 13 Box 172, Folder: “Review of the May 1978.”

Reviewing a draft of the Charney report in 1979 [Nierenberg] suggested that ‘man has survived extreme climate changes in the past and will do so in the future.’ Foreshadowing what would soon become an oft-repeated position, he argued that the real issue was not climate change per se, but ‘the degree of [our] adaptability to climate change’.<sup>11</sup>

Oreskes et al. use their typical phrase, “oft-repeated position”, without citing any additional examples. We think “oft” is more than one. With regard to their claim, taken in context, these comments had to do with effective communication not any broad-based philosophical viewpoint. The full comment without the paraphrasing is;

The third bullet is again too strongly overstated for a well balanced Academy document. Man has survived extreme climate changes in the past and will do so in the future. I don’t believe it is a question of survival – it could be more felicitously worded as the degree of adaptability to climate change.

It does not seem very striking to us to state the obvious: that humans would survive climate change, but the degree of damage to society is the issue. Other comments in the same document support the view that he was concentrating on the details of the document. “A very small point on page 9, third line of the second paragraph – I would like to see the ‘s’ dropped from ‘flows.’ I like the subjunctive.”<sup>12</sup> Continuing the misleading paraphrasing Oreskes et al. state :

He also argued that, since fossil fuel use would peak within seventy-five years – as petroleum reserves were depleted – CO<sub>2</sub> levels would peak too. ‘Between 100 and 300 years from now the planet should be back to where we are now as far as CO<sub>2</sub> alone is concerned.’<sup>13</sup>

In a footnote Oreskes et al. suggest that Nierenberg knew that this was incorrect because of coal reserve estimates and that he was “cherry picking the data.” But the actual quote does not refer to petroleum reserves at all.

As I said this is an overstatement depending on how long “long term” is. Since even in the ‘worst case’ developed by anyone the production of fossil fuel should peak and slow down rapidly after about 75 years and then return to

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<sup>11</sup> Ibid. 15

<sup>12</sup> William Nierenberg to John Perry August 14 1979

<sup>13</sup> Oreskes et al. 17

present values between 100 and 300 years from now. The planet should be back to where we are now as far as CO<sub>2</sub> alone is concerned.

Nierenberg refers to fossil fuel use in general and there is no reason to assume that he wasn't including coal. By paraphrasing the quote instead of simply using the original they add a reference to petroleum in order to set up their footnote criticism.

In another attempt to establish Nierenberg's views on climate change Oreskes et al continue their pattern of quoting fragments, in this case from the Executive Summary of the CDAC report itself, which was in fact endorsed by all the committee members.

Viewed in terms of energy, global pollution, and worldwide environmental damage the CO<sub>2</sub> problem appears intractable. Viewed as a problem of changes in local environmental factors – rainfall, river flow, sea level – the myriad of individual incremental problems take their place among the other stresses to which nations and individuals adapt.<sup>14</sup>

They leaves out the last sentence:

It is important to be flexible both in definition of the issue, which is really more climate change than CO<sub>2</sub>, and in maintaining a variety of alternative options for response.<sup>15</sup>

By leaving out the last sentence they lose the point of the paragraph and conclude:

In short Nierenberg reframed the issue as just one of many changes and challenges facing human society.<sup>16</sup>

Aside from attributing this paragraph to Nierenberg rather than the committee as a whole, it is quite difficult to see how the paragraph taken in its entirety “reframes the issue.”

“Chicken Little...” fast forwards from 1979 to 1990 to assert that Nierenberg went to the White House to stop George Bush from signing the “Framework Convention on Climate Change.” Oreskes et al. claim that his message was “global warming was not a problem and no policy action was necessary.”<sup>17</sup>

Putting aside the fact that it isn't clear how this *post hoc* event from 1990 has anything to do with the 1983 CDAC report, this is a case of playing extremely fast and loose with the

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<sup>14</sup> Ibid. 57

<sup>15</sup> “Changing Climate” (Executive Summary) page 3.

<sup>16</sup> Oreskes et al. 57

<sup>17</sup> Ibid. 14

facts. The cited unreviewed Science article<sup>18</sup> makes no reference to Nierenberg and the Convention on Climate Change, and Oreskes et al. present no other evidence for their claim.

The article in Science is based on a “Slim Unrefereed Report” published by the George C. Marshall Institute.<sup>19</sup> It seems to us that if Oreskes et al. wanted to establish Nierenberg’s views based on that report they should have simply cited it directly rather than an interpretation by a popular writer for Science. The simple explanation is that this wouldn’t have provided support for their views.

As to Nierenberg’s 1989 views, the Science article states that Nierenberg “has been working hard to get the message into the White House.” “He personally briefed White House Staff.” But, later on, in the same issue of Science Nierenberg responded:

I received a call to come to Washington from La Jolla on very short notice to brief some staff. I did so, but from then until now I have had no further contact.

He also states in the published letter in Science:

Our report does not wish away greenhouse warming. We make two recommendations. One is that a very large increase be made in resources to study these effects. We would not have made this recommendation if we did not believe that the possibilities were extremely serious. Our second recommendation that major policy actions not be undertaken until the implications are better understood seems to be the source of all the various criticisms.

In summary we don’t believe that the best way to establish Nierenberg’s views on CO<sub>2</sub> in 1983 would be a popular article dealing with events from 1989, and even if it were the cited article doesn’t back up the claims made by Oreskes et al. about those events.

In our view the first paragraph of his preface to the CDAC report most likely is the best representation of Nierenberg’s views in 1983 when the report was published.

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<sup>18</sup> Science, V.246, November 24, 1989

<sup>19</sup> George C. Marshall Institute

There is a broad class of problems that have no ‘solution’ in the sense of an agreed course of action that would be expected to make the problem go away. These problems can also be so important that they should not be avoided or ignored until the fog lifts...Increasing Atmospheric CO<sub>2</sub> and its climatic consequences constitute such a problem.<sup>20</sup>

### **Nierenberg’s selection as chair of the CDAC**

Oreskes et al. imply that Nierenberg was selected as Chairman of the CDAC for reasons other than his capability as a scientist. They do this by misrepresenting his scientific credentials, and by reference to his “conservative politics.”

Oreskes et al attempt to diminish Nierenberg’s credibility as a scientific chairman by omitting most of the salient features of his career, leaving out important information and using facts carelessly, and by suggesting he was no longer a working scientist after 1953. “He subsequently held a series of positions at the interface between science and politics.” They have Nierenberg moving directly from his PhD at Columbia University to “teaching physics” at the University of California at Berkeley Then they have him leaving in order to take the position as director of the Hudson Laboratory in 1953.<sup>21</sup> This is incorrect. A more complete summary of his career (below) makes clear why he was a reasonable choice to chair the CDAC.

In 1948 Nierenberg’s academic position was Assistant Professor of Physics at the University of Michigan. From 1950 to 1965 he was Associate and then Professor of physics at the University of California, Berkeley, where he had a very large and productive low energy nuclear physics laboratory, graduating 40 PhD’s during this time and publishing about 100 papers. During that period he took a one-year leave to serve as the director of the Columbia University Hudson Laboratory. Later, he oversaw the design and construction of the “new” physics building at Berkeley. Much later (1960-1962) he

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<sup>20</sup> “Changing Climate” (Executive Summary) page 3

<sup>21</sup> Oreskes et al. 15 and 16

took leave once again as Assistant Secretary General of the North Atlantic Treaty Organization (NATO) in charge of scientific affairs, where he oversaw many international studies on physics and advanced defense technologies.

In 1965 Nierenberg was offered a major change to run what most feel is the most prestigious oceanographic institution in the world, The Scripps Institution of Oceanography (SIO). His was not a random selection. His background in sonar research and other naval-related science, his knowledge of and interest in geophysics dating from his college times and his many friendships in the community made him intellectually eager to go. By then he had also developed the many necessary international relationships. As SIO's longest serving director, he quadrupled the funding for the institution and developed a fleet of five modern research vessels.

Nierenberg gained national recognition for his achievements and contributions to science. In 1965, he was elected to the National Academy of Sciences and to the Council of the National Academy of Sciences (NAS) in 1979. He was also elected to the National Academy of Engineering, and the National Academy of Arts and Sciences.

Clearly, Nierenberg earned a great deal of influence during this time. He served on a large number of prestigious committees, primarily after he returned from NATO. Most relevant in terms of the present subject are that in 1971 he was appointed chairman of the National Academy of Sciences National Advisory Committee on Oceans and Atmosphere and served on this committee until 1977. Nierenberg served on various panels of the Presidents' Science Advisory Committee. He was a member of the National Science Board from 1972 to 1978 and was appointed for another term from November 1982 to May 1988.

Nierenberg was a consultant to the National Security Agency, and served on many military-related panels. In 1976 he was appointed one of two senior consultants to the then newly formed White House Office of Science and Technology Policy (OSTP). He was a member of the National Aeronautics and Space Administration's (NASA) Advisory Council from 1978 to 1982 and served as its first chairman. He was Chairman of the OSTP Acid Rain Peer Review Panel, whose report "Acid Rain" was published in

1984. For anyone interested in political trivia and memorabilia, like the “Chicken Little....” co-authors appear to be, William Ruckelshaus (then the distinguished head of the Environmental Protection Agency) might be happy to recount the rather difficult meeting Nierenberg and Ruckelshaus had when they had to defend their recommendation to support legislation capping SO<sub>2</sub> emissions, to the formidable Director of Management and Budget, David Stockman, with President Ronald Reagan looking on.

This brief review of Nierenberg’s career and expertise make it clear that he was, contrary to the claims and innuendo of Oreskes et al., an eminently reasonable choice to chair the CDAC. Only by ignoring the realities of his career achievements could one come to a contrary conclusion.

Apparently the “Chicken Little...” authors weren’t satisfied with Nierenberg’s background as an explanation for why he was selected as committee chair. So they decided to ask John Perry who had been the executive secretary of the committee. Perry’s response was that “he had no recollection of how Nierenberg was chosen.” Most historians would have considered this a dead end, but instead they asked Perry to speculate. Perry suggested Nierenberg’s stature and “well known conservative politics.”<sup>22</sup>

Actually it is not clear why conservative politics would have made Nierenberg the choice to chair the committee. In 1980 Jimmy Carter was the president, and the Democratic Party controlled Congress, which specifically requested this report. Perhaps the authors and Perry confused the timing since the much of the committee’s work was done subsequently, during the Reagan presidency.

As evidence of this timing confusion Oreskes et al. first note that Nierenberg was in place as chairman of the committee in October 1980.<sup>23</sup> Then they observe “in 1981 Nierenberg joined the transition team of the new Reagan administration...Academy leaders likely viewed this as an asset, too.”<sup>24</sup> So apparently using a time travel device, in mid 1980 the academy leaders learned that Reagan would be elected later that year and that Nierenberg

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<sup>22</sup> Ibid. 22

<sup>23</sup> Ibid. 22

<sup>24</sup> Ibid. 22.

would be on his transition team making him ideal as Chairman of the CDAC.

A much more likely explanation for the choice of Nierenberg was that he had been involved in climate and atmospheric issues for a number of years. He had served as chair of the new presidential advisory committee, the National Advisory Committee on Oceans and Atmosphere (NACOA) to oversee a national program on oceanography. Nierenberg chaired NACOA from 1972 to 1977 and spoke forcefully in support of the National Oceans and Atmospheric Administration. Nierenberg had also served the White House during 1975-1976 as a member of the President's Science Advisory Committee and during 1976-1978 as a member of the Office of Science and Technology Policy (under President Carter). He chaired and served on the National Aeronautics and Space Administration's Advisory Council and was its first chairman from 1978 to 1982. He was also concurrently serving on the National Research Council's Climate Research Board, as previously stated. We can deduce that his chairmanship abilities were well known at the time, and he was certainly technically prepared for the job.

### **Selection of the CDAC committee**

Oreskes imply that Dr. Nierenberg somehow stacked the committee. They state, "When the opportunity came to constitute the committee he included more than biology, geology, and oceanography. He included economics too." They go on to argue, "It is a striking feature of the CO<sub>2</sub> assessment committee that its members included two economists."<sup>25</sup>

First, although committee chairpersons are always influential, it is not clear to what extent Nierenberg chose the committee members. Typically, National Research Council Committee membership is very carefully vetted by the supervising Board, which must approve any reports. Oreskes et al. provide no material to justify their position that Nierenberg selected the committee or made the choice to include a specific number of

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<sup>25</sup> Ibid. 26

social scientists.

The following is from the Foreword to the final report by Thomas Malone:

A number of considerations went into the design of the Committee and the selection of additional experts to contribute to its work. Competence was sought in each of the major subject areas of the question as well as experience with assessment of long-range issues.<sup>26</sup>

In other words, the Climate Research Board considered the make up of the committee to be in its purview and did not simply delegate the authority to the chairman.

Second it was hardly striking to include economists on the committee. The author's quickly observe that Thomas Schelling had been the chair of a 1980 NRC committee charged with examining the economic and social dimensions of anthropogenic warming. Given that the "Climate Change" authors needed to deal with the fact that the timing of the impact of CO<sub>2</sub> increases was a central question, a crucial input to determining timing would be an estimate of the growth of fossil fuel use. It would seem logical that economists would take the lead on this subject. However the charge to the committee makes it clear that economists would be needed, and removes any scrap of evidence that the inclusion of economists was Nierenberg's attempt to stack the committee. Oreskes et al. appear to have completed their work without having read the charge, a grievous omission. The charge to a committee of the National Research Council sets the subject matter and by extension, the nature of National Academy committees. In this case the charge is contained in an act of Congress, conveniently reprinted in Annex 3 of the "Climate Change" report. Quoting from the act, "Such study should also include an assessment of the economic, physical, climatic, and social effects of such impacts<sup>27</sup>."

Based on this directive it was the wish of *Congress*, not Nierenberg, that the committee include social scientists. It is also worth noting that subsequent comprehensive reports such as the current IPCC report include the work of many social scientists.

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<sup>26</sup> "Changing Climate" pages x, xi

<sup>27</sup> "Changing Climate" page 492

## **Nierenberg's influence on the Committee's deliberations**

Oreskes et al. allege, "Nierenberg repeatedly tried to bring forward suggestions" that warming was not a serious concern. The authors' evidence for this is a single discussion at "an early meeting" regarding a scientific theory proposed by the chair of the Oceanography Department at Woods Hole regarding ocean circulation.<sup>28</sup>

How it is possible to turn a single scientific discussion in the second of four meetings, into a "repeated attempt" to down-play the seriousness of global warming issue is impossible to understand. The "Chicken Little..." authors clearly had access to all the committee minutes, and is this their best example? It does not seem particularly noteworthy that Nierenberg brought up a current theory from a respected researcher even if at the end of the day the committee concluded that most oceanographers did not share the same view.

Trying to strengthen their fabrication that Nierenberg was personally pushing a particular view, the authors then suggest a sort of Machiavellian delegation:

"But Nierenberg's principal tactic was to rely on the arguments provided by the two economists."<sup>29</sup>

This is an amazing statement given that they present no evidence to back up this claim of collusion. They simply go on to outline some of the comments made by the economists at committee meetings.

## **The "Changing Climate" report**

Oreskes et al. write, "Nierenberg was the lead author of the first major report on climate science issued by the National Academy of Sciences *that challenged the emerging consensus view on global warming*" [emphasis ours].<sup>30</sup>

Although the "Chicken Little..." language is a bit unclear we assume from the context

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<sup>28</sup> Oreskes et al. 2008 page 28

<sup>29</sup> Ibid page 29

<sup>30</sup> Ibid page 8

that the authors aren't claiming that this is the first paper issued by the National Academy of sciences on climate science, but rather the first paper that differed from a consensus view that had been forming.

Oreskes et al. claim three elements of this "emerging consensus": that carbon dioxide was a greenhouse gas and increasing, that doubling was likely during the next half century, and that doubling would likely lead to an average global temperature increase of 2-3°C. Since this assertion is made without citation it isn't clear what group was supposed to share this consensus. Was it all climate scientists, members of the academy, physical scientists?

But assuming there was an "emerging consensus on global warming," the report clearly is in line with the three elements suggested by the "Chicken Little authors...". The Executive Summary of "Changing Climate" states,

2. The current increase is primarily attributable to burning of coal, oil, and gas; future increases will similarly be determined primarily by fossil fuel combustion. Deforestation and land use changes have probably been important factors in atmosphere CO<sub>2</sub> increase over the past 100 years. (Chapters 2, 3)<sup>31</sup>

The report speaks for itself, and it is almost completely in line with these three theoretical areas of consensus. The only difference was in the estimate of when carbon dioxide would double. The CDAC report, accurate in retrospect, put the likely projected doubling into the second half of the twenty-first century. It is therefore completely unclear why the "Chicken Little..." authors chose to characterize the report in this way. Oreskes et al provide no examples of how the report varies from their theoretical three-point consensus, and never return to this topic.

It does not appear to us that "Changing Climate" challenged any incipient scientific consensus but rather brought together a diverse set of expertise in one place for the first time. Again, Thomas Malone explains all of this in the foreword to the report. Whether or not there was "an emerging consensus" in 1983 is open to debate. In retrospect, it is

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<sup>31</sup> "Changing Climate" Executive Summary page 1.

reasonable to claim that “Changing Climate” played a role in forming the modern consensus, whatever that may be.

### **The Synthesis and Executive Summary**

Oreskes et al express puzzlement that the report was divided into multiple sections focusing on specific topics.<sup>32</sup> It isn't clear why they are puzzled. They include a quote from the preface, which explains this choice of organization. The report is actually a series of separately peer-reviewed papers authored by the various members of the committee.

Oreskes et al include the fact that the executive summary and synthesis were based on conclusions “which all members could wholeheartedly endorse.” Yet strangely they immediately state “the individual chapters were very different from each other and with the exception of the two chapters written by the economists, very different from the synthesis.”<sup>33</sup>

It isn't surprising that the different chapters are very different from each other as they cover completely different topics. How could a chapter estimating future carbon dioxide emissions be the same as a chapter on carbon dioxide and the oceans? It is difficult to imagine what they were even thinking when they wrote this.

The statement that the chapters were different than the synthesis and the executive summary is also insupportable. This would imply that the various committee members, all highly distinguished and influential scientists, agreed to a consensus synthesis that was completely different than their views. No evidence is produced to support this idea. Instead the available evidence indicates that these were indeed the views of the entire committee.

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<sup>32</sup> Oreskes et al. 2008 page 49

<sup>33</sup> Ibid page 50

With respect to consensus, here is the salient paragraph from Nierenberg's Preface to the report:

The CO<sub>2</sub> issue is so diverse in its intellectual components that no individual may be considered an expert on the entire problem. For this reason, as noted above, the CDAC prepared or commissioned separately authored and separately peer-reviewed papers in each area, with no attempt to force unanimity of style or of views. For the same reason, the Committee members felt themselves incapable of judging and endorsing as a group the details of each paper's analysis and findings. Thus, each paper should be viewed primarily as the product of its individual members and other reviewers but not enjoying the unanimity of conclusions possible in a more homogeneous and less controversial topic. However, the Committee's work did reveal a large core of views, findings, conclusions, and recommendations on a more general level, which all members could wholeheartedly and responsibly endorse. These are presented in the Synthesis of the report. Despite the existence of some areas of continuing controversy, such as the carbon cycle, there are no major dissents with respect to the contents of this assessment.<sup>34</sup>

As noted above Oreskes et al. do include paraphrased portions of this paragraph, in a way that leaves out some of the essential points. Even with that they fail to show that any of these statements in the Preface are incorrect or that there was any dissent by the various committee members.

Oreskes et al. enlist personal correspondence between Oreskes and John Perry to support their claim that the Synthesis did not represent the consensus, but they do so by omissions that change the message. In November 2007, John Perry wrote:

You assert that the members of the committee did not concur with the Synthesis (which by the way was written by Jesse Ausubel with some guidance and editing by Nierenberg). However, in the Preface Nierenberg specifically states that the Committee members "wholeheartedly and responsibly endorse" the general conclusions, and that there are "no major dissents with respect to the contents of this assessment." To the best of my knowledge, this statement is correct. Certainly I would never have permitted the report to go forward if any member had raised explicit objections. It's possible, of course, that Nierenberg simply cowed the group into submission by the force of his terrifying personality – but people of this caliber are not easily cowed<sup>35</sup>!

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<sup>34</sup> "Changing Climate" page xv

<sup>35</sup> email from John Perry to Naomi Oreskes November 2007

The only part of this note from John Perry that Oreskes et al. include in their paper was the parenthetical reference that Jesse Ausubel drafted the Preface and Nierenberg edited it. Since this was a private correspondence between Perry and Dr. Naomi Oreskes there is no way that a reader of “Chicken Little...” would be aware that the authors deliberately held back Perry’s view that the Executive Summary and Synthesis represented the consensus of the Committee.

Continuing the idea that the fact that the chapters covered different topics somehow meant there was a battle of ideas within the committee, the “Chicken Little...” authors state.

Nierenberg thus found support for *his views* [emphasis ours] not from his fellow natural scientists, but from the economists on the committee. And it was the economists’ view that the final report would place front and center.<sup>36</sup>

Oreskes et al. never establish a “view” for Nierenberg or for anyone else on the committee, for that matter. Their assertion that the final report places any particular “view front and center” is unfounded and the footnote that follows this statement has nothing to do with the assertion. We would say that the view of all the committee is placed front and center in the Executive Summary and the Synthesis. Perhaps this is too simple a notion.

The assertion that the Executive Summary and Synthesis focus on positions from the chapters authored by the economists is clearly incorrect. Of the twenty-one numbered paragraphs in the Executive Summary the first thirteen are completely scientific in nature. They specifically cover all three of the areas of “consensus” the authors reference earlier. In fact the estimate of climate sensitivity to CO<sub>2</sub> growth in “Changing Climate” is very similar to current IPCC estimates, warming in the 1.5C-4.5C range commensurate with CO<sub>2</sub> doubling, polar amplification, sea level rise, ice free arctic etc. These are expressed with very little uncertainty.

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<sup>36</sup> Oreskes et al. 2008 page 30

Then we reach some of the paragraphs that are based on the social science chapters (Chapters 2 and 9, with Chapter 2 being a forecast of CO<sub>2</sub> emissions). It is hard to see how this places them “front and center.” In any event when the conclusions are taken together they don’t seem particularly controversial, given that this was 1983 and not 2008. We had a difficult time finding the unreasonable positions of the economists. Surely it is reasonable for economists to suggest that cost benefit analysis is a useful tool for approaching the issue of timing actions?

What is not found anywhere in the Executive Summary is a reference to technology solving the problem, or that the problem would go away on its own. This is a complete fabrication by Oreskes et al., who are unable to come up with a single reference that supports these statements.

### **Response to the report**

Given their theory that the CDAC report contradicted the emerging consensus, and that it misrepresented the views of a majority of the committee members we would expect that they could have produced a series of critical responses to the report. Where is the outrage from the other committee members, and members of the research community. The answer is that it did not happen. And the obvious reason (to anyone but the authors of “Chicken Little...”) is that their hypothesis is completely incorrect.

In light of a complete absence of evidence they fall back on a letter that reviewer Alvin Weinberg sent to the committee prior to publication of “Changing Climate”. They comment, “A basic principle of Academy policy is that the conclusions of any report must be consistent with the evidence presented, and the summary must provide an accurate reflection of the report as a whole.”<sup>37</sup>

As an aside the citation for this statement of Academy policy is to a private communication with Larry Armi who is currently a scientist with the Scripps Institution of Oceanography. It is not clear why they felt that Armi would be the best source of this

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<sup>37</sup> Ibid page 62

Academy policy, except that they wanted to include the quote “by his own account Armi was ‘too junior’ to speak up.” Actually, Armi was a coauthor of the second assessment with Smagorinsky, and he never read “Changing Climate”<sup>38</sup>. The only conceivable purpose of including this would have been to mislead the reader into thinking that Armi was critical of a report that it turns out he never read.

They assert that Weinberg “noted that this report failed to pass the bar.” In fact, Weinberg made no comment on whether the Synthesis was in line with the individual chapters. This is another fabrication on the part of Oreskes et al. He never mentions this topic at all. Weinberg wanted to solve the climate problem with technology, specifically nuclear power. This is where he wanted a much stronger statement:

...of the non-fossil options the only ones that appear to have the capacity during the next 75 years of seriously reducing the growth of CO<sub>2</sub> are conservation and nuclear power. Progress in conservation has been substantial. By contrast, the nuclear option...has fallen into deep trouble.

Continuing to put words into Weinberg’s mouth they paraphrase the following: “markets would provide technological solutions without much pain or dislocation.”<sup>39</sup> In fact the words markets and technology never appear in Weinberg’s letter. At this point it seems clear that Oreskes et al find “markets” and “technology” behind every tree. The Weinberg letter is indeed quite critical, but it is interesting that Oreskes et al. try to redirect that criticism to match their own preconceived views.

The authors also claim that Weinberg’s input was ignored, and that there was no evidence that report was altered in response to his comments, but neither do they present evidence that it was *not* altered.<sup>40</sup> The final version of the report was substantially revised from the review copy that Weinberg received. It is clear that at least some of the figures and sections that he refers to were revised, whether this was as a result of those comments is now impossible to determine.

Having set up this straw man, the authors are now on a roll. They ask themselves how it was possible for these comments to be “ignored,” and quote Edward Frieman as saying

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<sup>38</sup> Personal Communication with Nicolas Nierenberg June 2008.

<sup>39</sup> Ibid. 62

<sup>40</sup> Ibid. 65

that standards were lax in those days. Oreskes et al. knew that Frieman was not involved in this report. Instead they had in their hands the following from John Perry, who was. “My recollection of the Weinberg review is somewhere between fuzzy and non-existent, but I can’t believe I would have buried such probing comments.”<sup>41</sup> So they choose to use the comments of someone who had no knowledge of the process, and to omit the comments of the person who was responsible for the process at the time.

The Weinberg letter provides no evidence for the claim that the Executive Summary and Synthesis Chapter were hijacked and did not reflect the consensus of the committee. While it also establishes that Weinberg was unhappy with the draft copy that he reviewed (primarily for not pushing the nuclear option), it certainly doesn’t establish that the published report was viewed negatively by the general community.

### **Nierenberg was “doing the administration’s bidding”**

Finally the Oreskes et al. get to what we vehemently hope is not their hidden motive: to intimidate scientists and qualified people from expressing their opinions.

“Nierenberg gave the Administration everything it wanted: a report that in his own words was ‘conservative,’ that presented a united front, insisted no action was needed now and concluded that technology would solve the problem with no need for government intervention.”<sup>42</sup>

Essentially nothing in this statement is accurate. The characterization of Nierenberg’s role in producing “Changing Climate” is misrepresented, as are the contents of the report. An examination of the cited speech by Nierenberg contains no references to technology, or to government intervention, although it does say the report is “conservative” (but it is likely that this was meant in the scientific, not the political sense). Although Oreskes et al. seem to love the references to technology and government, even in congressional testimony, they never produce a single citation connecting Nierenberg to these ideas.

The following quote from “Chicken Little...” is all too typical.

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<sup>41</sup> email from John Perry to Naomi Oreskes November 2007

<sup>42</sup> Oreskes et al. 47

“From Nierenberg’s personal papers and writings it is clear that he was particularly moved by the argument that humans had a long history of adapting to climate change in the past, and there was no reason to think they would not continue to do so in the future.”<sup>43</sup>

This is made without a single citation. As we have examined in depth they have no evidence for assigning this viewpoint to Nierenberg. The only place where anything referring to adaptation appears is in the report itself, and is the product of other authors. What papers or other writings are they referring to? In sixty pages they have not produced anything.

### **Uncertainty in the Synthesis**

Oreskes et al. allege “At junctures where an important uncertainty was broached the synthesis took the most sanguine view: that CO<sub>2</sub> use would naturally fall off as future demand for fossil fuel decreased, that deforestation would probably slow down, that weather modification could be made to work, and that the actual increase in mean global temperature for doubling CO<sub>2</sub> was likely to be at the low end of earlier estimates.”<sup>44</sup> (One can only assume that the reference to CO<sub>2</sub> “use” was an error and actually meant CO<sub>2</sub> emissions.)

Since we have already established that the synthesis represented the joint views of all of the committee members, it is perhaps not relevant to our core argument to address these claims. However they are so inaccurate that it is difficult not to comment.

The first three claims are made without citation. And there is good reason for that. On the CO<sub>2</sub> topic the synthesis simply summarizes what is found in the second chapter of the report “Future Carbon Dioxide Emissions from Fossil Fuels.” Projections of deforestation are not discussed in the synthesis, but are implicit in the forecasts of CO<sub>2</sub> concentrations. Objections on topics related to these forecasts are a bit bizarre since these have turned out to be fairly accurate and are in line with the current IPCC forecasts made twenty-five years later. Weather modification is not mentioned in the executive

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<sup>43</sup> Ibid page 60

<sup>44</sup> Ibid page 58

summary, and only in passing on page 60 of an 86-page synthesis. “From study of CO<sub>2</sub> we know that, in principle, modification of climate and weather is feasible; the question is what kinds of advances in climate and weather modification will emerge over the coming century.”<sup>45</sup>

The final claim of taking a sanguine view had to do with the temperature forecast. This is a bit more interesting error. Oreskes et al. actually cite the executive summary even though they say that that they are referring to the synthesis. In the executive summary it says that a CO<sub>2</sub> doubling “would cause a global surface air warming of between 1.5 degrees C and 4.5 degrees C. The climate record of the past hundred years and our estimates of CO<sub>2</sub> changes over that period suggest that values in the lower half of this range are more probable.”<sup>46</sup> Oreskes is very critical of the last sentence.

This last conclusion particularly flew in the face of the prior scientific results; neither Charney nor Smagorinsky’s group had suggested that the actual mean temperature increase was likely to be at the low end of their estimates. Nierenberg’s synopsis referred the reader to Chapter 4, but this was a set of excerpts from the Smagorinsky panel; no evidence was presented to support the low-end assertion.<sup>47</sup>

With their usual lack of care the “Chicken Little..” authors failed to note that the particular paragraph referred to both chapter 4 and chapter 5. (And a more than careless review would show that chapter 4 was not simply a set of excerpts from the Smagorinsky panel.) On the second page of chapter 5 the following statements were underlined for emphasis

If the preindustrial CO<sub>2</sub> concentration was near 300 ppm, the sensitivity of climate to CO<sub>2</sub> (expressed as projected temperature increase for a doubling of CO<sub>2</sub> concentration) might be as large as suggested by the upper half of the range of the study of the CO<sub>2</sub>/Climate review panel (1982), i.e. up to perhaps 4.5 degrees C; if the preindustrial CO<sub>2</sub> concentration was well below 300ppm and other forcing factors did not intervene, however, the sensitivity must be below about 3 degrees C to avoid inconsistency with the available record.”<sup>48</sup> In section 3.4 of the report appears the following “a WMO-sponsored Meeting of Experts

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<sup>45</sup> “Changing Climate” page 60

<sup>46</sup> Ibid. 2

<sup>47</sup> Oreskes et al. 59

<sup>48</sup> “Changing Climate” page 294

in June 1983 concluded the most likely mid-nineteenth-century concentration was between 260 and 280 ppm....”<sup>49</sup>

The statement that Oreskes et al. say “flew in the face” of scientific evidence was actually a quite logical inference from this set of conclusions.

This pattern continues with the following. “Nierenberg quoted, for example Revelle’s 70 cm estimate for sea level rise, but left the question of the West Antarctic Ice sheet disintegration to the vague statement that ‘more rapid rates could occur subsequently’.”<sup>50</sup>

As usual the Oreskes et al. fail to include the remainder of the paragraph. “More rapid rates could occur subsequently, if the West Antarctic Ice Sheet should begin to disintegrate.”<sup>51</sup> The implication was that the statement didn’t mention the ice sheet, but only their editing did that. And this was from the executive summary, which by definition needed to be brief. The synopsis, which they ignore, has the following. “Of even greater uncertainty is the potential disintegration of the West Antarctic Ice Sheet... This could cause a further sea-level rise of 5 to 6m in the next several hundred years.”<sup>52</sup>

In a final irony on this topic the current IPCC forecast made 25 years later is generally below a 70cm increase from 1983, and it does not forecast a West Antarctic disintegration this century. Oreskes et al criticize a 1983 report for being too conservative when it was actually slightly too aggressive!

## **Final Remarks**

We must leave a discussion of Oreskes et al.’s motives to others. Unlike these authors, we do not have the ability to read minds. We do not know why they might have chosen to manufacture their several conclusions, but from our analysis above, it seems clear that these conclusions must have preceded either their research or the writing of “Chicken Little...”

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<sup>49</sup> Ibid. 242

<sup>50</sup> Oreskes et al. 59

<sup>51</sup> “Changing Climate” page 2

<sup>52</sup> Ibid. 42

All three of us knew William Nierenberg intimately. If the authors had called him a man whose later work in the field made him a skeptic about some aspects of the climate-change debate, that would have been easy to substantiate, and we would not have disagreed. But then the authors would also have had to call him deeply analytical, eminently fair and extremely meticulous in a committee structure. This would not have fulfilled the exciting promise of the title, and of setting up a *bête noir* upon whom to heap their blame in front of the US Congress (who certainly deserve better), in this article and any they hope to publish in the future.

One of us has had a lifetime of experience in the publication of scholarly studies in the open literature, and understands the standards of evidence, reasoning, interpretation and scholarship. In our opinion, the paper by Oreskes et al. represents irresponsibly bad scholarship at best, and a dishonest, almost libelous hatchet-job at worst. Nierenberg believed deeply that science should serve the public interest, so much so that an annual prize for science in the public interest was established in his name. He served the American public intelligently, enthusiastically and responsibly to the best of his quite amazing ability. The dishonest revision of his history by three authors masquerading as scholars is an affront to his memory. The paper by Oreskes et al. brings only shame, not credit on the authors, and only clouds the understanding of the history of the science of climate change.

### **About the Authors**

Nicolas Nierenberg is a technology entrepreneur who currently serves on the board of several companies, he is also a former chairman and member of the board of trustees of the Burnham Institute for Medical Research, and is a member of the Director's Council at the Scripps Institution of Oceanography. Victoria Tschinkel is Chairman of 1000 Friends of Florida, former Director of the Nature Conservancy in Florida, and former Florida Secretary of Environmental Regulation. Walter Tschinkel is the R.O. Lawton distinguished professor in the department of Biology at Florida State University in Tallahassee.

