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Dr. Marye Anne Fox
Chancellor
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and

Dr. Naomi Oreskes
University of California, San Diego

3 September 2007

To: Dr. Marye Anne Fox, Chancellor, University of California, San Diego
To: Dr. Naomi Oreskes, University of California, San Diego
By email to chancellor@ucsd.edu and to noreskes@ucsd.edu

Mesdames,

My attention has been drawn to what purports to be a statement by Naomi Oreskes, a science historian at the University of California at San Diego, commenting on a forthcoming but not yet finalized paper of mine, an early draft of which was circulated without my authority. Furthermore, since no draft of my paper contains the statements attributed to me by Oreskes, the comments which have been made are based not on the paper itself but on media reports about it, though the statement fails to make this clear. Whether or not it was Oreskes who issued the statement, it has been widely publicized and the points made require answers from me.

I shall enumerate the points in the statement, which I shall recite in full and in Roman face. **My reply to each point will be in bold face.**

1) The Schulte piece is being published in Energy and Environment, a known contrarian journal. It was posted on the minority blog of the Senate Environment and Public Works committee, whose leader thinks that global warming is a "hoax." It was circulated on the internet by Marc Morano, a long-standing contrarian and former reporter and producer for the Rush Limbaugh Show, and who was involved in the "swift boat" campaign against John Kerry.

I drafted the paper because I had become concerned that patients were being perhaps unduly alarmed by media reports of catastrophic climate change and were coming to harm through resultant stress. Peer-reviewed studies of patients' views on the subject of climate change had reinforced my concern. The medical journals had also begun commenting on climate change, often in a frankly but not necessarily justifiably alarmist sense. Accordingly, I decided to study the peer-reviewed literature on climate change myself, starting where Oreskes' essay (Oreskes, 2004) had left off, in January 2004. It was only once the paper was

written that a colleague recommended that I should submit it to *Energy and Environment,* a peer-reviewed journal in good standing. *Science,* to which it was originally submitted, declined to publish it on the ground that it was not of sufficient interest. I have never had any contact with any member of the US Senate or with his staff. I am neither a "contrarian" nor an "alarmist". I am an endocrine surgeon with numerous published papers in the medical journals. My sole concern in this debate is the welfare of patients.

2) The Schulte piece misrepresents the research question we posed. It was, "How many papers published in referred journals disagree with the statement, "...most of the observed warming of the last 50 years is likely to have been due to the increase in greenhouse gas concentrations"? This statement came from the IPCC (2001) and was reiterated explicitly by the 2001 NAS report, so we wanted to know how many papers diverged from that consensus position. The answer was none. The Schulte claim does not refute that.

All drafts of my paper contain the following paragraph –

> **"The question whether there is a unanimous scientific consensus about climate change was investigated by means of a review of the recent peer-reviewed literature, carrying forward the research by Oreskes (2004), whose short essay had stated that none of 928 abstracts of papers published between 1993 and 2003 and found on the ISI *Web of Science* database using the search term "global climate change" had rejected the scientific consensus to the effect that –**
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> > **"'Most of the observed warming over the last 50 years is likely to have been due to the increase in greenhouse gas concentrations' (IPCC, 2001)."**

Since my quotation from IPCC (2001) was identical to that which was used by Oreskes herself, any charge of misrepresentation on my part must fail. Indeed, the unfortunate assertion of misrepresentation, which should surely not have been made without prior reference to me for verification of the facts, demonstrates that, at the time when the statement was written, its author had not read any draft of my paper.

The statement says that none of the papers which Oreskes reviewed departed from the "consensus" in the strictly limited sense defined in her essay. I say "strictly limited" because the IPCC's quoted sentence implies no more than that at least 0.25 ºC of the 0.5 ºC observed increase in global temperature over the past half century is likely to have been anthropogenic. My own paper carried Oreskes' research forward. The papers she reviewed had been published between 1993 2003: the papers I reviewed were published from 2004 onward. Therefore my paper was silent on the question whether her analysis had been correct. However, since she has seen fit to raise the question of unanimity in the peer-reviewed journals, I have now inspected the papers which she had reviewed. Some examples of papers which fell within her search criterion and within her timeframe, but which do not appear to me, *prima facie,* to support even her limited definition of the "consensus", are as follows –

- **AMMANN et al. (2003) detected evidence for close ties between solar variations and surface climate.**
- **REID (1997) found that "the importance of solar variability as a factor in climate change over the last few decades may have been underestimated in recent studies".**
- **KONDRATYEV and Varotsos (1996) criticize "the undoubtedly overemphasized contribution of the greenhouse effect to the global climate change".**

Two abstracts, in particular, directly rejected the "consensus" as Oreskes had defined it -

> **GERHARD and Hanson (2000): "The American Association of Petroleum Geologists' Ad Hoc Committee on Global Climate Issues has studied the supposition of human-induced climate change since the committee's inception in January 1998. This paper details the progress and findings of the committee through June 1999, At that time there had been essentially no geologic input into the global climate change debate. The following statements reflect the current state of climate knowledge from the geologic perspective as interpreted by the majority of the committee membership. The committee recognizes that new data could change its conclusions. The earth's climate is constantly changing owing to natural variability in earth processes. Natural climate variability over recent geological time is greater than reasonable estimates of potential human-induced greenhouse gas changes. Because no tool is available to test the supposition of human-induced climate change and the range of natural variability is so great, there is no discernible human influence on global climate at this time."**
>
> **FERNAU *et al.* (1993): "This article examines the status of the scientific uncertainties in predicting and verifying global climate change that hinder aggressive policy making. More and better measurements and statistical techniques are needed to detect and confirm the existence of greenhouse-gas-induced climate change, which currently cannot be distinguished from natural climate variability in the historical record. Uncertainties about the amount and rate of change of greenhouse gas emissions also make prediction of the magnitude and timing of climate change difficult. Because of inadequacies in the knowledge and depiction of physical processes and limited computer technology, predictions from existing computer models vary widely, particularly on a regional basis, and are not accurate enough yet for use in policy decisions. The extent of all these uncertainties is such that moving beyond no-regrets measures such as conservation will take political courage and may be delayed until scientific uncertainties are reduced."**

I am given to understand that Oreskes has pointed out that the paper by Gerhard and Hansen was not peer-reviewed. However, it is not clear to me that her essay was peer-reviewed either. It was published as an "Essay" in the comment section of *Science* under the subhead "Beyond The Ivory Tower" – an essay series which, according to the editors of *Science,* "highlights the benefits that scientists, science, and technology have brought to society throughout history".

It may or may not be that the authors of the above-cited abstracts personally believe that humankind is responsible for more than half of the observed warming of the past half century. It may or may not be that most climate scientists published in the journals believe that. However, the published papers which I have cited above, and the numerous papers which I have cited in my own study of papers published after the end of Oreskes' study, do raise grave doubts about the unanimity which Oreskes said she had found in the papers which she had reviewed when preparing her 2004 essay. If unanimity existed in the peer-reviewed literature between 1993 and 2003 – which I have reason to doubt – it certainly no longer exists today.

3) The piece misrepresents the results we obtained. In the original AAAS talk on which the paper was based, and in various interviews and conversations after, I repeated pointed out that very few papers analyzed said anything explicit at all about the consensus position. This was actually a very important result, for the following reason. Biologists today never write papers in which they explicitly say "we endorse evolution". Earth scientists never say "we explicitly endorse plate tectonics." This is because these things are now taken for granted. So when we read these papers and observed this pattern, we took this to be very significant. We realized that the basic issue was settled, and we observed that scientists had moved on to discussing details of the problem, mostly tempo and mode issues: how fast, how soon, in what manner, with what impacts, etc. (See Oreskes, 2007 for further discussion).

The statement says that "very few papers analyzed said anything explicit at all about the consensus position." **In remarkable contrast to this assertion, however, Oreskes' 2004 essay says, "Of all the papers, 75% fell into the first three categories [explicit endorsement of the consensus position, evaluation of impacts, mitigation proposals], either explicitly or implicitly accepting the consensus view."**

All drafts of my own paper contain the following paragraph –

> **"Oreskes reported that 75% of the 928 abstracts which she reviewed were –**
>
> > **'explicitly or implicitly accepting the consensus view … Remarkably, none of the papers disagreed with the consensus position. … Politicians, economists, journalists, and others may have the impression of confusion, disagreement, or discord among climate scientists, but that impression is incorrect. … The question of what to do about climate change remains open.'"**

Once again, since my paper quoted Oreskes' essay explicitly and accurately, any charge of misrepresentation on my part must fail. With all respect, the statement's declaration that the starting-point for Oreskes' research was that "we realized that the basic issue was settled" **would, if true, cast considerable doubt upon the impartiality and reliability of her research.**

The statement's admission that all papers on evaluation of impacts and on mitigation were counted as accepting the consensus also raises serious questions as to the appropriateness of Oreskes' methodology: for it is perfectly possible,

for example, to insure against a risk without believing that the risk is at all likely to become a reality.

In my own research, I carefully confined my analysis to what the learned papers under review actually said, and took no prior position on whether or not there was, or ought to be, a consensus. In all drafts of my paper, I quoted several papers *verbatim,* though I note that Oreskes did not do this in her 2004 essay. She assumes that the authors of many papers which do not reject the consensus can be counted as accepting it. The authors may or may not accept the consensus, and I have been made aware of research by Von Storch *et al.,* who had invited scientists in climate and related fields to express their opinions as to the "consensus", and had found that many disagreed with it: however, the statement is in effect now conceding that a substantial proportion of the scientific papers themselves, as published and as reviewed by Oreskes, do not provide any direct internal evidence whatsoever that their authors accept the consensus as she chose to define it.

Therefore Oreskes' original conclusion that 75% of the papers which she reviewed either explicitly or implicitly accepted that "consensus" seems to me, with respect, to be little better than guesswork inspired by wishful thinking on the basis of a previously-unstated now-declared preconception that the "basic issue" is "settled".

4) The Schulte piece misrepresents my own interpretation of the climate severity question, as well as that of the scientific societies whose positions we compiled. This is a typical contrarian tactic - to exaggerate or misrepresent the scientific claim and then "refute" it. My analysis was a summary of the position of scientific experts. I never said, nor have any of the major scientific societies said, that the scientific literature warns of an imminent "catastrophe." An analysis of how severe scientists think warming is or will be would have been a different paper. So you cannot "refute" my analysis by pointing out that the word "catastrophe" doesn't appear. I never said that it did. Nor would I expect it to. Scientists don't generally use that kind of language, although contrarians do.

Oreskes' 2004 essay contains the following statement, which, though the word "catastrophe" is not used, is unscientifically apocalyptic in tone –

> **"Our grandchildren will surely blame us if they find that we understood the reality of anthropogenic climate change and failed to do anything about it."**

However, no draft of my own paper either explicitly or implicitly ascribed any "interpretation" **of the** "severity" **of climate change to Oreskes. Accordingly, any charge of misrepresentation on my part must again fail. The focus of my paper was not Oreskes' research. In every draft of my paper, I was careful to make no comment of any kind on the accuracy or reliability of her research, still less on whether she regarded anthropogenic "global warming" as serious enough to be potentially catastrophic and hence to require action for the sake of our grandchildren. I confined myself to citing figures from her essay merely as a point of comparison for the figures in my own paper, which cover a period**

subsequent to, not coincident with, the period which her own research had covered.

My sole concern is the question whether, on the question of climate change, patients – particularly children, who are easily terrified – have any scientifically-compelling reason to be as alarmed as the studies in the medical literature now demonstrate that they are. Accordingly, I carefully examined the peer-reviewed literature and found that, out of 539 papers on "global climate change" whose abstracts I read, only one mentioned climate change as being "catastrophic", and even that paper offered no evidence in support of catastrophism. Patients will be reassured to know that.

5) The EPW press release accuses my paper of being "outdated." It is in fact a crucial element of the paper that the study that it goes back to 1993. We wanted to see how the arguments had developed over time, and to test, if we could, when the consensus position emerged. A crucial result for me was the realization that the basic consensus had already been established in the early 1990s. However, in hindsight this should actually have been obvious: it's why President George H.W. Bush signed the UN Framework Convention on Climate Change. The basic scientific insight was already in place.

I have no connection with the Environment and Public Works Committee of the US Senate. Nor have I drafted, issued, or authorized any press release or statement of any kind. No draft of my paper used the word "outdated". However, it is a fact that Oreskes' essay covered no papers published after 2003. In my own paper, Oreskes' research was brought up to date by using the same search term, "global climate change", on the same database that she had used, the ISI Web of Science, to inspect abstracts of 539 papers published between 2004 and mid-February 2007.

6) The author is a medical researcher. As a historian of science I am trained to analyze and understand scientific arguments, their development, their progress, etc., and my specific expertise is in the history of earth science. This past summer I was invited to teach a graduate intensive course at Vienna International Summer University, Vienna Circle Institute, on Consensus in Science. I do not know why a medical researcher would feel qualified to undertake an analysis of consensus in the earth scientific literature.

At this point, the statement is unduly *ad hominem.* As the author of numerous peer-reviewed papers in endocrinology, which is my medico-scientific specialism, I am of course experienced in the application of the scientific method, and am certainly no less qualified than a historian of science to evaluate the abstracts of peer-reviewed papers on global climate change against a simple, stated criterion.

7) Contrarians have been trying to refute my work for three years. A previous claim, also circulated and cited by Marc Morano, was subsequently retracted by its author. Evidently it has taken them three years to find some one foolish enough to try again.

I am not a "contrarian" and have not made any attempt to "refute" Oreskes' work. I have not had the pleasure of making Mr. Morano's acquaintance.

The author of the statement has been less than courteous, and less than professional, in having failed to verify the facts with me before thrice having used the word "misrepresentation" in connection with a draft of a paper by me which he or she cannot have read at the time. Worse, the author of the statement has used the word "foolish" about me when he or she had not done me the usual professional courtesy either of contacting me or even of reading what I had written before making haste to comment upon it. I should not expect any properly-qualified and impartially-motivated scientist to behave thus.

If the statement was indeed authored by Oreskes, I expect her to apologize for her professional discourtesy to me, and I invite the Chancellor of her university to enquire into the matter and then, if she be the statement's author, to ensure that she apologizes promptly and unreservedly. If she was not the author of the statement that has been widely circulated in her name, then of course no apology from her will be necessary; but I shall expect her to make it clear that she was not the author of the statement, and to dissociate herself from it *latae sententiae*.

Yours truly,

(signed) KLAUS-MARTIN SCHULTE

References

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