Palaeontologia Electronica
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Out of the Mainstream: U.S. Science Redux

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AMy administration will value science, make decisions based on facts and understand that facts require bold action.@ - US President-Elect Barack Obama, December 15, 2008.

With these words, with which he announced the nomination of physicist and Nobel laureate Steven Chu to be the next US Secretary of Energy, Barack Obama demonstrated why he was so heavily favored by the American scientific community during the election. This enthusiasm was further validated not only by the nomination of Chu, but of physicist John Holdren as his science advisor and marine biologist Jane Lubchenco to head NOAA. In his radio address making these nominations, Obama stated that "science holds the key to our survival as a planet and our security and prosperity as a nation. It's time we once again put science at the top of our agenda and worked to restore America's place as the world leader in science and technology." You could probably hear cheering in science labs and offices across this country.

The enthusiasm within the American scientific community probably stems not just from these words, but from the contrast with the treatment of science over the past eight years, in particular the interference with flow of information from US government scientists to the public and their colleagues on issues such as climate change (Kennedy 2006). Political ideology seemed to trump scientific integrity, particularly when it came to issues such as climate change and endangered species. The Union of Concerned Scientists, an American non-profit group of scientists and US citizens concerned that independent scientific analysis underpin US environmental, energy, and transportation policy (http://www.ucsusa.org), has been particularly active in pointing out these abuses and has now issued a report describing the steps necessary to restore scientific integrity to federal policy making.

The election also showed that factors beyond published position papers can be critical in gathering political support. One of the most interesting grass-roots initiatives was Science Debate 2008 (www.sciencedebate2008.com), which called for a presidential debate on science. Although the quest for an actual debate was certainly quixotic, the initiative did get both campaigns to answer the "top 14 science questions facing America." The answers made fascinating reading, and were detailed and thoughtful. The responses showed, as pointed by Seth Borenstein of the Associated Press (October 16, 2008), that both candidates offered "policies farther from the president than they are from each other . . . the differences between them are more notable in the nuances of policy than in the broad brush of campaigns." So why was there the disproportionate enthusiasm for Obama among American scientists?

Of course, one answer is that Republican candidate John McCain suffered by being too closely associated with the policies of the Bush administration. Certainly the equating of a sophisticated projector in a major planetarium with an "overhead projector" during the debates rankled. But there were also warning signals raised during the campaign about an issue that is near and dear to the hearts of paleontologists, the teaching of evolution in US schools.

Plotnick, Roy, E. 2008. Out of the Mainstream: U.S. Science Redux. *Palaeontologia Electronica* Vol. 12, Issue 1; 1E:3p; http://palaeo-electronica.org/paleo/2009_1/commentary/election.htm

Certainly the most important recent case in this never ending battle was the Kitzmiller v. Dover Area School District case of 2005. In March 2008, the Dover, Pennsylvania newspaper, the *York Sunday News,* moderated questions for Obama from members of the public. He was directly asked about his attitude toward teaching evolution in the schools. In his response he stated "I believe in evolution, and I believe there's a difference between science and faith . . . And I think it's a mistake to try to cloud the teaching of science with theories that frankly don't hold up to scientific inquiry."

This statement was reinforced in a response to a question from the British journal *Nature* (http://www.nature.com/news/2008/080924/full/455446a.html), in which he said: "I do not believe it is helpful to our students to cloud discussions of science with non-scientific theories like intelligent design that are not subject to experimental scrutiny." Obama also appointed a prominent critic of anti-evolution laws and creationism, Gilbert Omenn, former President of the American Association for the Advancement of Science, as an advisor during his campaign (http://blog.wired.com/wiredscience/2008/09/obama-campaign.html). The clarity of Obama's pro-science and pro-evolution stance is one reason why many of his supporters have found the choice of the avowed creationist pastor Rick Warren for the invocation at his inaugural so surprising and troubling.

In contrast, McCain's personal opinions on teaching evolution were harder to pin down, but there were good reasons to believe that he supported the teaching of intelligent design. He did not respond to *Nature*'s questions on the issue or to a question from the Associated Press on the same topic. As reported in *Nature* and elsewhere, during a Republican primary debate he stated: "I believe in evolution. But I also believe, when I hike the Grand Canyon and see it at sunset, that the hand of God is there also." In an April 9, 2006 interview with the New York Times, McCain explicitly supported the teaching of Aintelligent design." In a July 13, 2008 interview in the same newspaper, he indicated that the issue was a matter for the local school boards.

More troubling, of course, was his choice of running mate for Vice President. After first considering (among others) Governor Bobby Jindal of Louisiana, an avowed supporter of teaching ID in schools, he selected Alaska=s Sarah Palin.

The pick of Palin had its lighter moments in the US, such as when the magazine *Newsweek* had her on the cover with the headline "Palintology" (funny once). But a widely covered conversation reported by a Wasilla music teacher and blogger (http://articles.latimes.com/2008/sep/28/nation/na-palinreligion28) suggested that Palin, at least at one time, believed that dinosaurs and humans coexisted. During her campaign for governor, she explicitly advocated teaching both evolution and creationism. However, as reported by Dan Joling of the Associated Press (September 3, 2008), she has not pressed the issue during her term as governor. Her current beliefs and goals concerning the teaching of evolution remain unknown.

Does the election of Obama signify that a new golden age for American science, in particular paleontology, is now dawning? There are grounds for hope. Americans certainly have the most explicitly pro-science President in a generation. The teaching of science will be actively supported. The US Justice Department is likely to support the teaching of evolution in Federal court cases. Baring even further collapses of the economy, there should also be steady increases of funding levels to the US National Science Foundation and other science oriented agencies.

It is, of course, difficult to predict what the impact of the US election will have on the scientific community elsewhere in the world, but there are excellent reasons to anticipate much more active and engaged policies. In answer to a Science Debate 2008 question on climate change, Obama stated "This is a global problem. US leadership is essential but solutions will require contributions from all parts of the world" and that he would "restore US leadership in strategies for combating climate change and work closely with the international community." Similarly, he answered a question on ocean health by saying "The oceans are a global resource and a global responsibility for which the US can and should take a more active role." In one of his answers to the questions posed by *Nature*, Obama indicated that "Many pressing research challenges can best be addressed through international collaboration." But I am naturally a bit of a skeptic and so caution against undue enthusiasm. Campaign rhetoric does not always survive political realities. And although I foresee major increases in funding for areas such as climate research, I am doubtful whether there will be more than incremental increases for funding in paleontology. There are simply too many other recognized needs. Nevertheless, it is hard not to be

buoyantly optimistic! Time will tell if that feeling is justified.

ACKNOWLEDGMENTS

Although Deborah Stewart and Lisa Park kindly commented on the manuscript, they should not be subject to guilt by association.

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