

The Rightful Place of Science

The Democratic Party's enthusiastic embrace of science is delivering immediate financial rewards for research, but it raises long-term questions about the politicization of science.

I stood with the throngs on the Washington Mall on January 20, 2009, watching a young new president (well, truth be told, watching him on a Jumbotron) announce to a discouraged nation the beginning of an era of hope and responsibility. Standing between the Lincoln Memorial and the Washington Monument, I was feeling, in the words I saw emblazoned on t-shirts for sale by hawkers on the street, that indeed it was “Cool to be American Again.”

Just moments into his presidency, Barack Obama promised to “restore science to its rightful place” in U.S. society, a pronouncement that signaled to many a transition from an old world where decisions were dictated by political calculus and ideological rigidity to a new one dedicated to action based on rationality and respect for facts. “The Enlightenment Returns” trumpeted the recent headline of a *Science* editorial authored by physicist Kurt Gottfried of the advocacy group Union of Concerned Scientists and Nobelist Harold Varmus of the Sloan-Kettering Cancer Center.

Incredibly, science is at the forefront of the national political agenda. Perhaps the last time science figured so prominently in the pronouncements of a president was when Dwight Eisenhower, in his famous “military-industrial complex” farewell speech of 1961, warned in Newtonian fashion that “in holding scientific research and discovery in respect, as we should, we must also be alert to the equal and opposite danger that public policy could itself become the captive of a scientific-technological elite.” President Obama, in contrast, was welcoming that scientific-technological elite back into the political family after eight long years during which, in the words of Gottfried and Varmus, “the precepts of the Enlightenment were ignored and even disdained with respect to the manner in which science was used in the nation’s governance.”

What moved science to center stage? Early in his presidency, George W. Bush alienated many scientists and biomedical research advocates with his decision to significantly limit public funding for embryonic stem cell research. His

skepticism about climate change and his opposition to the Kyoto Protocol; a generally anti-regulatory stance on environmental, health, and consumer protection issues; support for abstinence as the preferred method of birth control; advocacy of nuclear power and the fossil fuel industry; and tolerance for the teaching of intelligent design, among other political preferences, contributed to a growing belief that the Bush administration generally found science to be an annoying inconvenience to its political agenda; an inconvenience that needed to be ignored, suppressed, or even manipulated for political purposes. High-profile reports issued in 2003 by Congressman Henry Waxman and in 2004 by the Union of Concerned Scientists highlighted numerous instances where “scientific integrity” had been undermined at federal agencies and in Bush administration policies. A February 2004 “Scientist Statement on Restoring Scientific Integrity to Federal Policy Making,” initially signed by 62 scientists, many with reputations as national leaders in their fields, summarized the charges: “When scientific knowledge has been found to be in conflict with its political goals, the administration has often manipulated the process through which science enters into its decisions . . . The distortion of scientific knowledge for partisan ends must cease if the public is to be properly informed about issues central to its well being, and the nation is to benefit fully from its heavy investment in scientific research.” The issue made it into the 2004 presidential campaign, where Democratic candidate John Kerry pledged: “I will listen to the advice of our scientists, so I can make the best decisions. . . . This is your future, and I will let science guide us, not ideology.” The allegations were memorably summed up in the title of Chris Mooney’s 2005 book, *The Republican War on Science*. In the run-up to the 2008 presidential election, a Democratic party Web site promised: “We will end the Bush administration’s war on science, restore scientific integrity, and return to evidence-based decision-making.”

And so, restoring science to its rightful place became good politics. But how are we to know the “rightful place” when we see it? One way to start might be to look at the young Obama administration for indications of what it is doing differently from the Bush administration in matters of science policy. The obvious first candidate for comparison would be embryonic stem cell research, which for many scientists and members of the public symbolized President Bush’s willingness to sacrifice science on the altar of a particularly distasteful politics: pandering to the religious right’s belief that the sanctity of human embryos outweighs the

potential of stem cell research to reduce human suffering. When President Bush announced his stem cell policy in August 2001, he tried to walk a moral tightrope by allowing federal support for research on existing stem cell lines, thus ensuring that no embryos would be destroyed for research purposes, while loosening the ban on embryo research that Congress had established in 1994, though on a very limited basis. The president reported that there were about 60 such existing cell lines, a number that turned out, depending on one’s perspective, to be either overly optimistic or a conscious deception; the actual number was closer to 20.

Lifting the restrictions on stem cell research was a part of the 2004 campaign platform of Democratic presidential candidate John Kerry, as it was of Barack Obama four years later. Less than two months into his presidency, Obama announced that he would reverse the Bush policies by allowing research on cell lines created after the Bush ban. The president instructed the director of the National Institutes of Health (NIH) to “develop guidelines for the support and conduct of responsible, scientifically worthy human stem cell research.”

In announcing the change, President Obama emphasized the need to “make scientific decisions based on facts, not ideology,” yet the new policy, as well as the language that the president used to explain it, underscores that the stem cell debate is in important ways not about scientific facts at all, but about the difficulty of balancing competing moral preferences. The new policy does not allow unrestricted use of embryos for research or the extraction of cell lines from embryos created by therapeutic cloning. In explaining that “[m]any thoughtful and decent people are conflicted about, or strongly oppose, this research,” President Obama was acknowledging that, even in its earliest stages, the small group of cells that constitute an embryo are in some way different from a chemical reagent to be sold in a catalog or an industrially synthesized molecule to be integrated into a widget. Indeed, to protect women from economic and scientific exploitation, and in deference to the moral and political ambiguity that embryos carry with them, no nation allows the unrestricted commodification of embryos, and some, including Germany, have bans on destroying embryos for research purposes. Although most Americans favor a less restrictive approach to stem cell research than that pursued by President Bush, the issue is inherently political and inherently moral. Thus, some of the cell lines approved for research under the Bush restrictions might actually not be approved under the Obama guidelines because they may not have been obtained with the appropriate level of prior informed consent of the donor, a moral constraint on science that apparently did not concern President Bush.

Shortly after President Obama laid out his new approach, a *New York Times* editorial accused him of taking “the easy political path” by allowing federal research only on excess embryos created through in vitro fertilization. The accusation is ambiguous; it implies either that there is a “hard” political path, or that there is a path that is entirely nonpolitical. Given the state of public opinion, apparently President Bush took the hard political path and paid the political price. And the idea that there is a path beyond politics, one that is paved with “facts, not ideology,” is false—indeed, itself a political distortion—so long as significant numbers of people see human embryos as more than just a commodifiable clump of molecules. Moreover, there is nothing at all anti-science about restricting the pursuit of scientific knowledge on the basis of moral concerns. Societies do this all the time; for example, with strict rules on human subjects research. The Bush and Obama policies differ only as a matter of degree; they are fundamentally similar in that neither one cedes moral authority to science and scientists. When it comes to embryonic stem cells, the “rightful place of science” remains a place that is located, debated, and governed through democratic political processes.

Another common allegation about Bush administration abuse of science focused on decisions that ignored the expert views of scientists in deference to pure political considerations. An early signal of how President Obama will deal with apparent conflicts between expert scientists and political calculus came when the president decided to slash funding for the Yucca Mountain nuclear waste repository, the only congressionally approved candidate for long-term storage of high-level nuclear waste. Since the late 1980s, the Department of Energy has spent on the order of \$13 billion to characterize the suitability of the 230-square-mile site for long-term geological storage, probably making that swath of Nevada desert the most carefully and completely studied piece of ground on the planet. At the same time, because of the need to isolate high-level waste from the environment for tens of thousands of years, uncertainty about the site can never be eliminated. Writing in *Science* last year, Isaac Winograd and Eugene Roseboom, respected geologists who have been studying the region longer than anyone, explained that this persistence of uncertainty is inherent in the nuclear waste problem itself, not just at Yucca Mountain, and that uncertainties can best be addressed through a phased approach that allows monitoring and learning over time. They suggest that the Nevada site is suitable for such an approach, echoing a recent report of the National Academies. But they also emphasize that the persistence of uncertainties “enables critics . . . to ignore major attributes of the site while high-

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lighting the unknowns and technical disputes.”

Among those critics have been the great majority of the citizens of Nevada, a state that has acted consistently and aggressively through the courts and political means to block progress on the site since it was selected in 1987. A particularly effective champion of this opposition has been Harry Reid, majority leader in the U.S. Senate and one of the most influential and powerful Democratic politicians in the nation. Now add to the mix that Nevada has been a swing state in recent presidential elections, supporting George Bush for president in 2000 and 2004, and Bill Clinton in 1992 and 1996. President Bush strongly supported the Yucca Mountain site, as did 2008 Republican candidate John McCain. All of the major Democratic presidential candidates, seeking an edge in the 2008 election, opposed the site; shutting it down was one of Barack Obama’s campaign promises, which he fulfilled by cutting support for the program in the fiscal year 2010 budget, an action accompanied by no fanfare and no public announcement.

At this point it is tempting to write: “It’s hard to imagine a case where politics trumped science more decisively than in the case of Yucca Mountain, where 20 years of research were traded for five electoral votes and the support of a powerful senator,” which seems basically correct, but taken out of context it could be viewed as a criticism of President Obama, which it is not. But the point I want to make is only slightly more subtle: Faced with a complex amalgam of scientific and political factors, President Obama chose short-term political gain over longer-term scientific assessment, and so decided to put an end to research aimed at characterizing the Yucca Mountain site. This decision can easily be portrayed in the same type of language that was used to attack President Bush’s politicization of science. John Stuckless, a geochemist who spent more than 20 years working on Yucca Mountain, was quoted in *Science* making the familiar argument: “I think it’s basically irresponsible. What it basically says is, they have no faith in the [scientists] who did the work . . . Decisions like that should be based on information, not on a gut feeling. The information we have is that there’s basically nothing wrong with that site, and you’re never going to find a better site.”

It turns out that the nostrums and tropes of the Republican war on science are not easily applied in the real world, at least not with any consistency. “In a blow to environmental groups and a boost for ranchers, the Obama administration announced Friday that it would take the gray wolf off the endangered species list in Montana and Idaho,” the *New York Times* reported on March 7. “This was a decision based on science,” said a spokesperson for the Department

of the Interior, as reported in the *Washington Post*. In contrast, the spokesperson for a Democratic member of Congress from Idaho said, in lauding the de-listing, “I can’t emphasize how important it is to have a Western rancher as secretary of the interior,” presumably implying that it wasn’t really all about science. Soon afterwards, the author Verlyn Klinkenborg, writing on the *Times* editorial page, argued that the decision “may indeed have been based on the science” but that hunting would quickly drive the wolves back to the brink of extinction. Representative Norm Dicks (D-WA) didn’t even buy the science claim: “I don’t think they took enough time to evaluate the science.” The environmental group EarthJustice issued a press release claiming that “independent scientists” did not believe the wolf population was big enough to justify de-listing; Defenders of Wildlife noted that the plan “fails to adequately address biological concerns about the lack of genetic exchange among wolf populations”; and the Sierra Club said that the Department of the Interior “should be working with the state of Wyoming to create a scientifically sound wolf management plan. . . . It’s inappropriate to delist wolves state-by-state. Wolves don’t know political boundaries.”

The “rightful place” of science is hard to find. Or perhaps we are looking for it in all the wrong places? When President Obama was urgently seeking to push his economic stimulus package through Congress in the early days of his administration, he needed the support of several Republican senators to guard against Republican filibuster and to bolster the claim that the stimulus bill was bipartisan. Senator Arlen Specter, who suffers from Hodgkin’s disease, agreed to back the stimulus package on the condition that it includes \$10 billion in additional funding for NIH. For this price a vote was bought and a filibuster-proof majority was achieved.

Now there is nothing at all wrong with making political deals like this; good politics is all about making deals. What’s interesting in this case is the pivotal political importance of a senator’s support for science. If Senator Specter (who, perhaps coincidentally, underwent a party conversion several months later) had asked for \$10 billion for a new weapons system or for abstinence-only counseling programs, would his demand have been met? In promoting the stimulus package to the public, one of the key features highlighted by congressional Democrats and the Obama administration was strong support for research, including \$3 billion for the National Science Foundation, \$7.5 billion for the Department of Energy, \$1 billion for the National Aero-

nautics and Space Administration, and \$800 million for the National Oceanic and Atmospheric Administration, in addition to the huge boost for NIH. These expenditures are on one level certainly an expression of belief that more public funding for research and development is a good thing, but they are also a response to the discovery by Democrats during the Bush administration that supporting science (and, equally important, accusing one’s Republican opponents of abusing or undermining science) is excellent politics; that it appeals to the media and to voters and is extremely difficult to defend against. Democrats were claiming not simply that money for science was good stimulus policy but that it was a necessary corrective to the neglect of science under the Bush administration. Speaker of the House Nancy Pelosi quipped: “For a long time, science had not been in the forefront. It was faith or science, take your pick. Now we’re saying that science is the answer to our prayers.”

Is money for science good stimulus policy? Experts on economics and science policy disagreed about whether ramming billions of dollars into R&D agencies in a short period of time was an effective way to stimulate economic growth and about whether those billions would be better spent on more traditional stimulus targets such as infrastructure and increased unemployment benefits. Lewis Branscomb, one of the nation’s most thoughtful observers of U.S. science policy, summed up the dilemma in a University of California, San Diego, newsletter article: “If the new research money is simply spread around the academic disciplines, it will be great for higher education, but will be a long time contributing to national problem-solving.” And beyond the stimulus question, were such sharp increases in science funding good science policy? Writing in *Nature*, former staff director for the House Science Committee David Goldston observed that “A stimulus bill is not the ideal vehicle for research spending, and if scientists and their proponents aren’t careful, the bill is a boon that could backfire.” Goldston highlighted three concerns: first, “that being included in the stimulus measure could turn science spending into a political football,” second, that “a brief boom could be followed by a prolonged bust,” and “third, and perhaps most troubling . . . that inclusion in the stimulus bill means the science money must be awarded with unusual, perhaps even reckless, speed.”

As a matter of national politics, however, the immediate benefits were obvious for the president and for Democratic politicians. Democrats are finally discovering a politically powerful symbol of what they want to stand for, a symbol that captures the American reverence for progress and exemplifies a positive role for government that cannot eas-

ily be tarred by Republicans as “tax-and-spend” or anti-market but on the contrary is widely believed by Americans to be the key to a better tomorrow. Consider, for example, the complete sentence that President Obama used in his inauguration speech: “We will restore science to its rightful place and wield technology’s wonders to raise health care’s quality and lower its costs.” Science in its “rightful place” is linked to the curing of disease and the reduction of health care costs. Who could be against such things? They stand in for a more general belief in human progress.

Never mind that the president’s claim—that more medical technology created by more scientific research will reduce health care costs—is, to put it mildly, implausible. Every person listening to the inauguration speech has experienced the inflationary spiral of health care costs in recent decades, a spiral that continual scientific and technological advance helps to perpetuate. New medical knowledge and technology will undoubtedly relieve suffering and extend life for many, and it will probably reduce costs in some cases when it replaces current types of care, but the overall effect of progress in medical science and technology will be the same as it has been for decades: to increase total health care spending. But a small inconsistency is the hobgoblin of policy wonks; surely the key point is that science, linked to progress, is change we can all believe in.

Perhaps the best way to understand what seems to be happening to science as a political symbol for Democrats is to consider, in contrast, the value of “national defense” as a political symbol for Republicans. President Bush made powerful use of the idea that Republicans are more concerned about national security, and more able to protect it, than are Democrats, both in justifying his prosecution of the war in Iraq and in attacking John Kerry during the 2004 election campaign. In the 1980 presidential campaign, Ronald Reagan made devastatingly effective use of the notion that President Carter was soft on defense, and a signal priority for the Reagan administration from its earliest days was to greatly increase expenditures on the military, just as President Obama is now doing for science.

Because “national security” and, it now turns out, “science” are tropes that resonate powerfully with significant parts of the voting public, they make highly potent political symbols—not just for communicating values, but also for distinguishing one’s self from the opposition. These sorts of symbols are particularly effective as political tools because they are difficult to co-opt by the other side. It is harder for a Democrat than for a Republican to sound sincere when arguing for a strong national defense. As a matter of ideology, Democrats are often skeptical about the extent to which

new weapons systems or new military adventures truly advance the cause of national security or human well-being. And similarly, it is harder for a Republican than a Democrat to sound sincere when arguing for the importance of science. Scientific results are commonly used to bolster arguments for government regulatory programs and policies, and as a matter of ideology Republicans are often skeptical about the ability of government to wisely design and implement such policies or about their actual benefits to society.

Neither of these ideological proclivities amounts to being, respectively, “soft on defense” or “anti-science,” but each provides a nucleus of plausible validity to such accusations. Trying to go against this grain—as when Michael Dukakis, the 1988 Democratic presidential candidate, sought to burnish his defense credentials by riding around in a tank, or when George Bush repeatedly claimed that he would make decisions about climate change and the environment on the basis of “sound science”—inevitably carry with them the aura of insincerity, of protesting a bit too much.

And so perhaps we have now discovered the rightful place of science: not on a pedestal, not impossibly insulated from politics and disputes about morality, but nestled within the bosom of the Democratic Party. Is this a good place for science to be? For the short term, increased budgets and increased influence for the scientific-technological elite will surely be good for the scientific enterprise itself. Serious attention to global environmental threats, to national energy security, to the complex difficulties of fostering technological innovation whose economic outcomes are not largely captured by the wealthy, are salutary priorities of the Obama administration and welcome correctives to the priorities of his predecessor.

But ownership of a powerful symbol can give rise to demagoguery and self-delusion. President Bush overplayed the national defense card in pursuit of an ideological vision that backfired with terrible consequences in Iraq. In turn, a scientific-technological elite unchecked by healthy skepticism and political pluralism may well indulge in its own excesses. Cults of expertise helped bring us the Vietnam War and the current economic meltdown. Uncritical belief in and promotion of the redemptive power of scientific and technological advance is implicated in some of the most difficult challenges facing humans today. In science, Democrats appear to have discovered a surprisingly potent political weapon. Let us hope they wield it with wisdom and humility.

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