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Political Science

By DANIEL SMITH

When Donald Kennedy, a biologist and editor of the eminent journal Science, was asked what had led so many American scientists to feel that George W. Bush's administration is anti-science, he isolated a familiar pair of culprits: climate change and stem cells. These represent, he said, "two solid issues in which there is a real difference between a strong consensus in the science community and the response of the administration to that consensus." Both issues have in fact riled scientists since the early days of the administration, and both continue to have broad repercussions. In March 2001, the White House abruptly withdrew its support for the Kyoto Protocol on climate change, and the U.S. withdrawal was still a locus of debate at this summer's G8 summit in Scotland. And the administration's decision to limit federal funds for embryonic-stem-cell research four years ago -- a move that many scientists worry has severely hampered one of the most fruitful avenues of biomedical inquiry to come along in decades -- resulted in a shift in the dynamics of financing, from the federal government to the states and private institutions. In November 2004, Californians voted to allocate $3 billion for stem-cell research in what was widely characterized as a "scientific secession."

Yet what remains most divisive, according to Kennedy, is not the Bush administration's specific policies, but a more general sense that "scientific conclusions, reached either within agencies or by people outside of government, are being changed for political reasons by people who have not done the scientific work." It is this sense that science is being "misused" that has given rise to two Congressional bills.

In late June, Senator Richard J. Durbin, an Illinois Democrat, introduced the Restore Scientific Integrity in Federal Research and Policymaking bill. Many on the right interpreted the move as little more than a clever bit of partisan grandstanding. "This all comes out of the Kerry campaign's attempt to spin the legitimate efforts of the administration to monitor scientific reports," Robert Walker, a Republican lobbyist and former chairman of the House Science Committee, told me. Even scientists, the ostensible beneficiaries of the bill, expressed little enthusiasm. "It won't get very far," said Kurt Gottfried, a Cornell physicist and chairman of the Union of Concerned Scientists, based in Cambridge, Mass., which has been highly critical of the Bush administration. "We've come to have a cynical attitude about what can happen in this government."

Both sides have reason to be skeptical. The bill -- which aims to put an end to the censorship and alteration of government scientific information and to the application of litmus tests in making advisory appointments -- is nearly identical to one introduced in February by Representative Henry A. Waxman, a California Democrat, that has been languishing in the House. And though Durbin's bill is also sponsored by such formidable Democratic figures as Hillary Rodham Clinton and Harry Reid, the Senate minority leader, it has about as much chance as Waxman's does of becoming law. Yet, as some have noted, the mere fact that it has appeared in the Senate points to the deep political rift over differences between the scientific community and the White House.

The notion that there is a widespread "misuse" of science first gained its force from a series of instances in which administration officials have, as Gottfried and others see it, "broken with an unwritten code of scientific conduct." Two of these instances, widely publicized by watchdog groups and reporters, have taken on almost metonymic significance. In 2002, William R. Miller, a prominent psychologist, was asked during an interview for a position on a National Institutes of Health advisory panel on drug abuse if he had voted for Bush. He replied that he had not. He was subsequently denied the appointment. (The administration maintains that the decision was made for other reasons.) Then, in June 2003, The New York Times reported that White House officials had demanded that a reference to a study in an Environmental Protection Agency report showing sharp increases in global temperatures be replaced by a reference to a study financed in part by the American Petroleum Institute that questioned those increases. According to a widely circulated internal memo, switching the studies and deleting other references to the human contribution to global climate change would have meant that the report no longer accurately represented scientific consensus. Rather than make the changes, the E.P.A. removed the entire section on global warming from its report, which focused solely on the environment. In and of themselves, neither of these instances was unusual; all administrations, according to Daniel Sarewitz, a former Congressional staff member and director of the Consortium for Science, Policy and Outcomes at Arizona State University, seek to some extent to mold scientific evidence to fit their political agendas. But scientists like Gottfried contend that the "scope and intensity" of the episodes under Bush are unprecedented.

It falls to John H. Marburger III, the president's science adviser, to respond to complaints like Gottfried's, and he has consistently maintained that they are a distortion of the administration's position. Recently, however, observers have noted that even he seems unusually insistent on reaffirming the scientific facts. While a guest of the Princeton Environmental Institute this spring, he responded to a question about the Kyoto Protocol by stating: "Global warming exists, and we have to do something about it. And what needs to be done is to reduce CO2." His remarks were quickly picked up by intrepid administration-watchers. Chris Mooney, a science journalist and author of "The Republican War on Science," wrote, "I don't think the president has ever stated the facts so plainly -- has he?" And in February, Marburger responded to a question about intelligent design by stating categorically, "Intelligent design is not a scientific theory." More visibly, he used much the same phrasing when he was asked by a Times reporter last month to respond to the president's endorsement of teaching intelligent design in schools.

When I spoke with Marburger in late August, several months after I first met him, he was adamant that his comments had carried not even a tinge of rebellion. "At least I haven't noticed any change in myself," he said with some amusement. "I still don't think there are any administration policies that are in conflict with science or with the way nature works."

This has been Marburger's stance since Bush's first term. Many scientists, based on what they knew about him, had hoped for something different. Though a delay in appointing Marburger led to speculation about the administration's commitment to science -- his appointment was not finalized until nine months into Bush's first term, and when it was, his position was stripped of the title assistant to the president, a designation it held since Bush's father's presidency -- his resume dovetailed with the concerns of the scientific community. A 64-year-old physicist, academic and university administrator, Jack Marburger was a lifelong Democrat and was widely regarded as a deft conciliator.

Whatever hopes scientists harbored for Marburger, however, were dealt a severe blow after the Union of Concerned Scientists issued a report in February of last year charging that the administration's political agenda had permeated "the traditionally objective, nonpartisan mechanisms through which the government uses scientific knowledge in forming and implementing public policy." A petition appended to the report and signed by more than 60 pre-eminent scientists, including 20 Nobel laureates -- among them Harold Varmus, former director of the National Institutes of Health -- accused the administration of "systematically" manipulating scientific findings. There were those who hoped that Marburger would tender his resignation in a show of solidarity; instead, he emerged in defense of the administration, claiming that the U.C.S. report was "wrong and misleading" and insisting that his employers had applied "the highest scientific standards in decision making." These statements alienated many scientists (Howard Gardner, a Harvard cognitive psychologist, went so far as to call Marburger a "prostitute" on National Public Radio), and the protests quickly grew more partisan. In June 2004, 48 Nobelists released a letter endorsing John Kerry, and several months later, a political action group, Scientists and Engineers for Change, arranged a series of lectures by prominent scientists in key battleground states, in a show of force that recalled the vehement opposition of the scientific community to the presidential candidacy of Barry Goldwater in 1964.

Bush's success in the election did little to tamp down scientific activism. The U.C.S. has continued to publicize instances in which politics seems to be intruding on science, and the original petition has garnered more than 7,000 additional signatures. The organization has also teamed up with Public Employees for Environmental Responsibility, a nonprofit Washington-based watchdog group, to produce a series of surveys tracking political interference, both real and perceived, with government employees in federal agencies. And in June, the American Civil Liberties Union released a report, "Science Under Siege," charging that post-9/11 security measures have imperiled the country's technical competitiveness by restricting access to equipment and documents and obstructing the movement of foreign scientists.

To many in the scientific community, it is unfathomable that Marburger would risk his reputation by staying on and continuing to defend the administration. Others see the fact that he has remained in office as indicative of nothing more than the very real compromises involved in formulating science policy. "If you haven't been there and lived in the White House, and thought deeply about your role and the ethical dilemmas you incur, such as whether or not to resign, then it might be quite difficult to understand what's happened with Marburger," says Neal Lane, Bill Clinton's second science adviser and a prominent supporter of the U.C.S. petition. Those who have worked closely with Marburger agree that his response is based on a careful cost-benefit analysis. "The choice is between Jack and a Neanderthal," says one former Bush administration official, whose livelihood still depends on the federal government and thus spoke to me on the condition of anonymity. "The scientific community will never understand that."

For Marburger, what is at stake is less complicated and less political. He insists that the "science wars" are illusory and that the Bush administration's stewardship of science is both defensible and in keeping with the ideal of scientific progress. Despite the ugly names he has been called along the way, he remains sanguine about science's prospects under the Bush administration -- for the simple reason, he says, that he is careful to make a distinction between Science (which his tone alone capitalizes) and the people who conduct it. Whether scientists set up camp outside the White House, Marburger suggested to me recently, or whether they remain quietly in their laboratories, science will continue to lumber on as it always has. So, too, will Washington.

One afternoon in March, I met Marburger for lunch at the Bombay Club, an Indian restaurant not far from the White House. It was raining, and Marburger, a sensible man who walks to meetings and lunches, arrived in a long black overcoat, his white hair sprinkled with rain. He spoke in a quiet, professorial tone about the work of Hans Bethe, the Nobel Prize-winning nuclear physicist, who died the day before, and about nonlinear optics, a field made possible by the invention of the laser and in which Marburger was a pioneer. All this seemed at odds with the prevailing image of a man torn between the scientific community that had fostered him and the administration that had taken him in, and I asked what he thought about the notion, widely held in the scientific community, that he must be ethically conflicted.

"I don't feel conflicted," he said calmly. "I don't feel that I'm someone who is, as I've been described, at the 'eye of a hurricane' or at the 'center of a storm.'" That image, he said, comes from the fact that "we're very closely tied to the dynamics of politics in our time, but we're not very closely tied to what is actually happening in science."

For Marburger, this is true even, or especially, when it comes to scientific developments that have generated the most controversy. Global warming, which many scientists see in Manichaean terms -- the evidence of increasing climate change versus the administration's unwillingness to take steps to combat the danger -- Marburger sees in terms of a larger back-and-forth between scientific advances and the willingness of the culture to alter itself accordingly. Each generation, Marburger told a group of environmental scientists at Princeton in the spring, has a natural resistance to changing its lifestyle, and our generation has a resistance to changing the way it produces energy -- "one of the deepest and most pervasive aspects of the economy." He sees the stem-cell debate in similar terms: science can point us to the facts, but it cannot solve what for some are the moral issues raised by the use of human embryos in research. In late July, when as staunch a Bush ally as Bill Frist, the Senate majority leader and a physician, backed a bill that would loosen federal restrictions on stem-cell research, Marburger remained silent. Then in August, it was reported that Harvard researchers had used existing embryonic stem cells to convert adult skin cells into stem cells. The bill supported by Frist, which had been gaining momentum in the Senate, despite Bush's threat of a veto, suddenly seemed likely to lose votes. For Marburger, the fact that new research had direct political consequences was as it should be: the findings raised ethical issues that were separate from the scientific ones, which would be worked out in due course.

This does not mean that Marburger believes there can or should be a stark division between scientific and social issues. After serving for 14 years as president of the State University of New York at Stony Brook, he was tapped in 1998 to become director of Brookhaven National Laboratory, a vast and prestigious federal research complex on the east end of Long Island, whose future had become suddenly threatened by the discovery of a plume of radioactive tritium in the groundwater beneath the lab's nuclear reactor site. The leak was in fact harmless -- it contained less radioactive material than a conventional Exit sign -- but it sent local environmentalists into a frenzy. Marburger spent countless hours listening to the concerns of activists, and he worked assiduously to reform the laboratory's image -- presiding over the shutdown of the offending reactor at the insistence of the Department of Energy, against his better scientific judgment; opening up Brookhaven to public scrutiny; and more strictly enforcing environmental-safety regulations. After three years, Marburger had not only resolved the conflict; he had also earned national recognition -- and it was his performance at Brookhaven that would bring him to the attention of the Bush administration.

As the presidential science adviser -- and director of the Office of Science and Technology Policy -- he would step into a less overtly controversial role than the one at Brookhaven. Though scientists since Benjamin Franklin have been acting as advisers to the government, the position was first codified by Dwight D. Eisenhower, who was motivated to bring a scientist closer to the Oval Office by the launching of Sputnik and the ensuing space race. It was an era in which admiration for science and scientists was at its peak, and the cultural mood was reflected in the White House. Early science

advisers played an active role in minting policies as expansive as a nuclear test-ban treaty with the Soviet Union and as sensitive as U-2 surveillance of the Soviet Union. But this heyday was not to last long. As the influence of scientists grew, so, too, did the level of their political activism. During the 1960's and early 1970's, they began to dispute, often on nontechnical grounds, the Vietnam War and to fight for strict arms control. This led, writes Gregg Herken in "Cardinal Choices," a history of presidential science advising, to "a progressive loss of faith in the process by both sides." The tension came to a head in 1973, when President Nixon, angry over the opposition of his advisers to his antiballistic-missile program, summarily abolished the post of science adviser. Gerald Ford reinstated it in 1976 -- and also established the Office of Science and Technology Policy, which was charged with analyzing the impact of science and technology on domestic and international affairs. But the role would be only a shadow of its predecessor.

In comparison to his midcentury precursors, Marburger is less active in formulating public policy, and unlike his colleague Leon Kass, chairman of the President's Council on Bioethics, he isn't asked to weigh its ethical or moral underpinnings. The Office of Science and Technology Policy, which is Marburger's base of operations, plays mostly an administrative role in the White House. With a staff of just over 40 and a budget of only $6 million, the office has none of the attributes that endow the agencies and departments it monitors with independence. And unlike the larger policy shops in the White House, like the National Security Council, it does not play an obvious role in the president's day-to-day decision making. To some extent, these shortcomings have historically been considered something of a benefit; the gist of an old saying among O.S.T.P. staff members is that because they have no people and no money, they can better represent the president's scientific efforts to the rest of the government. But the power of the office is widely agreed to depend on the science adviser's personal relationship with the president. "Your influence depends on whether people around the president feel you have something to add," says Neal Lane, Clinton's second science adviser, now a professor at Rice University and a senior fellow at the James A. Baker III Institute for Public Policy there. "The title" -- assistant to the president -- "is important. It means you're understood to have access."

How much access Marburger has is a matter of considerable debate. The lack of the title, as Lane says, contributes to the conventional wisdom that he works in an orbit far outside Bush's inner circle. But, as Marburger points out, he does attend the senior-level staff meeting held early each morning in the Roosevelt Room of the White House, and he is able to see the president whenever he feels it is necessary. Robert Walker, who served as a science-and-technology adviser to the Bush 2000 campaign, told me, "O.S.T.P. has been a major player in policy, and whoever makes the argument that it's been relegated to some backwater of the White House just reveals how little he knows about how this administration works."

Marburger is fond of citing a line written by Daniel Sarewitz, director of the Consortium for Science, Policy and Outcomes at Arizona State, that "it is not only axiomatic but also true that federal science policy is largely played out as federal science budget policy." The most important job he has, Marburger told me repeatedly, is helping to shape that policy: "If the science adviser is disengaged from the Office of Management and Budget, then he might as well get on the lecture circuit." Fiscal policy also serves, Marburger says, as an implicit defense of the administration's commitment to science. Over the course of Bush's first term, he points out, overall research-and-development spending rose by 44 percent, which, as some have noted, is a greater increase than in any four-year term in the last 30 years. "You really have to work at it to make a counterargument that science has not fared well in this administration," he told the journal Science last fall.

Critics have a different and, they say, more nuanced, view of the science budget. Much of the increase, they point out, was either preordained -- a residue of the extraordinary expansion of the National Institutes of Health, which began under Clinton -- or comes under the umbrella of military spending. What's more, in a fiscal climate constrained by the war in Iraq and by spending on the war on terror, the most recent White House science budget -- released in February and currently being negotiated by Congress -- was nearly flat, with financing for several programs actually declining. "All the basic science budgets are dropping," Rosina M. Bierbaum, dean of the School of Natural Resources and Environment at the University of Michigan and the interim director of O.S.T.P. before Marburger's arrival, told me. "They are emptying the science pipeline. How can you be for science and do that?" John Gibbons, Clinton's first science adviser, adds that money isn't the only issue. "We're unhappy about where science is going," he says. "The budget isn't the point. Are we going to abandon space exploration and just go to Mars? Are we going to maintain a global gag rule on birth control? Where is Marburger's voice in these decisions?"

His voice, Marburger said, is on "the health of science and the objectives that you try to achieve in a society through science." He typically defines these objectives in terms of large-scale projects and issues: the complications posed by the war on terrorism to the free international exchange of students in the sciences (Marburger has sought to ease restrictions placed on foreign-student visas); the identification and evaluation of new technologies to address federal security concerns; the health of the technical-publication industry, which is subject to peer review, in the age of the Internet, which typically is not; the siting and development of "big science" research equipment, like the Spallation Neutron Source in Oak Ridge, Tenn.; the rise of nanotechnology, with its potential to revolutionize everything from the treatment of cancer to the creation of new weaponry. "We're talking about the United States of America," he said. "A hundred and 30 billion dollars being spent on science and technology, just from government funds. We're talking about the warp speed of the economy, the warp speed of technology. To me, that is what's important. It's important to keep it going."

Marburger has taken pains to make his large-scale priorities, and his small-scale optimism, known. At a forum on science and technology at the Washington-based American Association for the Advancement of Science in April, he called for a new "science of science policy," urging the scientific community to apply the tools of the social sciences to guide research and development. Why not establish econometric models that could discern the effects that, for instance, the growth of technological competence in China and India will have on the American workforce? Or that could provide better data on what the return on federal investment might be in specific scientific programs? He was confident, he declared, that science was fine in the short term. "But," he stated, "I worry constantly that our tools for making wise decisions, and bringing along the American people and their elected representatives, are not yet sharp enough to manage the complexity of our evolving relationship with the awakening globe." The speech was quintessential Marburger: he was imploring the scientific community to get more involved in the workings of the federal government, but he was imploring it to do so with the clinical tools of empirical research.

As for the nitty-gritty of politics itself? I asked Marburger. He waved his hand. "That's just shrapnel in the air."

Jeff Ruch, executive director of Public Employees for Environmental Responsibility (PEER), had what he considers to be an amusing experience when he appeared recently before the Subcommittee on Regulatory Affairs of the House Committee on Government Reform. Over the past two years, the committee, of which Representative Henry Waxman is the ranking Democratic member, has produced a steady stream of news releases and reports questioning the administration's scientific integrity ("Data Manipulation Behind Reported Drop in Terrorism," "Federally-Funded Abstinence-Only

Programs Teach False and Misleading Information," "Bush Administration Dishonest About Stem-Cell Research"). Ruch had been invited to speak about the Data Quality Act, a 2001 law that gives outside parties the right to challenge what they consider to be false or misleading government information, but he took the opportunity to denounce what he called a "severe disinformation syndrome" affecting the executive branch. "The level of official dissembling from federal environmental and resource agencies has never been worse," he said. "The federal government today is thoroughly corrupt." "They looked at me as if I had two heads," Ruch told me, speaking of his subcommittee appearance. "They had no inkling I'd talk that way."

Ruch is the flip side of the nonideological, noncombative approach to science represented by Marburger (whom he refers to as "the official apologist for the Bush administration"). His organization, which he has run for 12 years, is what he calls a "battered-staff shelter." It provides legal support and guidance for government scientists and others who claim their work has been subjected to political interference, be it from Democrats or Republicans, or who say they have been punished for refusing to comply with political directives. Ruch referred me, for example, to the story of Andrew Eller, a federal biologist fired by the U.S. Fish and Wildlife Service after publicly exposing scientific flaws in the agency's recovery program for the endangered Florida panther. In a federal complaint filed jointly with PEER, Eller charged that he had been pressured by his superiors to play down the risks to the animal and to green-light development projects on land crucial to its habitat. Eller was reinstated after his case was settled out of court.

PEER has also, for the past several months, been producing a series of surveys in conjunction with the Union of Concerned Scientists that has provided significant ammunition for the administration's critics. The most recent survey, of fisheries scientists at the National Oceanic and Atmospheric Administration, concluded that nearly one-quarter of respondents had at some time been "directed to inappropriately exclude or alter technical information from a . . . scientific document." More than half were aware of cases in which "commercial interests have inappropriately induced the reversal or withdrawal of . . . scientific conclusions or decisions through political intervention."

Such interference, Ruch admits, is unavoidable in a system as vast as the federal government, in which scientific work swims in the same pool as political interests, but, he maintains, it has never occurred so frequently. During the Clinton administration, PEER's Washington office received three "intakes" -- complaints of interference with environmental work -- per day. That number, Ruch says, is now up to five, and the professional status of the complainants has risen markedly. "The principal difference stems from the Bush administration's near-obsession with information control," Ruch says. "Under Clinton, it was like the old Will Rogers joke, 'I'm a member of no organized party; I'm a Democrat.' Under Bush, control has been centralized to an extent that's almost unheard-of. And that control has migrated down the chain of command and manifested itself in the form of political interference."

It is this atmosphere of control, many scientists say, that has forced them into an overtly political position and that many fear may be having devastating effects on the federal scientific system. "What has been happening has long-term consequences for the health and capabilities of government science," says Kurt Gottfried of the Union of Concerned Scientists, "and we're beginning to see that scientists don't want to go into government. This is a virus that will take a long time to eradicate." Neal Lane, Clinton's science adviser, adds that morale has been plummeting in many federal agencies over the past five years. He points to several reasons that this might be the case, highlighting a directive issued by the Health and Human Services Department in 2004 that strictly limited the number of scientists the N.I.H. and the Centers for Disease Control and Prevention were permitted to send to an international AIDS conference in Bangkok. An internal department e-mail message revealed that the decision, which Lane says was an egregious instance of top-down interference, was issued because of the heckling of Tommy Thompson, then secretary of Health and Human Services, at a previous conference. And in the E.P.A., Lane says, supervisors have been ignoring internal scientific staff members "in a manner that is reprehensible": "If you want to destroy an agency, that's a really good way to do it."

Is the Bush administration truly a worse science offender than its predecessors? According to Daniel Sarewitz of the Consortium for Science, Policy and Outcomes, the degree of abuse is difficult to quantify, since the very notion of "misuse" of science is ideologically freighted. In 2003, for instance, the Hoover Institution, a conservative policy institute affiliated with Stanford University, published "Politicizing Science," a book that outlined instances in which policy makers had manipulated science for their own political ends, nearly always in the name of increased regulation. "The two sides simply bring to the table different ideas of what science is and how it should be used in regulating policy," Sarewitz observes.

For Marburger, such differences are less important than those that exist between the scientific community and society as a whole. "Science needs patrons, and our patron is society," he told Science shortly after the 2004 election. "But if we're not careful, the scientific community can become estranged from the rest of society and what it cares about." He was referring to the need for scientists to be sensitive to the religious and ethical concerns of many Americans, but much of the scientific community interpreted his remark as a warning that its criticisms might be affecting the administration's willingness to finance science. "There's this preoccupation with whether science is respected by the federal government," Marburger told me recently. "But I see no indication that that preoccupation has had any impact. Policy makers continue to like science and to fund it appropriately." Science is a monolith, Marburger said. It would take quite a lot of politics to topple it.

This brand of scientific reason is not what his critics want from Marburger, but it is a quality that those who know him well consider immutable, and even quietly beneficial. "Jack's not the type of guy to fall on his sword," says Norman Neureiter, director of the Center for Science, Technology and Security Policy at the American Association for the Advancement of Science. "Would a different personality be any better? That's difficult to say. If he's a voice at the table for science, that's a contribution, but it will tend to be an unsung contribution."

Of this Marburger seems wryly aware. Last year, during a speech on the politicization of science at the George C. Marshall Institute, he offered a brief outline of the direction his professional life has taken, from bench physicist to presidential adviser. "The curious thing about these roles," he told his audience, which had been led to expect an analysis of the battles then raging over the White House and science, "is that at no time did I regard myself as being a political actor. Yes, that is naive, but it is true."

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