What is the role of biologists in a hyperpartisan world?

The federal budget sequestration and the partial government shutdown in 2013 were dramatic reminders that, whether biologists like it or not, politics has a direct impact on their research. Although most scientists would prefer to be above the fray, many cannot escape today's political rancor.

Blogs, journal articles, and books from the political left and right blame the other side for politicization. A decade ago, President George W. Bush was accused of stacking scientific committees and censoring reports to serve his political agenda while conservatives complained that scientists were overstating the risks of global warming in order to garner grant money. Since then, the battle has not let up. In a 20 September 2013 posting on the Forbes Web site (www.forbes.com/sites/markhendrickson/2013/09/20/the-palpable-politicization-of-science-by-global-warming-alarmists), columnist Mark Hendrickson complained of “the palpable politicization of science by global warming alarmists”—a common refrain. According to this view, scientists themselves are among the worst politicizers, for contorting the evidence to fit their agenda.

It is tempting, then, to view politicizing as simply a label that people ascribe to their perceived opponents as a way to undermine their credibility, much as the term junk science was flung around in the 1990s. According to Roger A. Pielke Jr., author of The Honest Broker: Making Sense of Science in Policy and Politics, politicization is not a pejorative; it’s just a fact. “The only time you can stay above the fray is when you’re a grad student,” he said in an interview. “The minute you have to file a grant proposal with the NSF [National Science Foundation] or NIH [National Institutes of Health], you’re in the realm of connecting science with the world outside of science.”

Politics affects many important biological issues, from teaching evolution to stem cell research and endangered
Beginning in the 1970s, however, a shift began among conservatives that continues today. “Rather than [US]DOD and NASA, they’re looking at the EPA [Environmental Protection Agency],” says Gauchat. “[Science is] viewed as shifting from being innovative to being regulatory.”

At the same time that the perceived role of science was changing, so too was the Republican Party, according to Gauchat. Fueled by Fox News and similar media outlets and a conservative intellectual apparatus, an anti-regulatory ideology flourished within the GOP. “These arguments started blending together—they’re just trying to regulate us”—whether it’s teaching evolution in schools, regulating tobacco, or climate change,” says Gauchat. “Science began to be seen not as a group of experts with special knowledge but as yet another institution that did not represent their interests.”

According to Doel, “The conservative base has grown increasingly distrustful not just of scientists but [of] a lot of experts in general. As business interests have gained an ever stronger voice, they’ve been articulating a policy in which regulation leads to [a] lack of employment and [to] economic downturns, and that has been coupled with arguments against attempts to regulate carbon dioxide and other greenhouse gas emissions or [to] put restrictions on energy sources.”

In their 2010 book, Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming, Naomi Oreskes and Erik M. Conway argued that much of conservative ideology has been shaped by large economic interests sowing doubt about science, from the chemical industry’s attack on Rachel Carson in the 1960s to energy companies’ undermining climate science today. The more the public believes that there is scientific doubt and debate, they wrote, the harder it is for the government to take strong action on any number of issues.

Indeed, the federal government acknowledged climate change some 80 years ago. “It was clear to scientists, particularly climatologists and glaciologists, by the 1930s that the poles were beginning to warm up,” says Ron Doel, a science historian at Florida State University. As the Cold War intensified, the United States and other nations grew concerned about what this warming might mean. The USDOD worried, “Does it mean [that] the Soviets are going to have much better agricultural seasons, so their country will be stronger in general, with the troops better fed, the ports ice free? So for the Pentagon in 1947, climate change was a matter of national security,” Doel says.

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Despite the scientific consensus around the reality of serious anthropogenic climate change, uncertainty about the details—when and by how much the sea level will rise, the pace of desertification, and so on—fuels the political attacks against climate science. As Kitcher wrote in *Science in a Democratic Society*, “The community of climate scientists is caught in a dilemma. If they record the range of opinion among them in sober prose admitting their uncertainties, offering what probabilistic estimates they can, pointing out the range and complexity of possible consequences, their lengthy summaries cannot be expected to guide any swift action…. On the other hand... if they see the inundation of regions with millions of inhabitants as a serious risk and judge that consequence to be unacceptable, they will be accused of tainting their science with judgments of value.” Therefore, he writes, “they can only speak as scientists if they agree to be muffled.”

**Ideology trumps education**

Gauchat stresses that science is not viewed monolithically by political partisans. Physics and chemistry, for example, have not been as politicized as have the life sciences, which are often linked to environmentalism. Even more suspect are the social sciences. In March 2013, Congress ordered the NSF to fund only political science proposals that promote national security or the economic interests of the United States. The NSF subsequently canceled a grant cycle for political science but has now resumed its funding with the congressional restrictions in place.

Neither are Republicans monolithic in their views on climate change. A Pew survey released in November 2013 showed that 61 percent of “non–Tea Party” Republicans believed that there was solid evidence of global warming, whereas only 25 percent of Tea Party Republicans held that view. Only one-third of Republicans, however, accept that climate change is “mostly” anthropogenic. In contrast, 84 percent of Democrats thought that the evidence for warming was solid, and nearly two-thirds attributed it to human activity.

Prominent Republican Party members, such as former Florida governor Jeb Bush and Senators Lamar Alexander (R–TN), John McCain (R–AZ), Lindsay Graham (R–SC), and Lisa Murkowski (R–AK), have acknowledged climate change as a concern. But even mild statements have...
been met with fierce political backlash from the right. Graham, for example, was “enshrined in the GOP Hall of Shame” by the online publication RedState, in large part because of his acknowledgement of climate change. Not that all Democrats are addressing climate change: Some representing coal-producing states, such as Senator Joe Manchin of West Virginia, tend to put their states’ economic interests above climate change concerns. To advance legislation, 20 Democratic senators formed the Climate Action Task Force in January.

The partisan divide over climate science has a counterpart in public doubts about evolution. A new Harris poll on various beliefs held by Americans showed that 36 percent of Republicans, 52 percent of Democrats, and 51 percent of independents said that they believed in Darwin’s theory of evolution. Overall, 47 percent of the respondents said that they believe in evolution, whereas 72 percent said that they believe in miracles, and 42 percent said that they believe in ghosts.

Although scientists may feel that those who dismiss climate change or evolution are simply ill informed and uneducated, surveys don’t bear that out. Political ideology appears to trump education, especially when it comes to climate change. In a 2012 study in Population and Environment (doi:10.1007/s11111-011-0156-y), Debra J. Davidson and Michael Haan looked at attitudes toward climate change among residents of Alberta, Canada, where 35 percent of the country’s greenhouse gas emissions originate. “Political ideology had the strongest predictive value, with individuals voting for the conservative party significantly less likely to anticipate significant societal climate change impacts,” regardless of the respondents’ educational level, they found.

In a 2011 study in The Sociological Quarterly (doi:10.1111/j.1533-8525.2011.01198.x), Aaron M. McCright and Riley E. Dunlap also found that educational attainment did not correlate with acceptance of the scientific consensus. “Our results, along with those of prior studies, show that education and self-reported understanding of global warming have little effect on the views of climate change held by Republicans and conservatives. Reducing climate skepticism among this large segment of the American populace will require far more than simply providing additional information.”

Unscientific views propagated by political ideologues are, of course, widespread on the Internet—so much so that the editors of Popular Science decided in September to stop publishing reader comments. The editors explained, “A politically motivated, decades-long war on expertise has eroded the popular consensus on a wide variety of scientifically validated topics. Everything, from evolution to the origins of climate change, is mistakenly up for grabs again.”

The good news is that, despite the profusion of heated rhetoric, opinion polls consistently show that the public overall continues to hold science in high regard. In the NSF’s Science and Engineering Indicators 2012, the public placed strong confidence in leaders of the scientific community, with only
the military and medicine garnering higher rankings. (Congress, banks, and the press were at the bottom.) Scientists also ranked high in their contributions to societal well-being. Moreover, most people preferred that environmental scientists influence policy decisions related to global warming, ahead of elected officials and business leaders.

Nevertheless, elected officials, as guardians of taxpayer money, say that they have a duty to weigh in on how the NSF and other federal agencies spend their money. In April 2013, Representative Lamar Smith (R–TX), chair of the House Committee on Science, Space, and Technology, introduced a bill that would add an extra step to the NSF’s peer review process to weed out grants that Smith found unworthy. He said that his bill “improves on [the peer review process] by adding a layer of accountability. The intent of the draft legislation is to ensure that taxpayer dollars are spent on the highest-quality research possible.” He subsequently withdrew the legislation after a storm of controversy.

However, in an opinion piece in USA Today (www.usatoday.com/story/opinion/2013/09/30/cantor-gop-budget-science-spending-column/2896333) published on 30 September 2013, Smith and Representative Eric Cantor (R–VA), House majority leader, complained again about NSF funding priorities. Smith and Cantor scoffed at a handful of funded grants, such as one for the study of rangeland management in Mongolia. Complaining about a lack of transparency, they wrote, “If [the] NSF has nothing to hide, why not provide Congress and the American public with a meaningful justification for why these grants were chosen over thousands of others?”

In December, Acting NSF Director Cora Marrett instructed her staff to be more transparent and to more effectively convey publicly available grant abstracts. The NSF says that the changes had been in the works for months.

The role of biologists

Pielke argues that to retain public trust, scientists must be careful to be explicit when they engage in advocacy and that they should, at times, clarify possible policy choices rather than champion a cause. “Honest brokering is the equivalent of giving up authority,” he says. “I see that in the climate change debate: Honest brokering has been criticized by activist scientists who say [that] if you give [politicians] choices, you’re empowering them to make the wrong choice. If democracy means the power for decisionmaking rests with the people, that also means you have to accept [that] people might make decisions different from [those of] experts. Sometimes, our job is to enrich the debate, not [to] put our thumb on the scale.”

Others say that the issue of climate change ups the ante and that scientists must be more forceful. Scientists shouldn’t always stay in their labs and say that it’s someone else’s job to speak out, argues Daniel Kleinman, professor of community and environmental sociology at the University of Wisconsin–Madison. “One could imagine cases where presenting the technical information and letting politicians or regulators make the decision makes good sense,” he says. “But climate change has altered our environment, and
responding and doing the best we can to limit the negative effects of the climate changes under way is going to cost money.” Scientists should not be afraid to say so, he suggests.

Kitcher, the Columbia philosophy professor, urges biologists to defend climatologists such as James Hansen, former head of the NASA Goddard Institute for Space Studies, who have come under attack for speaking out forcefully on climate change. “They are speaking as scientists, and their values of protecting the planet for future generations are widely shared,” he says. “That is not overstepping their role.”

Others caution that scientists must thread the needle, speaking their truth forthrightly while maintaining their objectivity and their respected role as evidence-based experts. Supporting a particular policy option may cross the line into political advocacy. For example, says Glenn Branch, deputy director of the National Council for Science Education, “A climatologist can speak authoritatively about carbon emissions causing global warming but isn’t necessarily in a better position to say whether a carbon tax is preferable to a cap-and-trade system.”

For its part, AIBS’s Public Policy Office encourages biologists to get involved in the political arena by communicating with their members of Congress primarily in support of funding for research. More than 2000 biologists have signed up for legislative action alerts, according to Robert E. Gropp, AIBS director of public policy and the Division of Community Programs, and that number has grown steadily. Gropp’s office tracks dozens of bills that are related to research funding, climate change, conservation, science education, and the science workforce (http://capwiz.com/aibs/issues/bills). Some bills seem, on their face, designed to fuel rather than curb climate change, such as one that would prohibit the regulation of carbon dioxide emissions. Other bills would prohibit funds for the EPA to implement a cap-and-trade program or any new laws or regulations “pertaining to emissions of one or more greenhouse gases from stationary sources.”

AIBS also organizes biologists to visit their legislators in Washington in April and in their congressional district offices in August. In 2013, more than 100 biologists participated in home district office visits, many of them meeting directly with members of Congress. “We’re also seeing a lot more grad students [and other] early-career folks getting engaged,” says Gropp.

Meredith Niles, a doctoral candidate in ecology at the University of California, Davis, directed legislative affairs for the National Association of Graduate-Professional Students in 2013. Niles, who received the Emerging Public Policy Leadership Award from AIBS in 2010, says that the group’s main goal is to support funding for both scientific research and higher education. Members participate in legislative action days twice a year and come to Washington for a weekend of training on advocacy and issues, before fanning out on Capitol Hill for meetings at congressional offices.

“As scientists who take federal and state money, we have an obligation to communicate our work and its implications,” says Niles. “A scientist
who knows the research can say, 'Here are a number of options, and here are the implications of those. There's an immediate and important role in communicating their work to policymakers—maybe even to craft a policy. Otherwise, policy is getting made without the input of science."

Rebecca Certner, who is pursuing a PhD in marine and environmental sciences at Northeastern University, in Boston, attended her first AIBS Congressional Visits Day in Washington last April. She found that her legislators recognized the job-creating potential of scientific research. "The congressmen and senators were really impressed by the fact that basic research is not some distant idea that comes up with weird new theories," she says. "It's applicable to real people and to creating jobs and growing the economy."

In contrast, Bill Schuster, president of the Organization of Biological Field Stations, says that some of his organization's members report that they've had difficult discussions with their congressional representatives recently. "They're getting a lot of pushback saying, 'Why should we fund science?' or asking our members, 'What do you want us to cut in order to fund science programs?'" he says. "We try to offer productive answers about where not to cut and show that [research] is a valuable investment."

Schuster became involved in lobbying out of "economic necessity." "Just meeting a basic science operating budget for a field station is a difficult challenge every year," he says. "The big decisions on funding are made in Washington, and I feel [that] it's important to have a voice there."

One field station manager was surprised by how effective a site visit could be. Jeff Brown, who works for the University of California, Berkeley, and manages several field stations near Truckee, describes his congressional district as "pretty red." "Tom McClintock is our congressman, and he is as about as opposite of science as one could want," he says.

When AIBS sent out a request for members to host a legislator's visit, Brown was skeptical, but he decided that he had nothing to lose by inviting the congressman to visit a model sustainable forest management project on federal land. Two of the congressman's aides showed up. "At the beginning, they were only going through the motions," says Brown, "but as we got into what's going on at the field station and the history of the project and the broad support it has, they warmed up a lot." The field station now enjoys strong support from an unexpected source. "You may think [that] you're preaching to a stone wall, but you're not," he says. "If you never take the chance, you'll never garner a relationship or support."

The immediate threat of another government shutdown may have receded, and some of the worst effects of sequestration have now been mitigated, but it seems that many more bridges like that built by Brown will be needed to ensure strong bipartisan support for science.

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