



NEWSMAKER INTERVIEW

John Holdren Brings More Than Energy To His Role as Science Adviser

President Barack Obama's three domestic priorities—energy, health care, and education—provide John Holdren with a road map for serving as the president's science adviser. They also point to three different ways in which the 65-year-old physicist, on leave from Harvard University's John F. Kennedy School of Government, may carry out his second job, that of director of the 50-person Office of Science and Technology Policy (OSTP) within the White House.

On energy, Holdren told *Science* last week in one of his first interviews since his Senate confirmation 19 March, he hopes to wield considerable influence. "Energy is one of my big things. I'm going to pay a lot of attention to energy," says Holdren, who has extensive experience in energy, climate, and nuclear-proliferation issues. At the same time, Holdren signaled that the President's Council of Advisors on Science and Technology (PCAST), co-chaired by medicine Nobelist and former National Institutes of Health director Harold Varmus and Eric Lander of the Massachusetts Institute of Technology, is likely to be the nexus for any health care debates within OSTP. He acknowledged that he expects the president to rely heavily on Education Secretary Arne Duncan, a fellow Chicagoan and basketball buddy, for guidance on improving U.S. schools, with OSTP playing a complementary role in reforming science, technology,

engineering, and mathematics education.

Three weeks into his job, Holdren says OSTP and government scientists are "energized" by his boss's bold promise to "restore science to its rightful place." In a conversation with *Science*'s Jeffrey Mervis, Holdren spoke frankly on issues ranging from nuclear proliferation to the teaching of evolution. The following is an edited transcript; a complete version is available online at *Science*'s policy blog, *ScienceInsider* (blogs.sciencemag.org/scienceinsider/2009/04/in-full-intervi.html).

—JEFFREY MERVIS

Q: Are you concerned that reporting requirements for the American Recovery and Reinvestment Act (the \$787 billion stimulus package) will hamstring U.S. scientists? Or is that the price to pay for this massive influx of funding?

J.H.: There's clearly a tension there. When you do something as big as the recovery package, there's tremendous pressure to make sure that you don't just push the money out the door without any attention to assessment and evaluation. But the other side of the coin is that you don't want to burden people who are doing good work with a degree of reporting requirements that impair their productivity in any significant way. So it's a fundamental tension, and I'm not sure that we've got it exactly right. ... If you over-

burden researchers with reporting requirements, then you've done a bad thing. And we'll try to avoid that.

Q: Do you expect OSTP to play a bigger role in national security?

J.H.: Steve Fetter is assistant director at large, so I can deploy him on energy, climate change, and nuclear weapons. Steve has a background very similar to my own, and Steve has a portfolio similar to mine, and when I can't be in two places at once, I have complete confidence that Steve will be bringing the same things to the table. We will ultimately have an associate director who will be dual-hatted in the [National Security Council]. But I also have a role in the NSC. Whenever science and technology are on the table, I'm there.

Q: Is building a renewable replacement weapon necessary to win Senate approval of the Comprehensive Test Ban Treaty (CTBT)?

J.H.: My personal view—I don't make the policy, but I provide advice—is that we do not need a new warhead. [A National Academies' report I led] concluded that the safety and effectiveness of the current nuclear stockpile could be maintained indefinitely without developing new warheads, by monitoring the situation and making modifications if necessary.

My personal view is that designing a nuclear warhead and deploying it would throw out a good part of the baby with the bath water. It negates a substantial advantage to ratifying the test ban treaty because it would send a message to the world that the United States still thinks that it can and should design and

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On board. In his second day on the job, John Holdren (left) joined President Barack Obama and local students in a phone call to the space station.

deploy new warheads when circumstances require it. If that's the case, what have you accomplished with CTBT?

Q: Will additional shuttle missions be needed to complete the space station?

J.H.: The current plan is to get an additional shuttle mission to the space station within the 2010 framework. ... If that can't be done and things slip, then consideration will be given to going beyond that date. And that would be the last shuttle mission. There will be a gap in our capacity to put people in space with U.S. vehicles, because we will not have a follow-on to the shuttle ready before 2015.

Q: Will it be only 5 years?

J.H.: I wouldn't want to speculate. It's going to be at least that long. I don't see any way we can do it before 2015, and if things go as they often do, it might be a little later than 2015. And what we'll have to do in that interim period is rely on our international partners, which means the Russians. It might also be the Chinese, depending on how our relationship develops.

Q: Do you have confidence in China's ability to launch our astronauts?

J.H.: I think it's possible in principle to develop the required degree of confidence in the Chinese. I put it out there only as speculation, but I don't think it should be ruled out.

Q: Will your review of scientific ethics include a review of conflict-of-interest policies at each agency?

J.H.: I think it has to look at that. I wouldn't prejudge what we're going to say. But the question is, "What are the appropriate boundaries?"

Q: What about full disclosure for all National Institutes of Health (NIH) grantees?

J.H.: I don't feel comfortable prejudging that. It's not a domain with which I'm closely familiar. I would be interested in the views of Harold Varmus and Eric Lander on that. They are co-chairs of PCAST, which has not yet been fully constituted. ... And since I have, as co-chair of PCAST, the former director of NIH, and one of the smartest people I know, I'm not going to go on record on that issue without talking first to Harold.

Q: Will the portfolios of the associate directors be science, technology, energy/environment, and national security/international affairs?

J.H.: Yep. Although when you say energy, the title will be environment, and how energy will be handled remains to be seen. It depends in part on who we recruit for technology. Right now, the only associate director who has been nominated is Shere Abbott, for environment.

Q: So you haven't decided where energy will go?

J.H.: Well, energy is one of my big things. I'm going to pay a lot of attention to energy. Energy is one of Steve Fetter's big things. And we have Kevin Hurst, a senior policy analyst who's been working on energy. So right now we have a strong energy team, and we'll be bringing even more energy capability on board.

"Designing a nuclear warhead and deploying it ... negates a substantial advantage to ratifying the [Comprehensive Test Ban Treaty]."

—JOHN HOLDREN

Q: Given the Administration's energy team—Steve Chu, Carol Browner, Lisa Jackson, among others—what special expertise and perspective do you bring?

J.H.: Number one, of the people you just named, the only other scientist is Steve Chu. And Steve Chu and I, in the interagency working group on energy and climate, represent the science and technology side. Steve and I are both knowledgeable about a wide variety of energy technologies, and we are very close partners. We both know a fair amount about climate science, and we have others working for us who know even more.

Carol Browner, the former EPA director, is a brilliant analyst of policy and regulation. And we have at the table Larry Summers, Christina Romer, and Peter Orszag, who cover the economic side. We also have Cabinet secretaries who have big stakes in the energy issue, and they bring to the table important constituencies.

Q: How will OSTP handle science education?

J.H.: It'll be within the associate director for science. Everybody has a stake in it, however. And we will have an associate director

for science who is known for his or her commitment to strengthening science, technology, engineering, and math education. That's already clear.

Q: So you have somebody in mind?

J.H.: I do. And this is a big deal for the president. His commitment to education is clear, and it's shared by the education secretary, Arne Duncan. We're going to do a lot in that domain.

Q: Staying with education, do you think that the Texas state school board's recent decision to add a skeptical view of the study of evolution and the fossil record weaken the state's science standards and weaken national efforts to improve science education?

J.H.: Well, I have not reviewed that decision carefully. But my impression from reading about it is that it was not a step forward but rather a step backward. Of course, all science needs to be skeptical. It's hard to be against skepticism. But when you get into the domain of promoting particular views about the basis for skepticism of evolution, and those views are not really valid, then I think we have a problem. I think we need to be giving our kids a modern education in biology, and the underpinning of modern biology is evolution. And countervailing views that are not really science, if they are taught at all, should be taught in some other part of the curriculum.

Q: Is there anything you can do?

J.H.: I'm not aware of any leverage we have, at OSTP or within the federal government, over the science curriculum in Texas, other than exhortation. We can argue and we can beg and we can try to educate. But we have no authority to act.

Q: Were you troubled by the recent National Academies' report that one in six life scientists say they have self-censored some of their research because of security concerns, and is there anything you can do?

J.H.: That is a tough one. I think security concerns in the biological domain are real, and we cannot be cavalier about the propagation of findings that could be used by terrorists to harm us. But what the right approach to managing those risks is, is something we'll continue to struggle with.

There was self-censoring within the nuclear physics community in the late [19]30s and '40s, when it became clear to scientists that there was potential for weapons of vast destructive power. And I think that was a good thing.