SCIENCE POLICY

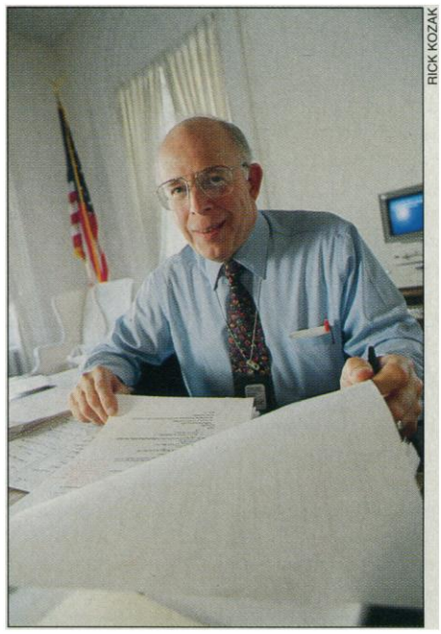
Jack Gibbons: Plugging Into The Power Structure

He's been on the job for just 2 weeks, and President Clinton's science adviser, John "Jack" Gibbons, is harried. He's running late because he just spent an hour in an unscheduled meeting with Vice President Al Gore working on technology proposals to include in Clinton's package of economic incentives, due to be unveiled in just a week's time. Earlier in the day, he attended a Cabinet meeting, at which he buttonholed two department heads to discuss high-level science appointments. Now he's back in his office eating a late lunch amid cardboard boxes full of files brought over from the congressional Office of Technology Assessment, which Gibbons directed for 13 years. The boxes will be unpacked when Gibbons' sparse staff has a moment to spare. That may be some time off.

Gibbons, who was appointed earlier in the Administration than any science adviser in recent memory, is busy getting himself plugged into a White House power structure that is still being formed. So far, he appears to have established some key connections. In a wide-ranging interview with *Science* on 9 February, he said he meets with Clinton once a day on average, generally as part of a group. He is a member of the newly created National Economic Council. And last week, Clinton announced that the Office of Science and Technology Policy (OSTP), which Gibbons heads, would include the National Space Council and the Critical Materials Council, a move that will consolidate most White House science and technology offices under Gibbons' authority.

His closest contacts so far seem to be with Gore, who has been given authority for coordinating technology and environmental policy. Indeed, the White House reorganization will place OSTP under the vice president's office (in his science adviser role, Gibbons will continue to report to the president). This, Gibbons says, is a concrete indication of what Clinton has long indicated would be Gore's day-to-day involvement in science and technology matters. Gibbons is quite happy with that relationship: "It's nice to have a champion a few notches above where you are—especially one who understands what you are talking about." Combined with his daily visits with Clinton, this close working relationship with Gore suggests that Gibbons is already enjoying far more access than did his immediate predecessors.

Gibbons says he has spent much of his first few days working on technology issues rather than on policies for basic research. In fact, he says, "I honestly don't yet know how the National Science Foundation's budget or the NIH budget is going to look" in the Clinton Administration's detailed budget proposals, which are currently scheduled to be sent up to Congress in late March. But he warns researchers not to expect the growth rates for basic research that have occurred in the past few years. "It is well recognized by this administration the enormous long-term utility of [basic] research in terms of its return as a national investment," Gibbons says, but "at the same time, you can't keep up 6% escalation in an economy that is growing at a half to a third of that."



RICK KOZAK

Broader reach. The space and materials councils now report to Gibbons.

That raises the question of whether some of the big science programs started in recent years can be maintained in a constrained budget. Ever since Clinton held a Camp David retreat with his top aides and Cabinet members—including Gibbons—late last month, rumors have been flying that Office of Management and Budget director Leon Panetta had targeted the Superconducting Super Collider (SSC) and the space station for cancellation.

Asked what the current thinking is on the two projects, Gibbons freely concedes that the space station is not science, and should be weighed on its technology value alone. It's being scored, he says, in the "technology infrastructure" category, in competition with such high-priority items as Gore's pet "data superhighway" computer networks. As for the SSC, is there a chance it will be canceled? The question stops Gibbons in his tracks. He pauses for nearly 10 seconds. "I don't want to prejudice what the president's choice is on that at the moment," he says, speaking slowly. He adds: "I don't think there's any impression it's not good science." (At a press conference at the AAAS annual meeting 5 days later, Gibbons discussed "slowing down" the project to let uncertainties over costs and foreign partners resolve.)

"One of the problems in this business is that we've been putting off a lot of these decisions and sort of thinking we could muddle through. You can't muddle through. You've got to come to some hard decisions of where we're going to go in terms of maximizing the public utility of these things," Gibbons says, adding, "It's my impression that the Administration wants to come to the wire on these things."

Naming names. A focus of Gibbons' advice, at least for now, has been providing and reviewing names for lists of potential appointees. Sometimes he says he gets a call from the White House personnel office asking for comments on potential candidates. Other times, Gibbons says he needs to prod a bit—hence the buttonholing of Cabinet secretaries when the opportunity arises. "I'd be misrepresenting it if I said it was a very coherent process," he notes.

He says he has provided a few names for a possible director of the National Institutes of Health to replace Bernadine Healy, and expects to have more input when Health and Human Services Secretary Donna Shalala decides to move on that post. The White House was caught somewhat off-guard by the resignation of Walter Massey last month as director of the National Science Foundation. "We're a bit behind on that selection because of the rush of events," Gibbons says. Nevertheless, he says he has already met with Massey and talked with National Science Board members to solicit some names. He has also provided some names for a possible replacement for NASA administrator Daniel Goldin.

Technology policy. Early in the campaign, candidate Clinton talked about setting up a civilian equivalent of the Defense Advanced Research Projects Agency (DARPA)—an agency that would work with industry to develop technologies critical to economic competitiveness. Gibbons says, however, that the plan now is to build on existing programs, especially those in the Commerce Department such as the Advanced Technology Program at the National Institute of Standards and Technology. The idea, he says, is to spread DARPA-like programs across the govern-

ment, creating public-private consortia to work on critical technologies. "If you look at the way we have been investing, you could say that if you take the space station, the [Strategic Defense Initiative], and a few other big projects, that's our investment in technology as a public. And there are real questions as to whether that is an optimized investment," he says.

OSTP shares the pain. The reorganization plan that consolidated Gibbons' authority over science and technology components of the White House had a downside: It was part of a 25% White House staff cut. The plan leaves OSTP with about 40 full-time slots plus six staffers detailed from other agencies—about 14 fewer people than under Gibbons' predecessor, D. Allan Bromley. Gibbons, perhaps putting on a brave face, says that should be plenty of staff—especially if he can persuade Congress to relieve OSTP of the burden of producing many of the reports now required by law. And to help matters, Gibbons has achieved something of a coup. He has managed to bring OSTP under one roof for the first time in many years: All 46 staff members will be moving to a single office suite in the coveted Old Executive Office Building in the White House compound later this year, ending a tradition in which most of OSTP was relegated to offices down the street.

Now that he's got prime office space—traditionally fuel for the fiercest White House battles—over with, Gibbons can turn to who will occupy it. He says he hopes to appoint scientists well known in their disciplines to some of the top posts in OSTP. As for outside advice, Gibbons says he has not yet decided whether to retain the President's Council of Advisers on Science and Technology (PCAST), which was set up by Bromley. Current PCAST members' terms expire in June.

Over the next few months, as the Administration takes shape and settles down to the business of running the country, Gibbons' job will no doubt change. A continued strong focus on technology is likely to remain, however, since that is clearly Gore's key interest. Some clues to how basic research will fare in that environment will come when Clinton's first budget is unveiled next month.

–Christopher Anderson and Colin Norman

PARTICLE PHYSICS

A Worldly Approach to a New Accelerator

Particle physicists are learning to their discomfiture that for one country to plan a multibillion-dollar accelerator, then ask other countries to help build it, is a recipe for frustration. That's the lesson emerging from the struggles to build the Superconducting Super Collider (SSC), the mammoth accelerator that is now in limbo as officials wait to see whether Japan and other nations will pitch in. But a group of laboratory directors who are already planning the next-generation accelerator—a large linear collider that will address physics the SSC can't probe—is taking steps to ensure that it will be an international collaboration from day one.

"We're trying our damndest to see that we don't make the same kinds of mistakes that came up with the SSC."

–Burton Richter

So far, no country has formally committed itself to the new accelerator, and its design is still in flux. But a trio of physics lab heads has drafted a memo of understanding they hope will set the tone for the development effort now under way. As Burton Richter, director of the Stanford Linear Accelerator Laboratory (SLAC), puts it, "We're trying our damndest to see that we don't make the same kinds of mistakes that came up with the international collaborations for the SSC. So when we eventually decide to proceed, the path will have been prepared for real international collaboration and everybody will have felt part of the thing since the beginning."

Drafted by Richter, along with Hirotaka Sugawara of Japan's KEK laboratory and Bjorn Wiik, the incoming director of Germany's DESY, the memo proposes that the development effort be overseen by an international committee consisting of one representative from each of the laboratories involved, which may eventually number 20 or 30. The proposal was reviewed last month by the International Committee for Future Accelerators; a revised version will soon go out for comment to physicists and administrators—what Richter calls "some of the bigger players"—in Europe, Japan, the United States, and Russia.

The machine Richter and his colleagues are thinking about would be smaller than the SSC. Instead of an 87-kilometer oval, it would take the form of a high-tech dragstrip tens of kilometers long. Collisions in the new machine would be limited to about 1 trillion electron volts (TeV), in contrast to 40 TeV for the SSC. But while the proton-proton collisions of the SSC produce explosions of secondary particles, the electrons and positrons of the linear collider, being simpler particles, would produce very clean collisions. What's more, says Richter, "there are certain areas of physics you [could] do better with an electron machine," and certain predicted particles would be easier to find.

The technical challenges of building such a machine have spurred an international development effort that, Richter estimates, is already costing the governments involved $40 million to $50 million a year. One challenge is accelerating the particles: In rings like the SSC, the particles reach their high energies by circulating countless times through the accelerating cavities, but in a linear collider the particles make just one pass. Two international collaborations are already studying designs for radiofrequency cavities that would generate the powerful accelerating gradients. One group is focusing on superconducting technology, the other on conventional conductors. It's a bit of a horserace, says Richter. "The expectation is that one of these approaches will turn out to be better."

Meanwhile, European, Russian, Japanese, and American physicists are collaborating at SLAC to learn how to focus the electron and positron beams down to 60 nanometers in diameter, 1/33 that of the beams at SLAC's existing linear collider. Decreasing the diameter of the beams, says Richter, increases their density, or "luminosity"—a critical factor for detecting extremely rare events at high energies. And because a finely focused beam is easier to achieve if the beam is narrow to start, Japanese and American physicists are studying a next-generation damping ring that would supply the accelerator with extremely narrow beams.

Once the supervisory committee concluded that this R&D effort had answered key questions, it would oversee the development of a unified conceptual design for the accelerator. That next step, says Richter, would include coming up with "a reasonably reliable budget estimate," which is likely to be in the range of $2 billion or $3 billion. After that, Richter says, "you could start construction around 1998—if you were only technology limited. Of course, you then have to factor in politics."

Where would such a machine be built? The big island of Hawaii is rumored to be a contender. Steve Olsen, a University of Hawaii physicist who has collaborated on work at KEK, confirms that Hawaii has been mentioned, if for no other reason than its location halfway between the United States and Japan. But any such talk, he says, is premature. "Nobody really wants to bring up a subject like this when the SSC is on the table. These are pie in the sky dreams."

–Gary Taubes