Keyworth Quits White House Post

The President's science adviser and Star Warrior will leave in December to start a corporate intelligence firm; no replacement has been chosen

George (Jay) Keyworth II, the President's long-tenured science adviser and loyal defender of the Strategic Defense Initiative (SDI) or "Star Wars" plan, resigned on 27 November.

Keyworth gave his letter of resignation to White House Chief of Staff Donald Regan the day before Thanksgiving, saying he will leave at the end of the year. He plans to join Herbert Meyer, vice chairman of the CIA's National Intelligence Council, in a consulting firm to be called Keyworth-Meyer International. Based in Washington, it will help multinational companies develop in-house staffs to collect and analyze scientific, economic, and political intelligence.

"We won't tell you what's going to happen in Europe in the next 10 years," says Meyer, "but we will tell you how to get the answer for yourself." Meyer was not concerned about conflict-of-interest restrictions that apply to retiring federal officials because he and Keyworth will not be seeking government contracts.

In a telephone interview with *Science*, Keyworth said he had been thinking about his departure for a year, and that "the President's pouring concrete around SDI at Geneva reassured me that this would be a good time to leave." He is confident that in his tenure at the White House he has "established the importance and priority of research and development." Keyworth says he leaves without "any regrets at all," but adds that "It will be a pleasure to wake up in the morning and know that I am in control of what I'm doing."

If necessary, Keyworth says, National Science Foundation Director Erich Bloch will "bridge the gap" while a new science adviser is being recruited.

In 4½ years in office, Keyworth drove home the message, a former aide says, that "science serves; society does not exist to serve science." By hammering away at this theme, Keyworth at first annoyed the research establishment. But many of the bruises healed after he helped obtain several generous budgets for science and engineering. As one academician says, funding for basic science is now at a higher level "than at any time during the glory days of the sixties." This means Keyworth will depart on a tide of goodwill.

But what is past may not be prologue. A new round of money quarrels is about to begin, inspired by this winter's campaign to reduce the federal deficit. Keyworth is stepping out of the picture at an opportune moment.

In addition to ducking the budget crisis, he will leave behind the Star Wars debate that has dogged him with growing intensity over the past 2 years. The President hatched the antimissile plan with little input from the technical community in March 1983. Critics say the science adviser should have been more skeptical of this untested idea and should have helped restrain its cost, if nothing else.

Keyworth in his office

He has gone. Will OSTP remain?

The money problems for nonmilitary projects will be acute next year whether or not Congress enacts the Gramm/Rudman antideficit bill debated this fall (*Science*, 25 October, p. 421). Plans to build large physics machines or a space station may be put off again. Other plans may be put on hold. Last April, long before this round of deficit-cutting began, Keyworth warned that even the optimists foresaw "several years of lean funding" for basic science. Now there is talk of a decade of level R&D budgets. As civilian programs suffer, criticism of SDI's lavish funding will grow harsher.

Another criticism of Keyworth's Office of Science and Technology Policy (OSTP) that is likely to persist is the view that it has focused too much on physics and defense and too little on biomedicine, agriculture, and the social sciences. To the extent that this reflects the President's own interests and prejudices, there probably will be little change post-Keyworth.

Beginning in 1982, Keyworth helped write strong budgets for research and development. A former aide says it is no accident that Keyworth was critical of the research establishment and at the same time helpful to it: "He was much more effective as a critic than if he'd been perceived by Dave Stockman [the President's first budget chief] as just another tin cup rattler."

The Reagan Administration's spending freeze in 1981 stymied some research programs. At the same time, the Administration brought about a painful change of emphasis in the "D" part of the R&D budget, shifting it from two-thirds civilian in nature to two-thirds military. Ex-

perimental energy projects were hit hardest. In basic research, the social sciences were relegated to third- or fourth-rank status. Biomedical research was slighted, in that the White House cut back funds for the National Institutes of Health (NIH), knowing that Congress would more than make up the loss in its version of the budget. But in general, after the first shock, basic research was protected. For this, Keyworth won the respect of the chief research universities.

In 1984, Keyworth helped plan a new program that began to channel funds through the National Science Foundation (NSF) into special centers at six engineering schools this year. The output, it is hoped, will spur innovation in U.S. industries. Keyworth wanted to expand the idea. Last summer he proposed that "multidisciplinary science and technology centers" be built at 50 universities. The White House was not enthusiastic, and its chances of being funded are dim.

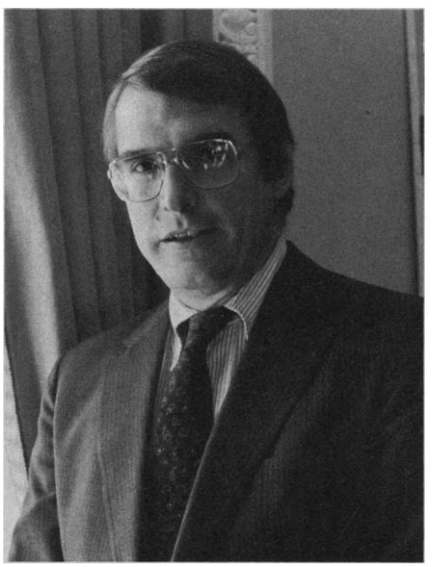
Some of Keyworth's strongest support came from the engineering community. Robert White, president of the National Academy of Engingeering, says Keyworth performed "remarkably well," especially since he "came to this city as an unknown to the scientific community, and knowing very little about what goes on at the policy levels of our government." He rates Keyworth positively on several major accomplishments, including the fact that, "This OSTP has recognized the issue of industrial competitiveness and its underpinnings and its relationship to the long-range welfare of this country more directly and more vociferously than any other OSTP has done."

From the outset, the Administration set some terms on its largesse in R&D funding. Researchers are expected to heed the current priorities—namely, rearming the military and supplying American industry with new ideas and talent. One observer at the National Science Foundation says that grantees have not found it hard to give these goals a nod, if only by "retooling proposals."

Keyworth's directness in pushing his message bothered some people, however. His manner has been called confrontational and blunt. He came to Washington straight from the Los Alamos National Laboratory, where he was chief of the physics program and deeply involved in military lasers. He promptly began telling research leaders that a little austerity would improve their work. That did not sit well.

Later, Keyworth lectured high-energy physicists about their greed for accelerators and their unwillingness to help shave the budget. This year he scolded the biomedical community at NIH for a similar lack of cooperation. Last December he let fly a memorable broadside at the press, saying it was "negative," drawn from "a narrow fringe element on the far left of our society," and more interested in tearing down America than building it up.

In a recent interview, Keyworth reflected on the possibility that he may have sounded confrontational. "I admit that I have had very little patience with the bureaucratic processes of government," he said. "Instead, when I could, I've tended to bypass them and go right



Keyworth is leaving as pressures are mounting to cut federal spending.

to the matter, discussing with principals." His model in this approach is "the most popular President of our times," Ronald Reagan. The President "reminded us of real leadership when he went out on SDI," according to Keyworth, a program that might never have come to fruition if Reagan "had gone through the consensus-building process."

No one has accused Keyworth of being too solicitous of public opinion. On the contrary, he is known for his loyalty to the President, regardless of what others might think. At least one Democratic Capitol Hill staffer found this "refreshing" and said that congressmen respect Keyworth for speaking openly as "the President's man." And despite Keyworth's distaste for the press, he has made himself available to reporters.

But to the critics, Keyworth's self-proclaimed role as "a guest in the President's house" sounds obsequious. They say the nation's chief scientist could exude a bit more skepticism and independence. For example, Jeremy Stone, the executive director of the Federation of American Scientists and a strong critic of the Administration, says Keyworth has "totally squandered" the credibility of his office.

Keyworth's main emblem of loyalty has been SDI. President Reagan's speech endorsing a space weapons program on 23 March 1983 marked the beginning of Keyworth's own role as an advocate. "From the period of writing the SDI speech, I would say at that time, from the very outset, this was to be my top priority," Keyworth says. In that week of speech writing it became "very obvious" how deeply the President cared, "how much a result of soul-searching it was." Since then, Keyworth says, his work on behalf of SDI has grown steadily, like "a monotonic temperature increase."

Keyworth was exposed to dissent from the early days, but he did not pass it along to the President. Several months after the Star Wars speech, Victor Reis, an aerospace expert at OSTP, departed quietly, uncomfortable with his boss's endorsement of SDI. A member of Keyworth's advisory Science Council also quit, irritated by the fact that he had not been able to get his criticisms passed along to the President. This was John Bardeen of the University of Illinois at Urbana, twice a winner of the Nobel Prize for physics.

This September, Bardeen issued a statement calling for public hearings on SDI, which he describes as a "$30 billion gamble" on a "project of dubious feasibility." Bardeen claims that the President prepared his Star Wars speech without the advice of technical experts in the Pentagon or the science adviser's office. Bardeen was on one of Keyworth's panels looking into the technology at the time, but writes that "we were not consulted." While Keyworth has been a supporter ever since the speech, Bardeen wrote, "There are few scientists either within or without the Administration who feel that Reagan's dream of protecting cities and making nuclear weapons obsolete is feasible in the foreseeable future."

Keyworth brushes aside "the majority" of criticism on SDI as being "without substantiation" and politically inspired. "Go out and look at the Scientists and Engineers for Mondale in the last election: it was almost entirely SDI-based [opponents]," he says.

Some valid questions about SDI have been raised, Keyworth believes. The criticism of bomb-pumped x-ray lasers (*Science*, 8 November, p. 646) may be

sound, according to Keyworth, but irrelevant: "I don't think [they] will be an important component of an eventual strategic defense. That's based on their limited potential for boost-phase intercept." In addition, he finds them politically undesirable because "defensive nuclear weapons are still nuclear weapons," and the President wants none of them. A more challenging question, Keyworth thinks, is whether a space defense can be deployed cheaply enough to discourage an attempt to overwhelm it with offensive weapons. "Good question," he says; "that's what the reasearch is for."

While Keyworth thinks that the aims of SDI are feasible, he says that even if he had doubts, he has been in a position where "political contiguousness" with the President is "mandatory." He adds: "If I choose to go out and criticize steps that the President has taken publicly I should do so in some other function than as his science adviser." Thus, his view of his role as a kind of mobilizer of technology does not seem very different from the role played by the Joint Chiefs as a mobilizer of troops.

The staffing of Keyworth's OSTP reflects the boss's interests and priorities. After two major waves of staff turnover in 1983 and 1985, the office is heavily peopled today with military, physics, and aerospace experts. In spatial proximity, the closest to Keyworth is Navy Captain Peter Graef, an assistant for military affairs, with an office near Keyworth's in the Old Executive Office Building. Across Pennsylvania Avenue in the New Executive Office Building is Deputy Director John McTague, a physical chemist on loan from the Brookhaven National Laboratory. He has been at OSTP since late 1983 and seems well liked on Capitol Hill.

There was, briefly, a second deputy director, physician Bernadine Healy, also well liked on the Hill. Her arrival in 1984 ended the complaint that OSTP was neglecting biomedicine. But her service lasted just a little over a year. She left in August 1985, married, and became Vice President for Research at the Cleveland Clinic. The life sciences are being handled now by Marvin Cassman, on loan from NIH, Robert Rabin, borrowed from NSF, and Air Force toxicologist Alvin Young.

The rapid pace of staff turnover at OSTP in recent years has more to do with the nature of the office than with its director. It has become a place where staffers "on loan" from other places can add prestigious White House service to their résumés. But it does not offer great visibility or administrative clout. OSTP can recruit able people, but it does not always keep them. In addition, Keyworth said he does not expect staffers to stay long, adding that "you get worn out here." Press aide Bruce Abell nodded; he was scheduled to write seven speeches in 5 days.

Almost exactly a year ago, there was a strong rumor in Washington that Keyworth and the OSTP were going to be removed from the White House. Edwin Meese III, then the President's chief of staff and a friend of Keyworth's, was about to depart from the Executive Office and move to the Justice Department. As a former OSTP staffer says, the OSTP had become "an island in the White House," and Keyworth's "only bridge to the President was SDI."

OSTP did not get the ax. Instead, Keyworth says, the President personally asked him to stay on as science adviser, and "the whole issue was to stay on to work on SDI." Keyworth agrees with an estimate that he may have spent 85 percent of his time on SDI this fall. But he prefers to say that in the past 2 years he has spent 50 percent of his time on it.

Keyworth by all accounts has been a strong leader of OSTP and has defined the office's role clearly as one that is to support policy handed down from above. The mold he has established will almost certainly last out this Administration.

—ELIOT MARSHALL

British Cabinet Split on SDI Agreement

Concern about technology transfer and diversion of talent from civilian programs have stalled agreement to participate in "Star Wars" research

Paris. An agreement between the American and British governments on the involvement of British scientists in the research phase of the Strategic Defense Initiative (SDI) has hit a snag. It is being held up by continuing concerns in London that such a move could drain scarce talent from other top-priority research programs, particularly those concerned with civilian applications of advanced computing techniques.

At a meeting in Brussels at the end of October, British Defense Minister Michael Heseltine and U.S. Defense Secretary Caspar Weinberger reached provisional agreement on the terms under which British companies and research institutes could accept SDI research contracts. At the time, it was hoped that final agreement would be reached before the Geneva summit meeting.

When the terms were put before the British cabinet, however, they were reported to have come under fierce criticism from Leon Brittan, trade and industry minister. Brittan apparently expressed the views of officials in his department that the draft agreement provided insufficient guarantees that the U.S. government would not apply excessive constraints on the use for non-SDI purposes of results obtained by British scientists under SDI research contracts.

The same officials have also expressed fears that British scientists might be wooed by the offer of generous SDI funding away from working on research projects considered vital to the future health of Britain's own high-technology industry, in particular those funded through the $500-million Alvey program on microelectronics research (*Science*, 20 May 1983, p. 799). "The use of a limited amount of top-quality manpower must be a major consideration in any SDI agreement," said Brian Oakley, the head of the Department of Trade and Industry's Alvey Directorate, in a telephone interview with *Science*.

The split within the government has brought to a head political tensions over the implications of accepting SDI research contracts that have been growing steadily in Britain—as in other European countries—ever since the invitation to participate was issued by Weinberger in March.

Several British companies and university research groups have already agreed in principle to undertake specific research projects. For example, Ferranti Instruments has reached a draft agreement for research into optical computing