U.S. SCIENCE POLICY

Bromley Memoirs Take Off the Gloves

When he was President George Bush's science adviser, physicist D. Allan Bromley followed two self-imposed rules: Never publicly disagree with another member of the Bush Administration, and never appear in public without a starched white shirt and bow tie. Now back at Yale University, Bromley has just published a book about his 4 years in Washington,* and he's broken one of his rules.

No, he hasn't taken off his bow tie; instead, he's taken off the kid gloves. Bromley's favorite target in the book is Samuel Skinner, former Secretary of Transportation, who served briefly as White House chief of staff. Bromley claims Skinner discounted the value of science to the country and, in particular, the importance of the Superconducting Super Collider (SSC); as a result, Bromley says, Skinner played a key role in its demise. Bromley also reveals that he fundamentally disagreed with the way Walter Massey, then director of the National Science Foundation (NSF), responded to pressure from Congress to push NSF toward more applied topics.

"The Skinner period illustrates a fundamental problem that George Bush had as president," Bromley writes. "He found it almost impossible to remove members of his staff who were old friends or personally loyal to him, even when their performance did not measure up." Skinner had an impact on science, Bromley writes, because, as chief gatekeeper, he heavily influenced what got onto the president's agenda. In particular, Bromley says, Skinner kept the SSC so far down on the agenda when President Bush met with Japanese Prime Minister Kiichi Miyazawa in January 1992 that it never came up.

That wasn't how Bromley had planned it. Bromley's office had drawn up a plan under which the Japanese prime minister would demonstrate Japan's growing role in global science by proposing to spend 500 billion yen ($4.5 billion) on science, 300 billion to upgrade university research facilities, and 200 billion for the SSC. "I visited Japan in October 1991...and was pleased when the Science Council of Japan voted unanimously to support it," Bromley writes. "I came back from Japan convinced that the President had only to ask the Prime Minister, and the SSC participation would be forthcoming." Bush was supposed to present the idea during a visit to Tokyo planned for November.

By the time Bromley returned, however, the White House had changed the agenda on him, transforming the trip into an opportunity for Bush to talk tough on trade. "Unfortunately, Sam Skinner and others decided that it would be best to delay the President's trip and to change its character completely....[As a result], the President never asked the Prime Minister for the SSC participation." Rather than being remembered for saving the SSC, the January visit is now best known for Bush's sudden illness and vomiting at a state dinner. And last fall, when Congress voted to terminate the SSC, opponents complained that it had failed to attract any significant foreign contributions.

On board. Bromley takes oath from vice president.

As for NSF, Bromley writes that any weakening of its commitment to academic research "would have been [a] major mistake. We have at least 18 other agencies that can carry out technology transfer to the industrial sector." But he adds that "I'm afraid that Walter Massey...took the point of view that such a shift was necessary...if he was to remain in the good graces of Congress."

Massey, now provost of the University of California, readily admits that he and Bromley argued about the direction NSF should take. Massey says Bromley thought "it was not the best use of NSF" to support more so-called "strategic" research. Massey disagreed: "I thought NSF could do it better than any other agency because we already had strong ties to the research universities."

Despite these stinging battles, Bromley seems to have caught Potomac Fever; several times he writes wistfully about what a second Bush Administration might have accomplished. Lacking that opportunity, he offers a visual record of his proximity to power: Of the 32 pictures in his book, 23 show him with the president.

–Jeffrey Mervis

* *The President's Scientists: Reminiscences of a White House Science Advisor*, Yale University Press, 1994.

CHEMISTRY

Buckyballs and Kin Are Still on a Roll

When it comes to what's hot in chemistry these days, fullerenes are sizzling. According to an analysis from the July/August *Science Watch*, papers on the all-carbon molecules have dominated the citation rankings over the past 3 years. The first fullerene, the 60-carbon "buckyball," was discovered a decade ago, but the field really took off, attracting physicists and materials scientists as well as chemists, when a process for making the curious molecules in quantity was reported in 1990. Since then fullerene variants—buckytubes and fullerenes with more than 60 carbons—have added to the excitement.

But science writer John Emsley, a chemist at Imperial College, London, who compiled these results from data supplied by *Science Citation Index*, warns against losing sight of other, more subtle trends. For example, relative to papers on other topics, surface chemistry made a strong showing in 1991 and 1992, boosted by advances in scanning tunneling microscopy. Asymmetric synthesis, computational chemistry, and self-assembly clearly generated some heat as well.

Cornell University theoretical chemist Roald Hoffmann seconds Emsley's observations. Fullerene chemistry "is fashionable, but not necessarily what's coming up or what's important in an absolute sense," he says.

–Jocelyn Kaiser

MOST CITED PAPERS IN CHEMISTRY (percentages)

Subject	1991*	1992**	1993***
Fullerenes and carbon tubules	46	42	63
Surface chemistry and semiconductors	9	12	0
Organic and asymmetric synthesis	9	11	6
Theoretical and computational chemistry	9	9	0
Natural and biologically active products	8	6	13
Organometallic chemistry	5	4	0
Analysis techniques	5	3	13
Molecular recognition and self-assembly	4	3	0
Polymers	3	0	0
Proteins	2	5	0
Others	1	4	6

*Papers attracting 50 or more citations: $n = 131$ **Papers attracting 25 or more citations: $n = 125$ ***Papers attracting 10 or more citations: $n = 16$

SOURCE: ISI'S SCIENCE INDICATORS DATABASE, 1991–93