PROFILE JOHN GRAHAM

Harvard Professor Shakes Up Regulatory Policy

As an academic, John Graham argued that regulations should be justified by cost-benefit analysis. He's now brought that view to the White House

WASHINGTON, D.C.—John D. Graham is not your typical ivory tower academic. Over the past dozen years, the Harvard University professor has testified before Congress 15 times, arguing, for example, that toxic air pollutants are overregulated and that pesticide laws should be overhauled. Now, the 45-year-old professor has moved further into the hurly-burly world of politics: He has swapped his university office for new digs in the Old Executive Office Building, where he has a plush blue carpet, 4.25-meter ornate plaster ceilings, shelves lined with books—including the seven he's written or edited on regulatory policy—and a view of the West Wing.

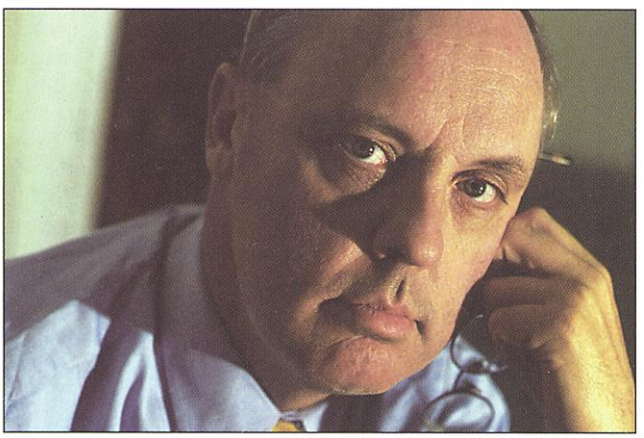
On New Year's Eve, Graham got an unexpected offer from the incoming Bush Administration to head the Office of Information and Regulatory Affairs (OIRA), part of the Office of Management and Budget (OMB). The job would give Graham a chance to influence policy directly, because OIRA reviews and signs all regulations proposed by federal agencies. And that's why Graham's nomination sparked such controversy last spring, when hundreds of academics, former policy officials, and environmental and health activists weighed in to oppose and support his nomination.

Supporters said Graham is a highly respected, objective scholar whose expertise would lead to more effective regulations. But critics argued that Graham would gut the regulatory system by reordering priorities according to strict cost-benefit tests; such tests, they assert, tend to be biased against regulations. Graham's career reflects "a persistent pattern of conflict of interest, of obscuring and minimizing dangers to human health with questionable cost-benefit analyses, and of hostility to governmental regulation in general," wrote 25 academics, including Johns Hopkins University environmental health professor Lynn Goldman, former director of the pesticides office at the Environmental Protection Agency (EPA), in a particularly scathing letter.

Graham survived the onslaught—the Senate approved his appointment in July—and he is beginning to apply a prescription for regulatory reform advocated by many economists and other experts in the 1990s. He says his goal is simply to forge a "smarter" regulatory system by bolstering the science and economic analyses behind rules and encouraging agencies to focus on those for which benefits clearly justify costs. "The challenge is how to use the resources we have to save the most lives possible and to protect the environment as much as we can," he says.

The professor is already shaking things up at regulatory agencies such as EPA and the Occupational Safety and Health Administration (OSHA), and those who know him expect more changes. Graham is "a very effective guy, very savvy, very hard-driving," says risk analyst M. Granger Morgan of Carnegie Mellon University in Pittsburgh.

The son of a Pittsburgh steel industrialist, Graham became interested in regulations as a college debater and economics and politics major. He earned a Ph.D. at Carnegie Mellon in public policy with Morgan as his adviser, writing a dissertation on the costs and benefits of driver air bags (clearly beneficial). Soon after he founded the Center for Risk Analysis at Harvard's School of Public Health, from which he is on leave.



Regulations czar. John Graham's nomination sparked a storm of protest, and his moves continue to stir controversy.

The center has done "very nice, fundamental methodological work" on topics such as how to incorporate uncertainty about a chemical's toxicity in assessing risks, says Morgan. But it's Graham's own, more applied work on comparing regulatory costs and benefits that has most often landed him on TV news shows—generally after a center press release.

In his most widely cited study, published in 1995, Graham and then–graduate student Tammy Tengs compared the cost per year of life saved of over 500 possible regulations and "interventions"—from imposing limits on toxic chemicals to increasing vaccinations to discouraging smoking. They concluded that medical interventions were the cheapest way to save lives, and controlling toxicants by far the most expensive. The implication, Graham and Tengs wrote, is that priorities are all wrong; the government could save 60,000 "statistical" lives a year by taking money from the regulation of chemical pollution and putting it into activities such as safety and substance abuse programs.

Critics like Public Citizen and the Natural Resources Defense Council (NRDC) say that that conclusion relies on faulty methods and assumptions. For one, it compares industry regulations with voluntary medical actions: apples and oranges. And, like most cost-benefit analyses, the study tends to overestimate costs and underestimate benefits, they say. For example, Graham and Tengs assumed that society puts less value on lives lost in the distant future, which made lives lost to cancer from chemical exposures worth less than those saved by, say, preventing car accidents.

If cost-benefit analysis is used at all to assess a regulation, says law professor Lisa Heinzerling of Georgetown University in Washington, D.C., it should be just one factor among many others that can't be measured in dollars—benefits such as protecting wildlife, whether it's something the government can control and whether certain groups or communities are especially hard hit by a hazard. But compared to some others in his field, Graham gives less weight to these intangible factors, colleagues say. "He has focused primarily on the economics," says risk analyst John Ahearne, director of the Sigma Xi Center in Durham, North Carolina.

Graham says the heart of the controversy isn't really him but "the continuation of a 10-year debate over regulatory reform" in Congress. Many economists and other experts have argued that the $200 billion per year that the country now spends on regulations often focuses on the wrong things, and routinely comparing costs and benefits would make more effective use of resources (*Science*, 12 April 1996, p. 221). As an ex-

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ample, he cites the Clean Air Act standards for toxic air pollutants. They are based on the levels that industry can feasibly achieve, but Graham argues that these chemicals lead to a minuscule rise in the risk of cancer, and so according to cost-effectiveness analysis, the regulations aren't justified.

"I think it's a disagreement about whether or not the analysis tools that my field represents—risk analysis, cost-effectiveness analysis, cost-benefit—are only tools to oppose regulations," Graham says. "I happen to believe that the tools can work constructively in both ways."

That claim is being tested as Graham implements his vision for the office he now heads. One of his first moves was to require that letters to agencies and other documents about proposed regulations be posted on OIRA's Web site, a step welcomed even by his critics. In drafting the office's annual report, Graham asked the public to note outdated regulations; he received 70 suggestions that his office is now looking into. Graham has sent some rules back for more work, such as an EPA regulation requiring cleaner engines in boats and snowmobiles that, he wrote, needed "improved analysis" of the costs and benefits. He's added new slots for scientists to his office staff, now mostly economists. And in a first for OIRA, Graham has recommended two new regulations to agencies—labeling foods that contain trans-fatty acids and putting defibrillators in workplaces, both of which would clearly save lives.

Graham is emphasizing a Clinton-era executive order that recommends that agencies conduct a cost-benefit analysis for the 100 or so rules each year that cost more than $100 million (*Science*, 5 October, p. 32). He is also urging agencies to use outside experts to review both risk assessments and cost-benefit analyses for these rules. "It's plainly a delaying tactic, and it's worse. It's an abuse of science," says economist Wesley Warren—an OMB official in the Clinton Administration now with NRDC—who questions whether panels will be objective.

Other experts agree with Graham that economic analyses often need more scrutiny. "They're of extremely heterogeneous quality," says Robert Stavins, a Harvard economist who chairs the environmental economics subcommittee of EPA's Science Advisory Board. And when they have been done, these analyses have tended to vary widely across agencies on matters such as the value of a human life, he notes, making it hard to compare, say, an EPA regulation with one from the Department of Transportation.

EPA, which has already been beefing up its economic reviews, is not complaining. Under EPA administrator Christine Todd Whitman, the agency's programs are now funneling all reviews through a central economics review office. The reforms may have more impact at OSHA. The agency now tends to rely on public hearings where witnesses are cross-examined to catch problems with its analyses.

In practice, there are limits on how much influence Graham can wield. Under the executive order, OMB has to review regulations within 60 to 90 days, and if it delays some rules by sending them back for more review, OIRA may bump up against court-ordered deadlines. And some laws—governing water and air pollution and pesticides in foods, for example—require regulations to be based on health standards, so they can't be overruled with economics. Still, many other regulations aren't tied to deadlines, says former EPA official Goldman. "The ability to delay action, that is real power," she says.

Some risk analysts who sympathize with the environmentalists say it's time for them to join the debate over cost-benefit analysis instead of trying to make it go away. "This is not a Reaganite plot. It's the way business is done," says toxicologist Ellen Silbergeld of the University of Maryland, Baltimore, who's worked with Environmental Defense but declined to sign a letter opposing Graham. Graham is a "worthy opponent," and "the most important thing is for the environmental community to take this [cost-benefit analysis] on." –JOCELYN KAISER

ARCHAEOLOGY

Did Plaster Hold Neolithic Society Together?

Recent studies around a 9500-year-old settlement suggest it was built in the middle of marshland. How then did its inhabitants grow their food?

ÇATALHÖYÜK, TURKEY—Sometimes the sun burns so brightly over the Anatolian plateau that it gets too hot to concentrate. Yet one sweltering day last summer, Neil Roberts had no trouble holding the attention of two dozen archaeologists crammed into the stifling conference room in the dig house at Çatalhöyük—the site of a 9500-year-old Neolithic village in south-central Turkey long regarded as one of the most important and enigmatic early settlements yet discovered. With a fan going full blast and the windows open to catch the light breeze off the surrounding wheat fields, Roberts, a geographer at the University of Plymouth in the United Kingdom, was describing some startling findings: At the time of its occupation, Çatalhöyük was smack in the middle of marshy wetlands, a stark contrast to the comparatively arid conditions that exist there today. Indeed, Roberts said, the wetlands immediately surrounding the village were probably flooded 2 or 3 months of the year.

Roberts's talk was not the only one that had the site's archaeologists scratching their heads. Data from the past 8 years of excavations at Çatalhöyük are again prompting a reassessment of this center, once home to perhaps 5000 or more people (*Science*, 20 November 1998, p. 1442). Çatalhöyük's farmers were pioneers of the so-called Neolithic Revolution in the Near East, when the hunter-gatherer lifestyle gave way to sedentary cultivation of plants and domestication of animals. During much of the last century, archaeologists thought that the rise of agriculture required early farmers to settle down so they could be near their crops and animals. Yet the new findings suggest that Çatalhöyük was inconveniently far from fields and flocks: Microscopic analysis of cereals consumed at the settlement indicates that the abundant wheat and barley were not grown in a wet alluvial landscape, but in drier, well-drained soils, the nearest of which were at least 12 kilometers away. And where did the sheep and

Marooned. New data suggest that Çatalhöyük was flooded during the spring, as shown in this artist's reconstruction.

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