

At the Frontiers of Science and Technology



Thanks to Ralph Gomory '50, U.S. Navy ships are better deployed, paper manufacturers cut their stock more efficiently and oil, gas and data flow more easily. And that's just the beginning.

Years before the Department of Homeland Security established www.ready.gov, before “offshoring” became a political and economic buzzword, before computers became small enough to carry around, Ralph Gomory '50 was envisioning a future in which bioterrorism, globalization and technological revolution would be reality.

“He was prescient,” Paula Olsiewski, a program director at the Alfred P. Sloan Foundation—of which Gomory has been president since 1989—told the magazine *Government Executive* in March. Gomory, she added, is “a very creative thinker.”

A respected mathematician and researcher, Gomory has made a career out of figuring out “the next big thing” in a number of fields. He set out on this path more than a half-century ago at Princeton, where his research, interrupted by three years in the U.S. Navy, established the field of integer programming, a quantitative technique still used to analyze everything from manufacturing to network flow to financial models. As one writer for *Think* magazine stated in 1972, “Thanks to Gomory, U.S. Navy ships are better deployed, paper manufacturers cut their stock more efficiently, oil and gas and data flow more easily.”

Gomory then joined IBM's research division in 1959, rising to director of research and ultimately senior vice president for science and technology by the time he reached the company's mandatory retirement age of 60 in 1989. During his tenure, he oversaw 2,000 researchers working around the globe to develop innovations such as the relational database and the tiny transistors

that made computers smaller and more powerful. Two IBM physicists won Nobel prizes under his watch.

“Our goal was to help the company and do first-rate scientific research,” says Gomory, for whom IBM named a \$25,000 award for the industrial application of science. “Developing new technology presented difficult technical problems, and we were able to invent in that sphere.”

At Sloan, one of the nation's largest private philanthropies (with grants totaling \$63 million in 2003), Gomory has earned a reputation for identifying little-researched topics at the frontiers of science and technology that could have a major impact on society with the proper attention and financial support.

In the early 1990s, for example, before the Internet became a public, commercial venture, he envisioned delivering college courses to students at remote locations via computer networks. A decade later, with help from Sloan (which originally gave grants to individual professors), Gomory's vision of “anytime, anyplace learning” has transformed the delivery of education, with 1.5 million students around the globe completing at least a portion of their coursework online.

Gomory also foresaw the potential for another, more sinister application of science, this time to terrorism and to large-scale biological and chemical attacks. Refusing to accept the prevailing wisdom at the time that there either was no threat or that nothing

could be done to respond to it, in fall 2000, Sloan underwrote The Johns Hopkins University's Center for Civilian Biodefense

By David McKay Wilson

PHOTOS BY CHARLES ESHELMANN

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lawmakers, media outlets and post offices, Sloan began helping the Department of Homeland Security to draft a list of recommendations for the public to follow in case of a bioterror attack. A public awareness campaign, funded by Sloan and launched in February 2003, encouraged Americans to have a disaster kit containing a dust mask, radio, water bottle, flashlight and whistle, as well as duct tape and plastic sheeting. The list was posted to the Web site www.ready.gov, which has since logged 20 million visitors.

"The foundation has been absolutely essential to what we did," Maj. Gen. Bruce Lawlor, retired chief of staff to Homeland Security Secretary Tom Ridge, told *The New York Times* the day after the campaign was launched. "Ralph in particular has been a catalyst for thinking about ways to protect people and doing it in a way that tries to take advantage of existing systems."

The federal government also asked the Sloan-funded Center for Law and the Public's Health to develop model legislation for states to respond to bioterrorist attacks, authorizing them to enforce quarantines, vaccinate people and seize and destroy property believed to be related to a terrorist attack without offering compensation. Sixteen states have adopted all or part of the model.



Strategies to the tune of \$3.5 million and approved a three-year grant to the Center for Law and the Public's Health at Georgetown and Johns Hopkins to study legal aspects of bioterror events.

"When we started our funding, few people took us seriously," says Gomory, who has served on the President's Council of Advisers on Science and Technology during the past three Republican administrations. "But now people realize that civil defense is quite important. And I feel that we have moved the issue along."

Indeed, in the wake of post-9/11 anthrax attacks at the offices of several

against terrorism, which can strike anywhere."

"Civil defense has to be a major part of protecting against terrorism, which can strike anywhere," Gomory said in an interview with Fox News shortly after www.ready.gov went live. "You can't say, 'Let the government do it.' This is a long-range threat, and we must start now to work against it."

The son of an international banker and a homemaker, Gomory credits his educational and scientific background with teaching him to trust his instincts on bioterrorism preparedness and other issues. He came to Williams in 1946 intending to study physics, but Professor Don Richmond sparked in him what would become a lifelong interest in mathematics. The two published a paper together on nonlinear differential equations in the summer of 1950.

Gomory also played on Williams' soccer team—he recalls eating steak at Coach Clarence Chafee's training table—and continues to be active, skiing in Sun Valley each February with his wife Lilian Wu, three children and nine grandchildren.

Even following him from Grand Central Station to the Sloan Foundation's offices at Rockefeller Center can be a challenge, as he moves briskly, precisely and without stopping—not surprising for a man who can run a mile-and-a-half in 11 minutes. Gomory also is a graduate of the

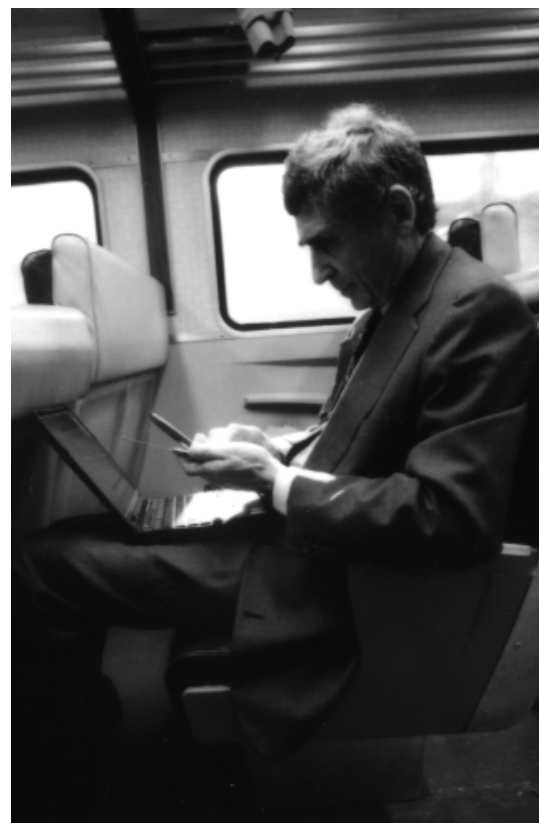
Bondurant School of High Performance Driving.

He speaks fondly of Williams and is known to wear a purple cow tie at the office. The College gave him an honorary degree in 1973, one of many he's earned along with a wall of awards, including the National Medal of Science, the John von Neumann Theory Prize and the Heinz Award for Technology, the Economy and Employment.

An active scholar who does most of his writing on an IBM ThinkPad while commuting from his home in Chappaqua, N.Y., to Manhattan on the Metro-North train, Gomory has written and co-written upwards of 87 technical papers and was co-author of the acclaimed *Global Trade and Conflicting National Interests*, published by MIT Press in 2001.

He's been hailed as an expert on "offshoring" and globalization, testifying before a congressional subcommittee earlier this year and speaking to college audiences around the country, including at Williams as the Class of 1960 Scholars Lecturer in Economics in 2003. During that visit, he also gave a talk to mathematics students on "Reflections on a Semi-Scientific Career."

As Edward Burger, chairman of the Department of Mathematics and Statistics, which hosted Gomory's colloquium talk last year, says: "He is a rare



breed: a great scientist and research scholar who can inspire other scientists to be more creative than they thought they could be."

For Gomory, it's less scientific than that. "Give people reasonable areas and goals," he has said, "and they invent." ■

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