US Scientists Pursue Ties with Cuban Colleagues, Despite Tightened Embargo

As Congress and the White House renew efforts to bring down the Castro regime, science may offer Americans one of the few openings into Cuba.

For 35 years and more, the US government has sought to put a stop to Fidel Castro and his militantly anti-American ways. It came as no surprise then that Cuba's 24 February shootdown of two small planes flown by members of a Miami-based anti-Castro group drew heavy condemnation from US politicians. Retaliation came swiftly in the form of tougher US sanctions against Cuba. In the science community, meanwhile, concern mounted that research and educational collaborations between the two countries, already encumbered by the long-standing US embargo on Cuba, would suffer further.

But an initial reading of the sanctions and proposed legislation indicates that they will not undo recent policy meant to encourage scientific exchange; these include new regulations allowing US institutions to fund academic exchanges and donate equipment, as well as revised guidelines on travel between the two countries.

"I'm cautiously hopeful," said Jeff Stann, head of the American Association for the Advancement of Science's Western Hemisphere Project, which has promoted research with Cuba. "Our sense from conversations with people in both the US and Cuban governments is that the current initiatives in science are important and should be continued."

According to Irving Lerch, director of the APS office of international affairs, APS is now examining the possibility of working with the Cuban Physics Society in three areas: journal distribution, telecommunications and joint workshops. APS leaders have been in regular contact with their Cuban colleagues since 1994, when the first Canadian–American–Mexican Meeting of Physical Societies in Cancun, Mexico, drew a large Cuban contingent. But concerns do remain, Lerch said, especially in light of the Helms–Burton legislation, known formally as the Cuba Liberty and Democratic Solidarity Act, which aims to isolate Cuba even more.

Freedom to travel

Though few would disagree that Cuba has its own human rights problems, "as of now the greatest restrictions [for scientists] are on the American side," said Lerch. In its annual report last year, the APS Committee on the International Freedom of Scientists stated that it "continues to monitor the US's Cuba policy, which in the past has prevented scientists from exercising their freedom to travel between the US and Cuba to attend scientific conferences." By contrast, US policy on scientific collaborations with other countries that have repressive governments—China, for example—is not nearly as restrictive.

Joseph Birman of the City College of New York was the CIFS chairman when the report was released. "We were very concerned that the interpretation of the rules [for traveling to and from Cuba] was being left entirely up to an officer in the State or Treasury Department who had no scientific expertise," Birman said. In one instance, a group of Cuban nuclear physicists who had been invited to a United Nations–sponsored science meeting were denied visas by the US Interests Section in Havana, which functions in lieu of an embassy there. The meeting was eventually moved to Vienna, both to protest the US action and to allow the Cubans to attend, Birman said. In another case, several US researchers were denied licenses to attend an international mathematics conference in Cuba, because the official who reviewed the applications decided that the Americans' intentions were recreational rather than professional.

Last year Birman and Barrett Ripin of APS discussed the cases with State and Treasury Department officials, in a meeting arranged by Frank von Hippel, who was then assistant director for national security in the White House Office of Science and Technology Policy. As a result, Birman said, new guidelines were issued so that an international scientific society's sponsorship of a meeting "would carry real weight."

Just one week before the shootdown, two Cuban researchers—Luis Montero, a quantum chemist, and Pedros Valdes Sosa, head of the neurophysics group at the Cuban Neuroscience Center—were able to visit the US with no difficulty. "Their visas were processed quite swiftly," said Carlos Handy, an associate professor of physics at Clark Atlanta University who met with them. Handy, a Cuban-American, has visited the island twice as an adult, most recently in late October of last year, and he has begun collaborating with physicists at the University of Havana and other research centers. "It's amazing what they've been able to accomplish despite the professional hardships," Handy said.

Until the breakup of the USSR, of course, Cuba's scientific program benefited from Soviet largesse. But over the last several years the combined effects of the US embargo and the cutoff of support from Eastern Europe have made doing science increasingly difficult.

George Reiter, a physics professor at the University of Houston, said he learned a great deal during a trip to Cuba a year and a half ago. "They were doing work on the onset of resistivity in superconductors that was using the most advanced theories, and they were doing some very nice frontline experiments," Reiter recalled. He also took note of their work on molecular beam epitaxy. "The problems they were looking at were similar to those being studied in this department." At the beginning of March, Reiter was awaiting word on a visa for Carlos Trallero-Giner, a University of Havana physicist whom he had invited to give a colloquium. According to Rolando Perez Alvarez, head of the physics faculty at Havana, Trallero would be the first member of his department to visit the US, at least in recent memory.

US scientists traveling to Cuba must still obtain a visa from the Cuban Interests Section in Washington as well as a license from the Treasury Department's Office of Foreign Assets Control that will allow them to spend money in Cuba. And for now, with charter flights suspended, they will need an itinerary that takes them through some other country.

Creative arguments

In addition to the revised guidelines governing travel, other restrictions on doing research with Cuba were also loosened last October. According to Kevin Sullivan, economic officer in the State Department's Office of Cuban

Affairs, the government will "encourage any area of scientific cooperation except biotechnology, which remains a sensitive issue."

Under the new rules, US institutions can donate equipment to nongovernment organizations in Cuba, such as scientific societies. The first to take advantage of that opening was the Center for Marine Conservation in Washington, DC, which is sending some basic supplies—insect and herbarium cases, jars and lids—to the Cuban Zoological Society for preserving specimens.

Such equipment transfers also require a license, in this case through the US Commerce Department, explained Michael Smith of the CMC. It pays to do some homework beforehand, he said. "The US government's position is not one of just promoting open scientific collaboration per se. They have some policy goals, and they want to see those policy goals achieved." And so the CMC group used some creative arguing to show how their proposal for basic research in biodiversity is consistent with US policy and interests. Among other things, they cited a 1935 US–Cuba treaty, in which both parties agreed "to respect and protect the cultural monuments of peoples," defined to include museums and educational and scientific institutions.

"In my view, collaboration with Cuba is chilled more by the rhetoric than by the regulations," Smith said. "This week is a good example: Judging by what you read in the newspapers, you'd think that absolutely nothing is possible. The reality is that scientific collaboration with Cuba is still quite open."

Academic exchanges are also permitted under last fall's rules. For example, the physics department at the University of Michigan is now reviewing applications from four Cuban students. Roberto Merlin, a Michigan physics professor, said that he'd like to see more Cuban students come to the US, "to open up the channels of communications, if nothing else."

Freedom to do physics

The push for greater openness also illustrates how, when the usual diplomatic paths become impassable, science presents an alternate route to international discourse. "I think it's exciting that scientists can have an effect on a larger social issue, establishing some kind of normal interaction between Cuba and the US," Smith said. "But it also means that we have a great responsibility and we'd better do something significant."

As Handy pointed out, "Many other countries are benefitting from the exceptional intellectual drive and professional commitment of Cuban scientists and students." He hopes that other members of the US physics community will make the extra effort to work with Cuban colleagues, and "continue to push to the fore what I call the defense of the profession—that is, wherever there is good physics being done, to try to remove the barriers that harm or impede it."

JEAN KUMAGAI

More Students Take Physics, and Teachers Like Teaching Them

The findings in a recent report from the American Institute of Physics refute some commonly held notions about high school physics teachers—that teacher burnout is on the rise, that experienced teachers are leaving the classroom in droves, that many who teach physics have little or no training in the subject. "The reality . . . is quite different," state the authors of *Overcoming Inertia: High School Physics in the 1990s*. More than half of the 2500 teachers who responded to the survey, which was conducted in 1993, said they had taken at least six semesters of physics coursework in college or graduate school, and three-quarters of the public school teachers had been certified to teach physics.

The survey also found "a surprisingly strong sense of elan and satisfaction" among physics teachers. When asked how often they'd like to teach the subject, an overwhelming 92% responded "as often as possible." Only 35% get to teach the subject every year, however, and 56% said that in their current assignment, physics was not the primary subject. Eighteen percent of the respondents said they planned to leave teaching sometime prior to retirement, compared to 23% in a survey three years earlier.

Conducted by AIP's Michael Neuschatz and Lori Alpert, the survey also looked at who takes physics. Over the six years since AIP conducted its first high school survey, in 1987, physics enrollments climbed from 20% to 24% of all high school graduates. This shift parallels a general rise in science enrollments. According to the National Center for Education Statistics, the proportion of US high school graduates who took biology grew from 79% in 1982 to 93% in 1992, while the proportion for chemistry rose from 32% to 56%. Neuschatz and Alpert attribute the increases to the stiffer graduation requirements implemented by more than 40 states since the mid-1980s.

With enrollments expected to grow further over the next several years, the report projected a small rise in the demand for physics teachers, with about 400 positions to be filled by recent graduates each year. But other types of education spending may not be keeping up with enrollments. In constant dollars, the median funding for equipment and supplies per physics class dropped from $300 in 1990 to $250 in 1993.

The proportion of girls taking physics has increased steadily, Neuschatz and Alpert observe, "although the percentages drop off noticeably for the more advanced physics courses." In 1993, girls accounted for 43% of the total physics enrollments but only 27% of calculus-based advanced-placement courses.

Single copies of the survey report are available free of charge. Contact AIP, Education and Employment Statistics Division, One Physics Ellipse, College Park, Maryland 20740-3843; e-mail jcabrera@aip.org.

IN BRIEF

The recently formed LIGO Research Community is a users' group for the Laser Interferometric Gravitational Observatory being built by Caltech and MIT. The group will meet next during the American Physical Society's spring meeting in Indianapolis. To join, send e-mail to lrc@ligo.caltech.edu or write to Syd Meshkov, LIGO Research Community, LIGO Project, Caltech, MS 51-53, Pasadena, California 91125. Additional information is posted on the Web at http://www.ligo.caltech.edu/LIGO_web/ResComm/ResComm_home.html.

This month a six-part documentary series profiling African American, Latin American and Native American scientists and engineers will begin airing on public television stations in the US (check local listings). One episode of "Breakthrough: The Changing Face of Science in America" features physicists George Castro of the IBM Corp and James Gates of the University of Maryland and astrophysicists France Cordova of NASA and Neil Tyson of Princeton University. The series was created by Blackside Inc, a film and television production company, which has scheduled various education and outreach activities around the series' broadcast. More information is available by sending e-mail to jass@blackside.com; Internet users can access Blackside's home page at http://www.blackside.com. ■