Forensic Scientists Uncovering Fate of Brazil's "Disappeared" with Help of AAAS

The first large-scale investigation into the fate of those who "disappeared" 20 years ago during Brazil's brutal military regime is under way at a remote cemetary outside the city of São Paulo.

With some help from a team of forensic specialists cosponsored by the American Association for the Advancement of Science (AAAS), Brazilian scientists have begun digging up a mass grave that was discovered on 4 September at the Dom Bosco cemetary in Perus.

The grave is thought to contain the remains of more than 1500 individuals, mostly one-time indigents from the city.

Hidden among the bodies, however, are at least 8 and perhaps as many as 12 men and women kidnapped by security forces during the 1970s, killed, and secretly buried, according to Eric Stover.

Stover is a human rights consultant and member of the AAAS-sponsored forensic advisory team that visited São Paulo in October with the approval of the state government.

> ***"The last person to speak for the dead is the pathologist."***

"Until now, families of the 'disappeared' have managed to learn what happened only through personal persistence," says Stover. "Now the powers-that-be are playing a role in bringing out the truth."

The AAAS presence in Brazil was cosponsored by the University of São Paulo, Americas Watch, and Physicians for Human Rights. It was the latest in a series of AAAS forensic missions or workshops aimed at countries troubled by human rights abuses.

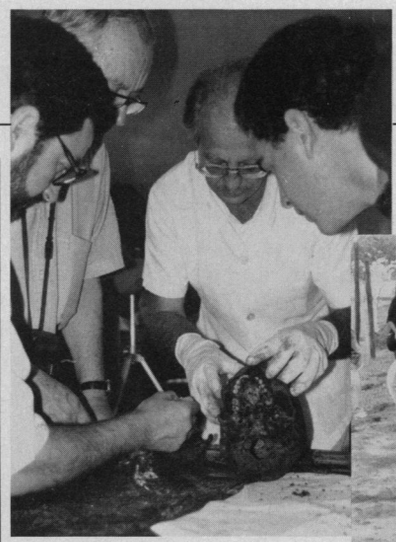
"Our first mission was to Argentina in 1984," says Janet Gruschow, senior program associate with the AAAS Science and Human Rights program, of which Stover is former director. The program, based at AAAS headquarters in Washington, D.C., is an activity of the Directorate for Science and Policy Programs. "Since then, we've also sent teams to Costa Rica, the Philippines, and other countries."

The AAAS teams "don't take sides," says Gruschow. "They're there as observers who can help" local scientists with the details of forensic science.

Besides Stover, members of the AAAS team to Brazil included Clyde Snow, a forensic anthropologist and frequent participant on such missions; Fred Jordan, chief state medical examiner of Oklahoma; and Luis Fondebrider and Alejandro Inchaurregui, two members of the Argentine Forensic Anthropology Team, a group formed in 1986 after a 5-week forensic workshop in Argentina sponsored by AAAS.

Forensic scientists are crucial to the protection of human rights, says Stover.

"The last person to speak for the dead is the pathologist," he says. "It's important to show what took place."



Eric Stover

(Above) An exhumed skull—one of the "disappeared"? Fred Jordan (right) eyes the mystery trench.

But in the case of São Paulo's Dom Bosco cemetary, says Stover, forensic scientists were part of the cover-up.

The Brazilian forensic system consists of medical-legal institutes in each state, says Stover. The institutes are required to account for unnatural deaths, including those that occur during police custody.

However, the medical-legal institutes are controlled by the police. Between 1971 and 1975, at the height of Brazil's "death squad" activity, bodies that showed signs of torture were often recorded by forensic workers as having been terrorists who died in police shoot-outs.

Those who "disappeared" were treated even more clandestinely, says Stover.

"Sometimes the police would dump a body at the cemetary gates and tell [workers] just to bury it," says Stover.

Evidence suggests that most of the "disappeared" at Dom Bosco were initially buried in a common grave reserved for people denoted as "N.N."—"ningun nombre" or "no names," anonymous indigents who died without family to pay for their burial.

But sometime between 1975 and 1976, says Stover, bodies in the common grave were exhumed and dumped into a long, unmarked trench behind Dom Bosco's main office. A year later, the cemetary's director was replaced.

The trench remained untouched until after the return of civilian government to Brazil in March 1990. Six months later, in response to families pleading for clues about missing relatives, Dom Bosco's new director dug up part of the mysterious trench.

The discovery of bodies there raised an outcry throughout the state, says Stover. Petitioned by families of the missing, São Paulo's governor asked scientists at the University of Campinas to take over the exhumation, the first time Brazilian authority had approved of such an effort.

However, "there was still some concern that the exhumation might not be done responsibly," says Stover. The Center for the Study of Violence, a human rights group at the University of São Paulo, asked for an outside team of forensic specialists to monitor the investigation. That's when Stover contacted AAAS.

The job facing the Brazilian scientists is "monumental," says Jordan. "The work is emotionally and physically tiring. It will be 2 to 3 years before they get any concrete answers about just who is in the grave and how they got there."

Still, some answers are already forthcoming. The names of at least 8 of the 144 people who "disappeared" at the hands of Brazilian authorities during the 1970s appear on Dom Bosco's records, says Stover; there may be as many as 12 such persons in the cemetary.

In addition, says Stover, the forensic team at Dom Bosco may be able to account for up to 50 people killed for their political beliefs by death squads or other military-backed forces.

The forensic team's task, after exhuming and cataloging all the bodies, will be to search for any links between the names of the "disappeared" and particular physical remains, says Jordan. If possible, the team will also try to determine each person's true condition at the time of death.

Earlier AAAS forensic missions have helped to track down those responsible for human rights abuses. In 1985, for example, Clyde Snow testified at the trial of Argentina's nine former military leaders.

It remains unclear whether Brazilian officials will use the Dom Bosco investigation to bring former military authorities to trial for human rights crimes.

In the meantime, however, Jordan and other AAAS team members are putting together a proposal for São Paulo's governor on how to establish an independent medical-legal system in Brazil similar to that found in the United States.

While important to Brazil's future, such efforts remain secondary to families concerned with what happened to missing loved ones.

"The families' need for closure is incredible," says Stover. "As one woman told me, 'I refuse to live with the knowledge that my son was buried like a dog.'"

For a copy of the Brazilian trip report, write Janet Gruschow, AAAS Science and Human Rights Program, 1333 H St., NW, Washington, DC 20005. ❖

Spotlight on Top Scientists in Africa

Yeya Ttiemoko Touré is caught in a not unpleasant bind.

As one of the world's leading entomologists, Touré is dedicated to interrupting the pernicious spread of mosquito-borne malaria in his native Mali.

But as one of Africa's best scientists, he is often compelled to put aside his research and go to bat for his continent in an international arena too often blind to Africa's achievements.

It is in this capacity as renowned African scientist that Touré will speak at the first of a new series of AAAS symposia aimed at "heightening awareness of the success and importance of science in Africa," says Amy Wilson, director of the AAAS Sub-Saharan Africa program and coordinator of the event.

"It's not been an easy time for Africa, economically or politically," says Wilson. "Nevertheless, here are first-rate African researchers hard at work at the scientific enterprise."

What's more, says Wilson, "encouraging and recognizing the good science that's going on in Africa is key to promoting development in the region."

Cochairing the symposium (to be held 15 February 1991, the first full day of the AAAS annual meeting in Washington, D.C.) will be Walter Massey, the University of Chicago physicist selected by President Bush to head the National Science Foundation. Massey is a former president of AAAS.

Also cochairing will be Thomas Odhiambo, president of the African Academy of Sciences.

Besides Odhiambo and Touré, seven other scientists will share their work and viewpoints on subjects ranging from sickle cell disease to sustainable agriculture.

Ethiopia's Melaku Worede and Aklilu Lemma received individual Right Livelihood Awards in 1989. Lemma, who is deputy director of Unicef's International Child Development Center, earned recognition for his fight against schistosomiasis, an often fatal parasitic illness that afflicts more than 200 million people around the world.

Worede is director of one of the world's most important seed banks, the Plant Genetic Resources Centre in Addis Ababa. He has created special reserves of traditional, drought-resistant seed varieties for release to local farmers and is working with them to increase annual crop yields.

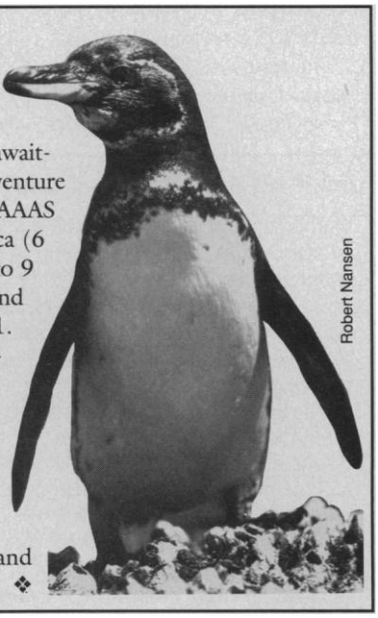
Gabriel Ogunmola, a Nigerian biochemist, will speak of his work in hemoglobin research and sickle cell disease. Ogunmola is spending a sabbatical year studying the HIV regulatory protein with Nobel laureate Paul Berg at Stanford University.

In addition, agronomist Bede Okogbo, director of the United Nations University Program on Natural Resources in Africa, will talk about sustainable agriculture, and Malu wa Kalenga, a Zairian physicist, will discuss nuclear technology and solar energy and their role in sub-Saharan development.

Chemist Lydia Makhubu, vice chancellor of the University of Swaziland, will join a panel discussion on policy strategies chaired by C. J. Chetsanga, dean of science at the University of

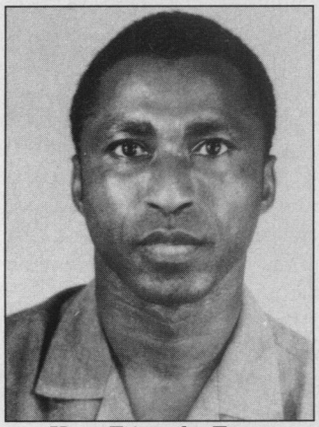
What's a cool penguin like this doing in a tropical paradise like the Galapagos Islands? The answer to this and other ecological mysteries are awaiting those AAAS members who venture out on one of three exclusive AAAS expeditions to either Costa Rica (6 to 17 April), Alaska (27 June to 9 July), or the Galapagos Islands and Ecuador (9 to 20 July) in 1991.

AAAS Travels is a new member benefit coordinated by Betchart Expeditions, Inc. (800-252-4910). Each trip, lead by an expert biologist or naturalist, explores the beauty and ecology of the region. Contact Betchart for rates and itineraries. ❖



Zimbabwe and director of his country's national research council. Makhubu will also speak that day at an invitation-only lunch on the role of women in African science.

Like Touré, all of the participating African scientists are "superior individuals who are overburdened and overworked" because of their willingness to put their countries' needs above their own research efforts, says Robert Gwadz, a scientist at the National Institute of Allergy and Infectious Diseases who works closely with Touré.



Yeya Ttiemoko Touré

"What happens to these people," says Gwadz, "is that they get sucked up into the administrative systems of their countries because they're by far the best qualified. But that means putting your country above your personal achievement."

"Science in Africa: Achievements and Prospects," is sponsored by a Carnegie Corporation of New York grant. ❖

Global Warming: Not Only Show in Town

Don't get Thomas Malone wrong. The meteorologist acknowledges that the threat of global warming is indeed a serious problem. But shouldn't scientists today be talking about more than carbon dioxide emissions?

"These days you can go to a climate change meeting once a week if you want to," says Malone, who is also chairman of the AAAS Consortium of Affiliates for International Programs (CAIP) steering committee. "And certainly they're important. But over the long haul, I think we've got to deal with the underlying issues."

For many United States scientists, the long haul will begin this February at a CAIP-sponsored symposium on global change taking place during the AAAS annual meeting in Washington, D.C. The symposium was inspired by Malone's concerns, which he voiced at a CAIP meeting last year.

Noting that the world's population is expected to double by 2025, Malone challenged CAIP members to develop the "information base" necessary to meet the world's needs "on a sustainable basis."

The result is "Humankind in Global Change: Indicators and Prospects," 17 to 19 February 1991 in Washington, D.C. The 3-day gathering will kick off efforts among scientists in the United States to contribute to a United Nations conference on development and the environment slated for 1992 in Brazil, according to CAIP coordinator Elizabeth Kirk.

"In Brazil, the world's governments will be presenting their positions on global change," says Kirk, "and American scientists are mobilizing now to have some input into that report."

For the most part, trends in global temperature changes and the scientific methods used to measure them continue to dominate most discussions, says Kirk. The AAAS symposium will be the first organized effort to start moving the discussions toward how the problems can be resolved.

"It's time to reopen the debate about appropriate lifestyles for a world in ecological peril," says Alan Durning of Worldwatch Institute, who will present a symposium paper on consumption. "We need to make progress in everything from deciding which light bulb to use to how to design an ecologically sound city."

Global change is an umbrella term for a host of events such as rapid population growth in Third World countries and the disproportionate consumption of goods and services in First World nations. Population shifts that result in added urbanization and deforestation of rain forests are also of concern.

Issues such as these are what lie behind the problems of climate change, says Malone.

"Human activity is becoming a forcing function for change on a planetary scale," says Malone in an editorial he wrote for CAIP's newsletter, *Consortium Notes*.

Growing populations and overconsumption require greater agricultural and industrial productivity, he says, but such activity is "beginning to stress the global life-support system of renewable and nonrenewable resources."

Because scientists and engineers have "played a key role" in speeding up the world's productive growth, Malone says, they "have a special responsibility to get to the heart of the matter" through such efforts as the AAAS global change symposium.

Other U.S. organizations are also marshaling their forces around the issue of global change.

This spring the National Academy of Sciences will release the results of three global change studies that will, among other things, examine the global warming policies of the Environmental Protection Agency, says Kirk.

"The AAAS meeting will complement those studies," she says, by looking at population, production and consumption, organizational obstacles, and cultural attitudes. ❖

Fellows Sought from Industry for OSTP Posts

The goal of strengthening the United States' industrial competitiveness around the world is receiving a boost from a new AAAS fellowship program.

Supported by a grant from the New York-based Alfred P. Sloan Foundation, scientists and engineers from industry will work in the White House Office of Science and Technology Policy (OSTP) for one or two years.

The fellows will provide expertise in industrial research and development, technology transfer, international competitiveness, and related issues. In return, they'll gain extensive public policy making experience.

Two AAAS-Sloan Executive Branch Science and Engineering Fellowships will be granted for 1991-92. Scientists and engineers with significant industrial experience are invited to apply before the 1 February 1991 deadline.

For more information and application instructions, contact the Directorate for Science and Policy Programs at AAAS, 1333 H St., NW, Washington, DC 20005, or by calling 202-326-6600.

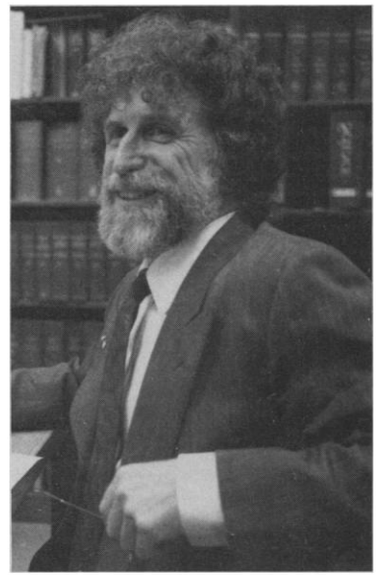
Interview with Ivan Havel: Science in Eastern Europe

Ivan Havel remembers when in the late 1970s the Czechoslovakian state police began watching his apartment. For months he had been hosting unofficial science seminars, and the police didn't like it.

"It politicized me," says the soft-spoken computer scientist and brother of Czechoslovakian president Vaclav Havel. "The police would check the people who came and ask them to identify themselves. They didn't like meetings between official and unofficial scientists.

"After awhile," he says, "most official scientists stopped coming. It was too big a risk."

Today Havel is director of the recently launched Center for Theoretical Study in Prague, a cross-disciplinary institute that he hopes will spark new developments in Eastern European science. His recent visit to the United States included a stop at the American Association for the Advancement of Science on 6 December. In the following interview, Havel speaks of his hopes for the future of Czechoslovakian science.



Q: What was difficult about doing science during the Communist era?

A: Scientific work had to be combined with the ideological dissemination of Marxist ideas. There was a strict hierarchy of state projects and, to get by, a scientist had to pretend that his research was under such-and-such a heading in the hierarchy. In this way, bureaucrats decided what was important research.

Q: Were the bureaucrats themselves scientists?

A: Leadership in the [National] Academy [of Sciences] or at universities required not so much familiarity with scientific work as loyalty and membership in the Communist party. By 1989, some very bright individuals could still work officially in institutes and travel a little, but many scientists took other jobs and tried to continue unofficially on their own.

Q: Is that what you did?

A: Yes. I joined the Academy for about 8 years and worked in artifical intelligence, which luckily fit into their hierarchy as useful to them. But I didn't have a normal career because of my brother's activities. After he formed Charter 77 [a group of 240 intellectuals protesting the suppression of freedom] and I refused to write against it, I was asked to leave. Eventually I took a job at an institution employing handicapped people. The job left me time to continue my own research.

Q: Without a lab?

A: People who were not able to do concrete technical research were nonetheless people of knowledge; they couldn't stop their endeavor. So they shifted to wider viewpoints. A biologist who took another job could reflect on biology from a philosophical point of view. I worked in theoretical computer science.

We held informal science seminars all through the 1970s. It was a very stimulating atmosphere. In our language, science has a broader meaning than in English. It includes not just natural science but social sciences and the humanities. Our last meeting was in December 1989. Unfortunately, we don't have time now, we are so busy with the revolution.

Q: What are the biggest problems your country faces regarding science?

A: Most serious is the transition toward a free-market economy. Last year, state funding for basic science decreased by about 10%. There is talk of a national fund for science, similar to the National Science Foundation, that would work on the basis of grants to projects, not institutions.

Q: What about improving the quality of research?

A: Well, there's the problem of what to do with the scientific bureaucracy. How do we get rid of mediocre scientists? Some institutions are beginning to use standards like the number of citations or the amount of international recognition a scientist has received.

Q: Can your country catch up with the West?

A: My personal opinion is that it is impossible to catch up quickly, especially in the area of high technology. Instead, I think we should [continue] what has been done unofficially over the last 40 years. I might be too optimistic, but I think we can trade off with the West by offering new ideas and a more philosophical viewpoint [in exchange for] concrete knowledge and technical [expertise].

Q: In rebuilding your country's scientific community, do you see problems in the West that you would like to avoid?

A: Scientists in the West are sometimes overburdened by project proposals. Also, it seems that many budgets are oriented toward an expected economic outcome, rather than as a contribution to knowledge.

I think the solution is that funding should be based on science as part of culture. I'd like to see some of the people who donate to art also give to science, and that institutes for science also see art as something that should be supported.

Q: For years, those who taught science at universities were separated from those who did basic research. What effect has this had on the scientific community?

A: The division of labor between university and the Academy is obviously unreasonable. Changing this will be easier than most things. The idea now is to let people do what they are able to do. At my Center, we will do mostly research but also some teaching. This is a first step toward the reunion of research and teaching.

Q: What's the premise behind your Center?

A: It's modeled after Princeton's Institute of Advanced Study. Its primary purpose is to bring leading Western scientists to our country, to make it easy for them to do research and to stimulate contact with our own scientists and graduate students. There will be about ten professors, half from outside the country and half from Czechoslovakia. Our scope is broad, including science and humanities, so that we might create an environment for cross-disciplinary talk.

Q: What is the public's attitude toward science today?

A: During this transition in the economy, the real expenses [for science] will be much more public and they will be compared with those for other things. One of our tasks is to address the public [about the importance of science].

Personally, I think the contribution of science to society is something at the level of minds, not the level of materials. The role of science is to expand knowledge of the world more than it is to solve industrial or economic problems. ◆