the prospect not just of a technology gap, but of a technology that is changing faster than they can ever acquire it.

"What is, almost inexplicably, concealed in economic writings," says Nobel laureate Gunnar Myrdal in his monumental *Asian Drama*, "is the obvious fact that scientific and technological advance in the West has had, and is having, an impact on the South Asian countries that is very detrimental to their development prospects." For example, technology has weakened the trading position of these nations because of the development of synthetic substitutes for the raw materials they used to export, and medical advances have endowed them with a population explosion.

Myrdal goes on to remark that "it would be contrary to our belief in progress, the very spirit of our civilization, to argue that, as a protection to the underdeveloped countries, these advances should be stopped or their results should not be used." As long as developing countries can hope to share in that progress, they would probably agree. It would certainly be unfortunate if, through inadequate attention to the distribution of scientific knowledge and its fruits, a majority of the world's population were to decide they would be better served should the tree of knowledge be less intensively harvested.

—NICHOLAS WADE

Court Ruling Supports Academy View on Information Issue

A recent federal court decision supports the claim of the National Academy of Sciences (NAS) that it should not be subject to the laws which require federal agencies and advisory committees to give the public access to committee meetings and documents. On the old question of whether the academy is a federal agency or a private organization, Judge John D. Sirica, who wrote the opinion, comes down firmly on the latter side.

Sirica's decision came in a court order filed on 28 July in a suit in the U.S. District Court for the District of Columbia brought by the Public Interest Campaign, a Nader-type organization which concentrates on air pollution problems. The suit asks that NAS be ordered to comply with the Federal Advisory Committee Act (FACA) and the Freedom of Information Act (FOIA). Louis Lombardo, president of the campaign and plaintiff in the suit, said that his organization has filed an appeal on 20 August with the U.S. Court of Appeals.

In the original suit, which dates from March 1974, the campaign charged that Lombardo had been prevented from gaining access to the meetings and working papers of the academy's Committee on Motor Vehicle Emissions (CMVE) in violation of FACA and FOIA. The crux of the matter is the question of whether the academy has federal "agency" status and, therefore, is subject to those laws.

The Public Interest Campaign argued that NAS has numerous government connections and comes within the scope of the definition of an agency in FACA and FOIA. The plaintiffs point out that the academy is chartered by Congress, reports to Congress, and derives a very substantial portion of its income from the federal government. They note that the academy is mentioned in several federal laws which give some legal significance to reports or recommendations of NAS, calling particular attention to the Clean Air Act Amendments of 1970 which require the administrator of the Environmental Protection Agency to arrange for the academy to conduct studies concerning the feasibility of meeting certain emission standards. (The CMVE was created under these arrangements.) These arguments are stressed again in the appeal.

The academy has insisted in recent years that it is a private organization (*Science*, 5 April 1974), but the matter has been regarded as lying in a legal gray area. Rulings on the subject have been issued by various government agencies, mostly reinforcing the view that NAS is a private entity, but the Sirica decision is apparently the first court finding that bears directly on the issue.

In his opinion, Sirica refers to the language of both FACA and FOIA and to the legislative histories which reflect congressional assumptions and intentions. He concluded that the academy is not covered by the provisions of either law, denied the plaintiff's motion, and granted the defendant's motion to dismiss the case.

Commenting on the decision, Lombardo expressed the view that the academy would be better off if the Public Interest Campaign won the case. "We're not trying to do away with the academy," he said, "it's a great institution." Lombardo said that de facto the academy is the "supreme court of science," and that the campaign was trying to make it so de jure. "If we lost," he said, "they'd be just another bunch of consulting engineers."

Academy officials are described as "very pleased" with the decision and confident that the court's finding that NAS is a private organization would be confirmed.

The academy, however, is not untouched by public concern about the private workings of public bodies. A new policy is being implemented under which the public will have access to the minutes of study committees as well as much of the information used by the committees during their deliberations. Classified information, trade secrets, and information of a personal character will be excluded. In remarks to academy members at their April meeting, academy president Philip Handler described the new policy as follows:

> For some time, we have been reviewing the matter of public access to our advisory activities. The notion of opening our procedures, in some part, does not derive from external pressure, but out of our own belief that it is appropriate that our institution operate within the spirit of the Freedom of Information and the Federal Advisory Committee Acts, to the extent that we can do so without injury to our advisory capabilities, and without loss of control over our own activities. After many months of discussion and refinement, the Council has adopted an institution-wide policy in these regards. By this policy, henceforth, whenever useful and appropriate, early in its study, each project committee may make arrangements to receive data, evidence and points of view from public and private groups and individuals; following publication of its report, the minutes of meetings of the committee and its panels, copies of all information and documents that have come to the committee from external sources, and reports from all panels and subcommittees will be made available upon request. Implementation of this policy will go a long way toward assuring others of the accountability of our institution.

Guidelines based on the policy are expected to be put into effect after review by the academy's governing council this month.

The academy is the defendant in another court case still pending. The Office of Equal Employment Opportunity (OEEO) is demanding that the academy pay 2 years' salary to a job applicant who was never hired, but who, the suit claims, was injured by NAS practices in checking ref-

erences. A main issue appears to be that, because references are kept confidential, the applicant did not have fair opportunity to rebut negative comments. The suit is still in the preliminary stages. Somewhat ironically, NAS is being sued as a private body. If the academy were another federal agency, OEEO could not take it to court.

Perhaps as a sign of the times, the academy has added a legal counsel to its staff. The new counsel is James R. Wright, who moved to the post from the CMVE, where he was staff officer and counsel. An academy spokesman said that the academy's legal work in the past—mostly dealing with the contract law—had been handled by a Washington law firm, but the decision to employ a counsel was motivated by the "litigious nature" of a lot of the issues in which the academy is now involved.

—JOHN WALSH

Boost for Credit Rating of Organic Farmers

One of the basic tenets of the modern way of agriculture—that intensive use of chemical fertilizer and pesticides is the royal road to high yields—is called into question by a study of the economics of organic farming. The study, which is arousing surprise and some consternation among conventional agriculturalists, indicates that organic farmers can produce about as much per acre, and earn as good an income, as conventional farmers using the full panoply of chemical aids to agriculture. Of relevance to national policy as well as the farmer's pocketbook is that organic farming is about one-third as prodigal of energy as is the conventional method of farming.

The study,* performed by William Lockeretz and coauthors at the Center for the Biology of Natural Systems at Washington University, St. Louis, defines organic farmers as those who nourish their soil with manure or crops grown for the purpose ("green manure"), while eschewing the use of chemical fertilizers and pesticides. The 16 organic farms examined in the study, all located in Corn Belt states and run on a profit-making basis, were each matched with conventional farms similar in size, soild properties, and location.

From an economic comparison of the two styles of farming, Lockeretz and colleagues draw the following conclusions.

- The market value per acre of the crops produced by the organic farmers was only slightly less than that of the conventionally raised crops. Most of the crops (chiefly corn, soybeans, wheat, and oats) were fed to cattle, not sold for cash. Had they been sold at prevailing prices, however, the organic farmers would have received $165 per acre for their produce, $14 less than the conventional farmers. The 8 percent difference is not statistically significant.
- The organic farmers' operating costs were, on average, $31 per acre, $16 less than those of the conventional farmers, largely because they had no chemical fertilizer bills to meet.
- Since the differences in production value and operating costs cancel each other out, the two groups of farmers enjoy essentially the same net income per acre of crop production—$134 for the organics, $132 for the conventionals—as far as direct costs are concerned. The authors of the study believe that the fixed costs are the same in both cases.
- As for energy intensiveness, measured as energy input per unit value of production, the conventional farmers used 18,400 Btu's per dollar, the organic farmers 6800 Btu's per dollar, a difference of almost threefold.

The authors of the study, who include center director Barry Commoner, do not neglect to cite the low opinion in which organic farming is held by authorities such as the Secretary of Agriculture. ("Before we go back to an organic agriculture in this country somebody must decide which 50 million Americans we are going to let starve or go hungry," Earl Butz said in a 1971 interview.) The authors do not advocate a mass return to organic agriculture, but they believe that organic and conventional farming are two points on a spectrum and that it is possible to adopt certain features of each. They stress that their study is preliminary, being based on the performance of the 1974 crop year only. One implication they draw from their results is that organic farms "will be less vulnerable than conventional ones to further disruptive effects of the energy crisis of the kind that have already been experienced in the Corn Belt"—half of the conventional farmers in the study used less fertilizer than they would have liked in 1974, because it was either too expensive or unobtainable.

Another inference is that organic farms, because of their lower operating costs, are less vulnerable to a decline in crop prices. Present agricultural methods, the authors believe, "are not necessarily the only way to produce food in sufficient quantities at a reasonable economic return to the farmer."

The study's finding of equal income among the two groups has occasioned considerable interest in the Department of Agriculture. "I was astounded that they were so close," says Earle E. Gavett of the Economic Research Service. Gavett, who serves as an unofficial devil's advocate on the National Science Foundation committee reviewing the project, believes that with a continuing rise in the cost of energy "it is entirely possible that more and more people could go this [the organic] route, and I think we should investigate this further."

Department of Agriculture officials stress that they are not hostile to organic farming—"We are working with some of those, like the Rodale people, who were most critical of us in the past," says an Agricultural Research Service (ARS) scientist. But despite concern about the energy intensiveness of American agriculture, the ARS has been unable to mount a specific study of organic farming because of lack of new funds. Asked why the Washington University study is funded by the National Science Foundation and not the Department of Agriculture, ARS energy coordinator Landy B. Altman explains that the department can only study the energy problem with funds it can get from other agencies. Also, in the present funding crisis, "We are pretty well stuck with the complement of people we have, so there is some reluctance to redirect much of our program into energy research." The Department of Agriculture estimated 2 or 3 years ago that some $10 million was being spent in projects which were "more than casually related to energy research," a figure which Altman believes has not changed much since.

Not everyone is pleased by the National Science Foundation's sponsorship of the study. Says an official of the Fertilizer Institute in Washington, D.C., "I am concerned that the NSF is putting money into a group like this which is more interested in headlines than in the facts." The Washington University group may not have produced a brew satisfactory to everyone, but it has at least stirred the pot.—N.W.

*"A Comparison of the Production, Economic Returns, and Energy Intensiveness of Corn Belt Farms That Do and Do Not Use Inorganic Fertilizers and Pesticides," William Lockeretz, Robert Klepper, Barry Commoner, Michael Gertler, Sarah Fast, Daniel O'Leary, and Roger Blobaum (Center for the Biology of Natural Systems, Washington University, St. Louis, Missouri, 20 July 1975).