ABASS: Social Sciences Carving a Niche at the Academy

The National Academy of Sciences (NAS), better known as a guardian of existing excellence than a promoter of new paradigms, has not until the past few years granted the "soft" sciences more than a toehold in its establishment. But it has come to acknowledge that social and behavioral sciences exist and must be included—albeit cautiously—in what goes under the name of science.

The Academy's business arm, the National Research Council (NRC), has long had a Division of Behavioral Sciences. But it was not until 1973, when NAS president Philip Handler spurred a reorganization of the NRC, that social science was accorded more than a tenuous position. This has happened in two ways. First, there is a modest affirmative action–type program for social scientists: of the 60 new NAS members elected each year, 8 must be social or behavioral scientists. Second, in accordance with the increased call for its services, the NRC was reorganized from a collection of discipline-oriented divisions to four assemblies (discipline-oriented) and four commissions (problem-oriented). Thus was created the Assembly for Behavioral and Social Sciences (ABASS).

Demands on the NRC have been multiplying rapidly, and the atmosphere at the Academy has gotten considerably more lively as the staff, now numbering almost 1200, becomes increasingly comprised of young and heavily credentialed professionals. Nowhere is this infusion of pep more evident than at ABASS, which has grown by leaps and bounds under the guidance of its youthfully impish—and, by all accounts, exceedingly competent—director, sociologist David Goslin, who was recruited from the Russell Sage Foundation. ABASS is the go-go assembly at NRC, the assembly that has more fun. But despite its jaunty image, it has succeeded in not running afoul of the hard science establishment because it plays by the rules and has a solid record of production.

ABASS was created in 1973 to supplant the 10-year-old Division of Behavioral Sciences. At that time, it had a staff of ten, was involved in four studies, and had a budget of $400,000. It was headed by labor economist Henry David, who cultivated a fairly tight network of fellow economists and had little formal contact with the rest of NRC—in keeping with what has been termed the "balkanized" nature of Academy operations. Now ABASS has a staff of 60 (40 of whom are professionals), has 40 committees, and will be doing over $4 million worth of business this year. Goslin, with the help of his associate, economist Lester Silverman, has succeeded in making his shop the fastest-growing part of NRC, has enormously expanded the academic network from which committee members are selected, and has taken advantage of new institutional arrangements permitting the assembly to plug into activities throughout the NRC and the Institute of Medicine (IOM).

Social Relevance Stressed

The first major policy decision of the new ABASS was to get relevant fast. Despite constraints imposed by the fact that it cannot do a study unless someone is willing to pay for it, it has already gone a long way toward establishing long-term committees on major social problems, such as crime, unemployment, poverty, education, drug abuse, and aging.

ABASS committees are arranged in three program areas: "developing the behavioral and social sciences," increasing their use in policy formation, and "improving the understanding of social processes and problems."

An example of what is going on in the first area is a report, produced last year, on "fundamental research relevant to education," commissioned by the National Institute on Education (NIE). The report, which in essence told NIE to get back to the business of research, resulted in a new budgetary stipulation that 20 percent of its money go into basic research. Another report that appears to have had considerable impact was the Simon report (after committee chairman Herbert A. Simon of Carnegie-Mellon University), which surveyed the social and behavioral science programs at the National Science Foundation. That report, which NSF director William Atkinson says was "tremendously useful" led to restructuring the NSF programs into two divisions instead of one and gave the social sciences more prominence in the upper levels of the agency. These two reports are relatively rare instances of such documents having a clearly traceable effect on policies.

Another activity in ABASS program area 1 is a massive survey of federal support for social research and development, a multivolume effort the first of which has just appeared, that will be trickling out to the public over the course of this year. It is hoped that after the publication of the social R & D study more money will be forthcoming for publishing an annual survey of federally funded research. (Although it is difficult, in the social sciences, to separate basic from applied, the government spends an estimated $400 million annually on basic social R & D.)

Program area 2, "improving the use of the behavioral, social and statistical sciences in public policy formation," contains the committee on national statistics, which used to be housed in the Assembly for Mathematics and Physical Sciences. The committee was transferred at its own request because it felt the ABASS environment more appropriate to its mission—it is not a committee on the discipline of statistics but one that looks at "which numbers to count" (as Goslin says) in gathering data on which to base social policies.

This program area also contains the law enforcement research committee, which last year delivered another of the body blows to which the Law Enforcement Assistance Administration has become accustomed (*Science*, 15 July 1977). Another committee, which typifies the direction in which ABASS is trying to head, is the one on evaluation of poverty research. The department of Health, Education, and Welfare originally asked ABASS to evaluate the research program at the Institute for Poverty Research at the University of Wisconsin. ABASS subsequently negotiated this into a broader study covering all federally funded poverty research—an example of ABASS successfully broadening its mandate so that it can produce generalizable results.

Although the program areas obviously overlap, area 3 is probably where topics of the most immediate substantive interest are grouped. This area is also the biggest one, consuming three-fourths of the ABASS budget. It contains 16 committees, according to the annual program plan—including ones on the evaluation of employment and training programs, community reactions to the Concorde, research on criminal rehabilitation, pop-

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ulation and demography, ability testing, implications of terminating federal payments for abortion, substance abuse, child development research, and aging. The population committee, under contract with the Agency for International Development, has a budget of $513,000. Newly established, part of its job is to figure out how to ascertain fertility and mortality levels in countries where such data are spotty or nonexistent. That is supposed to help AID figure out whether its population programs are working.

The closest ABASS gets to conducting actual research is work being done by the committee on evaluation of government employment and training programs. A half-dozen field personnel are conducting interviews with state and local officials to determine how well decentralization of employment programs is working. This is one of the most generously budgeted of all the ABASS programs, with $340,000 for the coming fiscal year, including money from the Ford Foundation as well as the Department of Labor.

Although in most cases ABASS can only do what someone with money asks it to, it has in some cases, with the help of seed money from foundations, been able to initiate a committee on its own. Such a one is the ability testing committee which, according to its staff director "is close to an ideal committee." Ability testing has been examined in small areas, but this will be the first time anyone looks at the role of such tests in all sectors—education, industry, the military, and the Civil Service. The committee was given money by the Carnegie Foundation and has picked up more support from four government agencies.

The substance abuse committee is interesting because it is actually a committee on "substance abuse and habitual behavior." The title reflects an awareness of the environmental, psychological, and social factors influencing drug abuse much more sophisticated than that of the old NRC committee on problems of drug dependence, which concentrated solely on the biological aspects. Furthermore, the new committee intends to look beyond substance abuse to other addictive behaviors such as gambling—a development reflecting awareness that substance abuse may have more to do with the nature of the abuser than the nature of the substance.

Scientists may be curious to know how the rest of the Academy feels about having social and behavioral sciences firmly in the nest instead of hanging on by their toenails. Handler explains that "the most remarkable aspect of why my colleagues who are natural scientists are not sneeringly distrustful of soft sciences is . . . that we struck a bargain." They

Briefing

Coca Proposed as Prescription Drug

Andrew Weil, a physician and Harvard-affiliated ethnopharmacologist, thinks that if the Indians in South America benefit from chewing coca leaves, so might we. At a press conference at the AAAS meeting last month, he announced plans to ask the Food and Drug Administration for permission to test coca, from which cocaine is derived, with people.

Weil, who has had extensive first-hand experience testing the medicinal and psychoactive properties of various New World plants and herbs, thinks that a preparation made from coca leaves—most likely chewing gum—could be useful as an antidepressant, a stimulating substitute for caffeine, and a palliative for stomach disorders.

Coca leaves are chewed in the Andes as energizers and appetite suppressors as well as for social purposes. "It tastes good," Weil told the press conference. "The act of chewing it is pleasant. It has a numbing effect in the mouth [good for mouth irritations] . . . and pleasant, warm feeling in your stomach . . . and there is an elevation of mood." Weil thinks that since Americans are not likely to want to go around chewing leaves, a coca chewing gum could achieve the same effect with gradual release of the ingredients. And he contends that consuming the natural plant extract is safer than many tranquillizers and antidepressants.

This is not exactly a new idea, of course. Sigmund Freud initially thought cocaine would be a good antidepressant; later he changed his mind and dallied with it for such problems as asthma, opiate addiction, and neurasthenia. People used to get a lift from Coca Cola because it contained coca extract until shortly before the Pure Food and Drug Act was passed in 1905 (now the manufacturers used decocainized leaves). Cocaine subsequently developed a reputation as one of the most evil drugs known to man.

The fact that Weil's proposal has not stirred any particularly negative reactions shows how much the climate has changed in recent years. Drug abuse research has gotten considerably more sophisticated since the avalanche of drug using in the 1960's, and there is growing interest in cultural and psychological factors influencing drug use. The attitude that not all drugs of abuse are intrinsically bad is reflected in the Administration's new policy of encouraging research into possible medical uses for heroin and marihuana. Another current that could spur reconsideration of coca is that of rebellion against established medicine and an accompanying interest in resorting to "natural" remedies including herbal ones. So there has been, as Yale psychiatrist David Musto says, "an enormous shift in our cultural attitudes," a change that, as he notes, has occurred partly in reaction to alarmist government attitudes toward drugs such as marihuana.

But whether prescription coca chewing gum will one day be available is another matter. Both Musto and Harvard psychiatrist Lester Grinspoon say that while coca is a good pepper-upper it could not make a dent in a serious depression. As for the other uses, the benefits are probably too marginal to justify increasing the availability of a drug as attractive as cocaine, no matter what form it comes in.

Court Rules GE May Patent New Microorganism

In a decision whose ramifications are as yet very unclear, a patent appeals court has ruled that General Electric may patent a new strain of bacteria developed to combat oil spills.

This is the second time that the panel, the Court of Customs and Patent Appeals, in Washington, D.C., has ruled that biological matter is patentable. The first ruling, last October, held that Upjohn Co. had the right to patent a purified microorganism used to produce the antibiotic lincomycin. GE's new invention was developed by microbiologist Ananda M. Chakrabarty, who introduced plasmids from various hydrocarbon-degrading or-

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were welcome if they followed the rules. Under the NRC reorganization plan an Academy-wide review process was installed. The review board of 11 supervises the review of all reports with an eye towards ensuring that conclusions flow logically (and scientifically) from the information presented. Handler boasts that the Academy is unique in that it is the only place where work of social scientists is passed on by physical scientists. Since the review board is and always will be dominated by hard scientists, there is little chance that the Academy will find itself throwing its immense prestige behind any pie in the sky from the vaporous fringes.

Other parts of the Academy now routinely seek out ABASS expertise. "They have enriched our other committees just enormously," says Handler. The substance abuse committee, for example, is involved with IOM's barbiturate study; the population committee contributed to a symposium held by the life sciences assembly.

A principal function of ABASS is to broaden the flow of communication between social science disciplines and the government. For many years policymakers who wanted social science expertise called upon a small cadre of old hands. One had one's "tame economist," as Handler puts it; if one wanted the word from anthropology one called up Margaret Mead. But serving on an Academy committee is almost like having a mini-internship in Washington. So, the greater number of people brought into the committee system, the more the countryside is sprinkled with social scientists who know a thing or two about the world of public policy.

Physical scientists, of course, have been cultivating these ties through the Academy for decades, and dependence on them has been institutionalized in some cases by the existence of more or less perpetual committees that fill a continuing requirement for external technical advice. "Social scientists are going through a learning process that hard scientists went through long ago," says Handler. He emphasizes that they are still "young" sciences and that "it is difficult to obtain information concerning the questions they address in anything like the confidence they do in the area of natural sciences."

ABASS is getting into high gear in an era when it is beginning to be recognized that traditional disciplines are not in a very good position to look for solutions to pressing social problems. From Handler's lofty vantage point, nothing is really interdisciplinary unless it crosses assembly lines. But from Goslin's perspective, "it's enough to get economists and sociologists to talk to each other

Briefing

ganisms into a bacterium to produce a strain that eats up oil more efficiently than naturally occurring organisms do.

In both the GE and Upjohn cases, the biological substances were ruled unpatentable first by a patent examiner and later by the Board of Patent Appeals. But the court, using the same reasoning for GE as it had for Upjohn, decided that the bacterium is a "manufacture or composition of matter" as defined in the basic patent law, which was passed in 1790. The court noted that "the only asserted objection to their patentability is that the microorganisms are alive," a distinction it felt to be "without legal significance." Said the court: "We see no sound reason to refuse patent protection to . . . microorganisms themselves—a kind of tool used by chemical manufacturers in much the same way as they use chemical elements, compounds and compositions which are not considered to be alive. . . ."

Two of the five judges on the panel emphatically rejected this way of looking at things. They agreed with the Board of Patent Appeals that the 1790 Act was only intended to cover things inanimate. As proof they pointed out that Congress in 1930 passed the Plant Patent Act, which authorizes patent protection for certain asexually reproduced new plant varieties. If Congress had intended the original act to cover living organisms there would, then, have been no need to pass the plant act.

The court chose not to get into a discussion of where the line should be drawn when it comes to patenting forms of life, indicating instead that these questions would have to be answered on a case-by-case basis. But it expressed confidence (in wording from the Upjohn case) that "the nature and commercial uses of biologically pure cultures of microorganisms . . . are much more akin to inanimate chemical compounds . . . than they are to horses and honeybees, or raspberries and roses."

Neither of the decisions has yet been appealed by the government, but the Supreme Court may some day find itself in the position of determining when a form of life starts looking less like a chemical and more like a horse.

DNA Work to Begin Soon at Fort Detrick

A district court judge on 23 February cleared the way for P4 gene-splicing experiments to go on at newly renovated facilities in the Army's old germ warfare laboratory in Fort Detrick, Maryland. P4 is the most stringent level of containment in the recombinant DNA guidelines of the National Institutes of Health.

The research was originally expected to start last November, but has been delayed by a lawsuit brought by a Maryland lawyer on behalf of his infant son. Ferdinand C. Mack, a resident of Frederick, sued to halt renovation at Fort Detrick on the grounds that NIH had failed to file an environmental impact statement for the work to be conducted there. NIH agreed to hold off doing any experiments until the environmental impact statement on its guidelines became final in November. The judge subsequently ruled that statement was sufficient. Mack is appealing the decision.

Mack's is one of two lawsuits filed to block DNA research. The other one, still pending, was filed last year in New York state by Friends of the Earth, and is an attempt to enjoin all such research on the grounds that the guidelines are illegal.

Barring any more court intervention, researchers Wallace Rowe and Malcolm Martin of the National Institute of Allergy and Infectious Diseases should soon start the first risk assessment studies, inserting the DNA from polyoma virus (a virus that causes cancer in mice) into *Escherichia coli* EK2 (a weakened strain of bacteria that cannot survive outside the laboratory). This DNA virus–EK2 unit will be injected into mice to see if the DNA can get out and cause the organisms to produce tumors or antibodies. It is not expected that it will.

At present, only two other P4 facilities are being readied. One is a mobile facility located on the NIH campus in Bethesda, Maryland; the other is at the European Molecular Biology Organization (EMBO) in Heidelberg, Germany.

Constance Holden

U.S. Warns Britain on Reprocessing

Efforts by the Carter Administration to head off international trade in plutonium appear to have reached a critical stage. France last September signed a contract to reprocess 1600 metric tons of spent nuclear fuel from Japanese reactors. Now Britain is nearing a decision on whether to expand an existing reprocessing plant at Windscale into a full-scale commercial facility capable of reprocessing 1200 metric tons per year of spent fuel from Japan and other countries.

The Carter Administration has made no public move to intervene in the British decision, but they have sent a strong private warning that the United States may seek to undercut the economic base for the billion-dollar Windscale facility. The warning comes in a letter from U.S. undersecretary of state Joseph Nye to his counterpart in the British Foreign Office that was made public in the House of Commons 2 weeks ago.

The Windscale plant had been the subject of an extended public inquiry in Britain that heard testimony for 100 days last year and became a forum for opposing sides in the debate over nuclear power and its connection to nuclear weapons proliferation. During the hearings, British Nuclear Fuels Ltd. (BNFL), the firm that proposes to build and operate the Windscale facility, seized upon a carelessly worded letter from the U.S. Energy Research and Development Administration (ERDA, now the Department of Energy) to argue that U.S. opposition to reprocessing and plutonium commerce had weakened. The ERDA letter approved a one time transfer of 42 bundles of spent fuel from Japan's Tsuruga nuclear power station, which was running out of storage space, to BNFL; the letter's wording, now admitted by U.S. officials to have been an error, also seemed to approve the re-export of purified plutonium to Japan. (ERDA approval was required because the fuel was originally of U.S. origin, as is most of Japan's fuel.)

The Windscale hearings concluded last November. In December the Carter Administration, concerned about what it regarded as a deliberate misrepresentation by BNFL of U.S. policy on reprocessing, sent the Nye warning letter to the British Foreign Office with a request that it be passed on to the inspector who was writing the Windscale inquiry report. The letter refers to an "unwarranted conclusion" in the testimony and then goes on to a more general discussion of nuclear proliferation and reprocessing plants that appears to be addressed to the British government as a whole, not just to the inspector. The letter says "the United States is not prepared at this time to encourage weapons states to decide in favor of proceeding with new reprocessing plants." In regard to the proposed Windscale plant, it says, "we cannot give any assurance that BNFL may count on MB-10's [the DOE document that approves transfer of spent fuel] as a matter of course for feed for a new plant or in support of long term reprocessing commitments that it may enter into." Since BNFL is apparently counting on Japanese reprocessing business as a means of financing the Windscale plant, lack of U.S. approval could make it uneconomic to operate.

The Nye letter appears to be a diplomatic way of urging the British government to forego Windscale without quite saying so. It also appears, however, to have had little initial effect. Press reports in England indicate that the inquiry report will strongly recommend to the government that it go ahead with the plan. The French are already committed to construction of their new reprocessing plant.

Some observers believe that Carter efforts are too little, too late. They contend that the United States will not in fact deny its allies access to spent fuel when push comes to shove and hence that an expanded Windscale plant will signal the start of commercial reprocessing across national boundaries and foreshadow the eventual accumulation of plutonium stockpiles in countries that do not at present have nuclear weapons. Thus the credibility and the success of the Carter antiproliferation effort are arguably riding on the British decision.

How that decision will go is uncertain. But last week the British government announced that it will submit the Windscale plant to a full debate in Parliament before making a decision.—ALLEN L. HAMMOND

much less get mathematicians and physicists into the mix." Goslin believes ABASS is more seriously interdisciplinary than any other advisory group.

Being interdisciplinary, in fact, seems really to be what ABASS is all about. In January the ABASS executive committee, now known confusingly as the "assembly," had a meeting in Palo Alto at which they discussed just that. Chairman Duncan Luce of Harvard asked the members (now expanded from 15 to 18 to include a psychologist, a psychobiologist, and a lawyer) to discuss the issues within their fields. Among other things, the group noted that there no longer seem to be any grand theories within disciplines that are rich enough to illuminate current problems.

Wellesley economist Caroline Shaw Bell says that from almost every field came "the same feeling—of waiting for some development within that field to show the direction things are going."

The problems facing the social sciences were seen as more overwhelming than ever. Fundamental social assumptions have been falling away, laying bare mysteries and paradoxes that "common sense" used to cover. The economy is on a weird trip that Keynes did not supply any answers for. Poverty persists despite the solutions of the 1960's. People are losing faith in government and institutions in general. Bureaucracies, supposedly the "epitome of rationality" suffer from built-in "pathologies" that no one knows how to cure. It has become increasingly clear that little is known about how large numbers of people form and change their values and attitudes. And history equips us with little precedent for such problems as the effect on social services of an aging population, the effect of mandatory retirement, income maintenance, why the general public cannot get serious about energy conservation, and how to understand social and public policy choices when our social goals are unclear.

As University of Chicago archeologist Robert McC. Adams, the first chairman of ABASS, has noted, we are still digging our way out of the mass of data supplied by the government programs started in the 1960's and "coherent, generally acknowledged results, and even a clear sense of federal purpose, are in many cases still distinguished mainly by their absence."

More and more issues are now perceived as being in the realm of the social sciences, for as political scientist Aaron Wildavsky says, "The less people trust social processes, the more they make

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what used to be technical questions into policy ones." "It's perfectly clear," says psychobiologist Richard F. Thompson, "that all the major problems this society faces are right in the center of ABASS interests. The major problems are social and behavioral. The government is just beginning to realize that."

And since all these massive problems leave individual disciplines flailing, an interdisciplinary approach to them seems the only alternative. That is why ABASS considers itself to be the right development at the right time.

It is clear the assembly does not want to waste its limited resources on nit-picking matters when all these cosmic questions are lowering on America. Consequently, according to Goslin, it is attempting to put more emphasis on questions that bear directly on substance rather than organizational and management processes—hence the burgeoning of area 3.

Particularly relevant to the cosmic questions is a committee (as yet sponsorless) now being organized by ABASS around "individual and social perceptions of risk." People's perceptions of risk are generally not in line with actual probabilities of disaster. Bell cites as an example the fact that despite the knowledge that their coast was storm-prone, only 20 percent of coastal dwellers in Massachusetts proved to have flood insurance when the recent blizzard hit. On the other hand, she observes, many people are very uptight about nuclear power even though the risk of a major accident is said to be vanishingly small. Bell adds that looking at things from a perception-of-risk angle may help policy-makers figure out why so many teen-age girls get pregnant even though they know about sex and contraception.

There are many other sweeping matters ABASS would like to examine if it can get the money. One is a study of the practices of federal regulatory commissions. Another is urban development. But these topics, however important, are too global to be of practical interest to any single client.

ABASS would undoubtedly like to put more of the heavy talent at its disposal into grander topics. But, as Handler says, "If they want to ask grand sweeping questions . . . they will have to earn their way until they are so firmly established that when they pound the table saying you must provide money that 'must' will have weight."

Says Goslin: "We have a long long way to go to get to the point where the physical sciences are."

—CONSTANCE HOLDEN

Bicycling and Health: Braving Bad Air

A young, healthy man bicycles to his office in the city. It is hot and muggy outside and the pollution index rises steadily as the day wears on. At the end of the day, the man hesitates to ride home. Should he leave his bike at work and accept a ride home with his friend who drives an air-conditioned car? Just what are the effects on health of bicycling in hot, polluted air? According to a recent Department of Transportation (DOT) study, there may actually be no major adverse short-term effects on health as a result of bicycling in these conditions. So if the young man feels up to facing the hazards of traffic, he may as well bicycle home.

Drawing by Martha Bari

The DOT study was admittedly small in scale. It was supervised by Michael Waldman, Sharlene Weiss, and William Articola of Messer Associates, Inc., of Silver Spring, Maryland. With the help of Patrick Gorman and his staff at the George Washington University Medical Center, they selected ten healthy men between the ages of 23 and 39 to brave the rigors of Washington's heat and pollution during the evening rush hours from 23 May to 22 July 1977. Seven of the volunteers rode their bicycles; three rode in air-conditioned cars.

The study participants were assigned routes that ranged from one with high traffic density and tall buildings (which presumably bottle pollution) to one with low traffic density and only a few low buildings. Each route ended at the George Washington University Health Center, where the participants' conditions were examined by means of blood tests, exercise tests, pulmonary tests, and checks of symptoms such as coughs, wheezes, headaches, and eye irritation.

The investigators report that the bicyclists were more likely than the motorists to report symptoms of fatigue, sore throat, laryngeal irritation, and eye irritation. These symptoms were most common when the concentration of nitrates along the routes was high, and nitrates were as likely to be present on routes with high traffic density as on those with low density. At least two of these symptoms may not be direct effects of the heat and pollution, however. Sore throats may be more accurately termed dry throats the investigators suggest, because the bicyclists were instructed to breathe through their mouths. And eye irritation was sometimes caused by particles in the bicyclists' eyes.

The study participants who rode in air-conditioned cars tended to have more carbon monoxide in their blood than the bicyclists. This may be because the bicyclists were more mobile and able to avoid long waits in traffic jams. The performance of neither bicyclists nor motorists in exercise tests, tests of cardiovascular function, and tests of pulmonary function deteriorated after their ordeals in the traffic. The few minor symptoms reported (such as eye irritation) were "transitory in nature and disappeared quickly," the investigators say.

The study designers stress that their conclusions apply only to young healthy male non-smokers and that more research is needed. But, according to Leslie Baldwin of DOT, everyone associated with the study was surprised at how innocuous the short-term effects of heat and pollution seem to be.—GINA BARI KOLATA

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