
Public Interest Science in the University: The Stanford Workshops on Political and Social Issues

Students looking at the Stanford curriculum see little relation between the courses being offered and the problems of our society—urban blight and the ghetto . . . outrageous influence of the military . . . pollution and destruction of the environment . . .

And even where courses are directed to the study of particular problems, active engagement in possible solutions is rarely considered.

We are a few students who feel that the urgency of these problems warrants a more active approach, and have organized several workshops to study issues of local and national concern directly—specifically in order to consider what can be done about them.

—from the first SWOPSI catalogue,
fall 1969

American universities possess on their faculties the nation's primary independent reservoir of technical talent. It is natural therefore to look first to the

universities for leadership in public interest science—and most of the scientists in our case studies in preceding chapters have in fact been affiliated with universities.

The most potent combination that exists in the university—in public interest science, as in research—is the combination of the energy and enthusiasm of able graduate students with the knowledge and experience of faculty members. The success of some of the Stanford Workshops on Social and Political Issues (SWOPSI) illustrates the potential of this combination. The SWOPSI workshops were first organized by two graduate students and one undergraduate at Stanford University in fall 1969.¹ The subjects of these courses ranged from air pollution in the San Francisco Bay Area to international arms control and disarmament, and almost all of them were offered for full academic credit. Below we tell the stories of some of the more successful of these workshops.

The Logging Study

Allan Cox, a noted Stanford University professor of geophysics, lives in the rustic town of Sky Londa, California, located in the mountains of the Pacific Coast Range a few miles to the west of the Stanford campus. During 1968 he became concerned about both the increased logging in his area and the logging practices, which appeared to him to be unnecessarily destructive. By summer 1969 Cox and several of his neighbors were lobbying with the San Mateo County Board of Supervisors asking them to deny a logging permit for a proposed operation near Sky Londa. The county had previously passed ordinances to prohibit logging companies from leaving the forest floor littered with small dead timber and the streams choked with silt and debris. But attempts by the county to enforce these ordinances were fruitless. (Ultimately the courts ruled that the California Forest Practices Act of 1945, providing for self-regulation of the timber industry, completely preempted the field of logging legislation—despite the fact that this law made no provision for protection of the environment in urban areas.) It did not take long for Cox to conclude that better laws were required.

Dave Soper, a graduate student of physics at Stanford, agreed to join Cox in setting up a SWOPSI workshop on logging. Their goals were to identify the main social costs of logging in suburban areas, formulate a set of objectives for public policy on logging, analyze the effectiveness of current regulatory practices, and ultimately to generate recommendations for action. Brief descriptions of this and the nine other workshop-courses that were also organized during summer 1969 were combined to form the first SWOPSI catalogue, which was distributed at Stanford's fall 1969 registration. The student response was respectable if not overwhelming. Thirteen students registered for the logging workshop, of whom ten ultimately completed the course. The students came from a variety of

academic backgrounds, but most had previously been interested in environmental issues.

During the course of the workshop its members interviewed logging company officials, forestry experts, a county tax assessor, planning commission staff members, and members of local conservation groups. In addition, most of the workshop went on a field trip to study a well-managed logging operation and also attended one or two county government hearings on logging.

The efforts of the logging workshop were devoted almost entirely toward preparation of a report, *Logging in Urban Counties*.² The students were assigned to write the various chapters: an overview of logging and man's environment, a history of the logging controversy in San Mateo and Marin counties, logging economics, and tax policy affecting logging. The entire group met for about two hours each week.

The workshop was unlike most academic courses in that its leader was not an authority on the subject being studied. Consequently, Professor Cox cast himself in the role of editor of the logging report rather than that of instructor. Most of the chapters went through at least one stage of detailed criticism and rewriting. The work at first showed a number of weaknesses: too little feeling for what constitutes a well-reasoned and well-documented argument, lack of experience in locating relevant government documents, and a tendency after interviewing a public official or a logger to write a personal emotional reaction rather than to give a factual account. Professor Cox did not hesitate to send the students back for another interview if the first try was unsatisfactory.

At the end of the three-month workshop, the students' work and the leaders' careful editing resulted in a well-written and thorough 100-page report. The technical background of the workshop leaders was reflected in a discussion of various models of forest management in the report (clear-cutting versus selective logging), as well as in the generally careful quantitative treatment of economic issues. The report was distributed to county and state officials, conservation groups, and the news media. Preparation of a short summary and a press release helped to increase the coverage given the report by the local Bay Area newspapers. As a result of this publicity, several hundred additional copies of the report were sold (at cost) during the next several months.

This concluded the workshop's official activities, and it was in fact the end of the involvement of most of the students. But the local logging situation was just beginning to be politically interesting. In February 1970, just after the SWOPSI logging report became available, the San Mateo County Board of Supervisors and the County Planning Commission met in an extraordinary joint session to consider the logging question. There was a large turnout of loggers and citizens groups, and good news media coverage. Cox and Soper made a formal presentation of their workshop's report.

The upshot was that the County Board of Supervisors decided to ask the local State Assemblyman and Senator to introduce a bill in the state legislature permitting a "local option" for counties to impose controls stricter than those of the State Forest Practices Act. The State Division of Forestry's District Rules

Committee met several times to enact special rules in an effort to placate the county without changing the state law. But the aroused county officials and conservationists were not so easily satisfied. They objected that the proposed rules lacked teeth for enforcement and that they ignored a crucial requirement—the appointment of individuals to the District Rules Committee who would represent the interests of the general public.

The focus of attention now shifted to Sacramento. During the spring and summer Cox, Soper, several housewives from Sky Londa, and a few officials of San Mateo and Marin counties joined in what Cox calls "low-grade lobbying" of the state legislature in favor of the "local option" bill. They had minimal help from established conservation organizations. The State Division of Forestry and the timber industry both opposed the proposed law, but 1970 was a year of great concern for the environment, and the fact that there was an election coming up in November helped the conservationists a great deal. The bill passed both houses of the legislature in September 1970. The local citizens group then worked hard through Republican contacts to get Governor Reagan to sign the bill—which he did.

Under the new law, San Mateo County officials immediately began the job of drafting county ordinances to regulate timber operations. In the early months of 1971 they held hearings to solicit input from loggers, land owners, conservation groups, and other interested parties. Informal shirt-sleeve sessions between all groups hammered out details. The final ordinance was passed in April 1971. Later that same month the timber company whose practices had most offended the conservationists announced that it was going out of business.³

The logging workshop had worked on a limited but significant problem, and its efforts had paid off. Professor Cox adds:

Our work on logging has had a strong impact on my own life and on that of several students—new career directions, fresh motivations, even new (and deep) friendships. Not very important on the scale of national problems, but important on the scale of individual lives.⁴

Air Pollution

Another one of the first ten SWOPSI workshops ambitiously tackled the problem of air pollution in the six-county San Francisco Bay Area. Some sixty undergraduates, twelve graduate students (including eight law students), a faculty member, a medical doctor, and a housewife participated in the workshop, which was led by Edward Groth III, a graduate student of biology at Stanford. Unlike Allen Cox, Groth was already an expert on the subject of his workshop, since the study of air pollution was a major part of his doctoral research. He consequently took a rather active role in the direction of the workshop, beginning with several introductory lectures on the nature of

pollution problems. As the workshop progressed, however, Groth's role, like Cox's, became increasingly that of editor-in-chief, supervising the work of eight contributing editors and dozens of researchers.

The air-pollution group spent the entire academic year 1969-1970 at its task. The researchers were divided into three main teams, concentrating on (1) air pollution from local industrial activities; (2) the membership and activities of the Bay Area Air Pollution Control District (BAAPCD); and (3) the public reaction to air pollution, both on the man-on-the-street level and through organized citizens' groups.

The research team working on industrial air pollution studied twenty-nine Bay Area industrial sites in great detail with groups of researchers visiting twenty of them for a tour and interview. Additional information was obtained from BAAPCD files and other sources. (Although the private automobile is a major contributor to the Bay Area air-pollution problem, the workshop concentrated on industrial pollution instead. Air pollution created by cars is more a national than a local problem and has been much more extensively studied.) Their report contained detailed data on emissions, pollution-control achievements, and recommended improvements for each of these plants. A number of the plants studied were found to be seriously deficient—but a number of others were identified as exemplary.

The researchers studying the Bay Area Air Pollution Control District attended BAAPCD Board meetings and also many meetings of subsidiary councils and committees. They interviewed the directors and staff at length and studied the BAAPCD's public records. This information provided the basis for a thorough discussion of the history and organization of the BAAPCD and a cogent analysis of its accomplishments and shortcomings. In addition, the report of this group gave detailed information on each member of the board, each member of its influential Technical Advisory Panel, and the most important members of its staff. Overall, the report emphasized the BAAPCD's potential and urged citizens to help it become more aggressive by giving it their political support.

The final group of researchers conducted a public opinion survey. A total of 1,436 people were briefly interviewed at seventeen locations in the six-county Bay Area. Here are some typical responses:

"How serious is the air-pollution problem?"

Very serious	70.6%
Somewhat serious	25.3
Not serious	3.0
No problem	0.5
No opinion	0.6

Other questions established that most people would be willing to spend a significant amount of money (of the order of three to five dollars per month) in taxes or increased prices for cleaner air. However, only 10 percent knew who was responsible for regulating air quality in the Bay Area (the BAAPCD).

The researchers followed up their man-on-the-street survey with seventy-seven

extensive telephone interviews with representatives of labor unions, men's and women's service clubs, church groups, and so forth. Finally, they reported on and evaluated the work of most of the local citizens' groups working for cleaner air and then gave detailed suggestions for individuals or groups interested in joining the fight.

The final product of this monumental effort was a comprehensive and remarkably readable 380-page handbook entitled *Air Pollution in the San Francisco Bay Region*.⁵

The SWOPSI air-pollution workshop concluded in spring 1970, and the report was released the following September, along with a twenty-two-page summary. Television and other media coverage was good, and one San Francisco radio station, KCBS, quoted excerpts from the report and from a taped interview with Groth for several weeks afterward. Of the twenty-eight Bay Area daily newspapers seventeen covered the report, devoting an average of thirty column inches per paper to the story.⁶ Unfortunately, none of the newspapers told their readers how they could obtain copies of the full report; this information was supplied only by San Francisco's noncommercial television station, KQED.⁷ Nevertheless the demand for the report was high. More than 2,000 copies were distributed.

The report did not go unnoticed by the BAAPCD. A committee of the board was appointed to review it. When they reported back eight months later, however, all they had to say was that the report was basically sound and full of useful information but that, in their opinion, the section on the personalities of individual board members was in poor taste. Perhaps a more tangible response to the report occurred in August 1970, even before the report came out, when the board appointed Ned Groth to its Technical Advisory Panel. He replaced an industrial representative whose reappointment his group had strongly opposed. Thus, the first official reaction to the SWOPSI workshop was to coopt its leader.

In the years since the SWOPSI report, several older BAAPCD board members have been replaced with young activists, and the lobbying of citizens groups has become increasingly effective. Groth and his friends have given these groups assistance, including educating them on air pollution problems and organizing presentations by expert witnesses at BAAPCD hearings and in Sacramento.

Some Other SWOPSI's

PESCADERO DAM

One other of the first ten SWOPSI workshops had a considerable impact on local issues: a study of a proposed dam on Pescadero Creek, a pretty stream which winds through the mountains west of Stanford down to the Pacific Ocean. This workshop was led by J. D. Bjorken, a well-known theoretical physicist at the Stanford Linear Accelerator Center, and Joe Califf, an engineering graduate student specializing in water resources. The workshop found that the proposed

dam was for geological reasons an exceedingly costly (about \$50 million) way to supply water for proposed housing developments along the Pacific Coast south of San Francisco—itsself a goal of arguable desirability. Furthermore, the dam would flood the central part of an important state park, and the reservoir thus created would be of limited recreational value because of large fluctuations in the water level. The workshop's report⁸ and Bjorken's testimony were influential in convincing the county to abandon the project.

UNIVERSITY ISSUES

Several of the workshops concentrated on problems of special concern to Stanford University, its students, and its staff. One focused on helping graduating students find "jobs in areas of urgent social concern." Another studied problems in the delivery of health care in the United States, focusing particular attention on Stanford University's health care plans for students and employees. All of the six participants in this workshop were premedical students. One of their recommendations—which was adopted by the university—involved an improvement in the terms of Stanford employees' major medical insurance. Yet another workshop examined the impact of computers on privacy, studying both technical possibilities and desirable policies. As a result of a study of Stanford University's safeguards of student files by two participants in this workshop, the university instituted a number of reforms—some of them even before the report⁹ appeared. In this case, as in others, the mere existence of a group studying the operations of the bureaucracy helped to provide the impetus for constructive self-examination.

NATIONAL ISSUES

Two of the first SWOPSI workshops attacked problems of national or international scope. One of these, led by the director of the Stanford Linear Accelerator Center, Wolfgang K. H. Panofsky, sought to find ways in which students could work for arms control. Professor Panofsky has had a great deal of experience as an arms control advisor and negotiator (See Chapter 5.)

More than 100 students sought to register for Panofsky's course. Although this was several times the number that could be accommodated, the students' obvious enthusiasm led Panofsky and several other faculty members to plan a large-scale course on arms control starting the following year. The SWOPSI workshop participants studied the problems of disarmament and diplomacy, and some helped to develop materials for the new course. Several of the students were selected to participate in an international summer school on arms control in Italy, and several others secured summer positions with the U.S. Arms Control and Disarmament Agency. One of Panofsky's assistants in the SWOPSI course, Elise Becket, then a second-year law student, went on to work in the summer of 1970 as an aide to Senator John Sherman Cooper (R.-Ky.), who was at the time one of the leaders in the Senate fight against the antiballistic missile system.

The authors of the present book were involved in yet another SWOPSI workshop—on federal policy making for technology. Other leaders of the workshop included Martin Perl, an experimental physicist, and Robert Jaffe, a graduate student of physics and also one of the organizers of SWOPSI.

A major focus of this workshop was a study of the federal science advisory system. Two former members of the President's Science Advisory Committee and several other high government advisors each spent an evening in discussion with the workshop participants, and several of the participants' research projects examined the role of technical advice in specific executive-branch decisions.

The group soon became concerned with the relatively weak role of Congress in determining national policy for technology. As one of the projects of the workshop, a questionnaire was sent to every member of Congress, with the cooperation of former Representative Jeffrey Cohelan of Berkeley and California Senator Alan Cranston (D.). The responses from eighty-two Congressmen indicated that most of them felt that Congress was at a serious disadvantage compared to the executive branch for lack of technical information and expertise. A small report, *Congress and Technology*,¹⁰ was then written presenting the case for upgrading Congress's resources of technical expertise and giving particular suggestions as to how this might be done—among these a proposal for a program of Congressional fellowships for scientists. (Several professional societies organized such a program in 1973, as we describe below in Chapter 18.) The report was distributed to all members of Congress.

Another project of this workshop was a study of news media treatment of technical issues, in particular the oil leaks from wells in the Santa Barbara Channel, on the California coast. They found that almost all of the numerous articles on this subject in leading newspapers and news magazines were derived from official statements or handouts by government or industry, and only a very small fraction of the news coverage was based on investigative journalism.

During the summer of 1970, after the completion of the workshop, the present authors went on to write a 200-page report, *The Politics of Technology: Activities and Responsibilities of Scientists in the Direction of Technology*.¹¹ This report discussed the organization and effectiveness of the executive-branch science advisory structure. (Parts II and III of this book are an outgrowth of that project.) We were pleased but frankly astonished at the interest in the report when it came out. It inspired articles in publications ranging from *Chemical and Engineering News* to the *National Enquirer*,¹² and friends even sent us news clippings from England and Israel. Perhaps more importantly, it was rather widely discussed in the scientific community (and even by at least one panel of the President's Science Advisory Committee, where, according to an informant, the panel members were admonished by their chairman not to follow our suggested guidelines for advisors). It was the response to this report which convinced us that a book on the subject was required.¹³

Overview

The workshops discussed so far were among the first group of ten SWOPSI offered in fall 1969. The program is still flourishing. During SWOPSI's first three years there were more than eighty workshops enrolling some 1,700 undergraduates and 200 graduate students at Stanford. More than half of the workshops have had an impact of one sort or other on the wider community, and over a dozen have prepared comprehensive and authoritative reports on various subjects, such as *Pesticide Exposure and Protection of California Farm Workers*, *The Politics of Pollution Control in Monterey Bay*, and *Balanced Transportation Planning for Suburban and Academic Communities*.¹⁴ The transportation workshop in 1971 also produced a useful pocket-size handbook of public transportation in the Bay Area, *Ride On!*,¹⁵ which is still selling well at local bookstores and newsstands.

The influence of the SWOPSI workshops has thus been considerable, both in the local political arena and in their effects on the participants' lives. Indeed, SWOPSI seems to be well on its way toward becoming a Stanford institution. Perhaps the most serious danger that the program faces is that it will become too "academic," overinstitutionalized—and less hard-hitting.

This is not to say that, to be effective, SWOPSI-type courses must be less academically oriented than traditional courses on traditional subjects. Indeed, the SWOPSI complement the traditional curriculum. One of the greatest benefits of the SWOPSI approach has been in introducing students to the kind of field work that researching a social or political issue entails: isolating and structuring a research area, identifying and interviewing appropriate individuals, finding and securing relevant documents—frequently relatively obscure publications from government agencies or corporations. Workshop leaders have commented that undergraduates generally require a lot of initial guidance before they can successfully undertake such research. Enthusiasm often compensates for lack of experience, however, and students willingly pore over statistical data and learn to evaluate relevant chemical, engineering, and business techniques. The experience that they thus gain should be helpful in their future careers, and for some students it has influenced their choice of academic majors and career goals.

Faculty, too, are not immune from such influences, and SWOPSI workshop leaders have been able to develop new interests and apply knowledge and skills to fields that they would normally not enter. It must be admitted, however, that the successful SWOPSI workshops have made very heavy demands upon the time of their faculty and graduate student leaders. The leaders have not been compensated for their contributions to SWOPSI either in salary or by any reduction in their normal course load. Voluntary faculty support can sustain a new academic program through its experimental years, but it is unrealistic to expect it to continue indefinitely. Thus far the required large-scale funding has not been forthcoming from the government, from private foundations, or from

Stanford or other universities themselves. But SWOPSI has succeeded even without such funding—thanks to the dedication of its workshop leaders.

There is no reason why a program similar to SWOPSI cannot be instituted at any college or university of at least moderate size. The main requirements are a large measure of enthusiasm among some students and faculty and the willingness of a few people to organize it. It also helps to have some key administrators on your side. (In SWOPSI's case, the most helpful university official was Dean of the Graduate School Lincoln Moses.)

Political Constraints

A potential problem that worried the SWOPSI organizers even before the first workshops began was that persons outside the university would criticize the propriety of any university involvement in politics and challenge the objectivity of the workshop leaders and participants. For example, a skeptic might react to the logging workshop, described above, as an effort by Professor Cox to recruit undergraduates to fight his private battles. Actually, there has been little criticism of this type. This is probably due, at least in part, to the high quality of most SWOPSI reports as well as to the fact that most workshop leaders have been careful to restrict workshop activities to information gathering, analysis, and dissemination, with any political activity postponed until after the workshop has concluded.

The only attacks on SWOPSI have come from within the university, not from outside. In each case it was because some professorial oxen were gored. The most damaging of these attacks occurred after the publication of the two-volume SWOPSI report *Department of Defense-Sponsored Research at Stanford*.¹⁶ Volume I simply reprints the statements on file at Stanford regarding the nature of the research being performed under each Defense Department contract, together with a computer printout from the Pentagon giving its version of the same information. Not surprisingly, in some instances the differences were pretty striking: the professor would claim to be doing some perfectly innocuous-sounding research project—for example, "High power broadly tunable laser action in the ultraviolet spectrum"—while the Defense Department report would emphasize the potential military applications of the same research: "Weaponry—lasers for increased damage effectiveness." Volume II of the report comments on these differences as well as on the more general implications of military sponsorship of university research.

The SWOPSI Policy Board had thought the report fair but dull. They were much surprised, therefore, to find it receiving considerable coverage in the news media.

The report was also greeted by cries of outrage from a number of the faculty members whose research it described. And, of course, university officials were

concerned about the possible damage to the university's relationship with the Department of Defense. One day, when the controversy over the report was at its peak, a representative of the Stanford University research office called upon a leading official at the Pentagon in charge of Defense Department-sponsored research. The Stanford man wished to make it clear that he deplored the report, that he considered it irresponsible, and that the Stanford administration deeply regretted the whole affair. Much to his consternation, the Pentagon official disagreed, asserting that in his opinion the report was quite balanced—and that furthermore one of its authors was his daughter!¹⁷

Unfortunately, the story did not end here. Some of the Stanford faculty, particularly certain members of the Stanford School of Engineering, brought strong pressure on the university administration to throttle SWOPSI. The Dean of Undergraduate Education, within whose bailiwick SWOPSI resided, responded by demanding better review procedures for SWOPSI publications. The university also refused to provide any support for the publications program, and it forbade SWOPSI to seek outside support.¹⁸ The number of new SWOPSI publications subsequently declined sharply. The university's decision not to fund SWOPSI publications did have one virtue, however: by forcing the publications program to become self-supporting, it enabled SWOPSI to remain partially independent. By late 1973, several interesting new SWOPSI reports were in publication or preparation.¹⁹

NOTES

1. The undergraduate was Joyce Kobayaski, and the graduate students were Bob Jaffe and Joel Primack. Joyce served during academic year 1969-1970 as Stanford student body president and later became a medical student. Bob and Joel were graduate students in theoretical physics.

This book was stimulated by the authors' involvement in one of the first SWOPSI courses, discussed later in this chapter. And this chapter is based upon SWOPSI files, the personal records of the authors, and conversations and correspondence with Allan Cox, Edward Groth, Nicholas Corff, and Dan Lewis.

Copies of the reports mentioned in this chapter and more information on SWOPSI can be obtained from SWOPSI, 590A Old Union, Stanford University, Stanford, California 94305. See also Joanne Lublin, "Stanford's Recipe for Relevance," *Change, The Magazine of Higher Learning*, October 1971, pp. 13-15; Nicholas J. Corff, et. al, *SWOPSI Director's Report 1970-71*; and B. Michael Closson and James L. Gibbs, Jr., *A Report to the Senate of the Academic Council on the Special Joint Agencies of the Committee on Undergraduate Studies and the Dean of Undergraduate Studies*, Stanford University report no. SenD#1010, StCD#1436, November 1972.

2. Allan Cox and Davison Soper, *Logging in Urban Counties* (Stanford, Calif.: SWOPSI 1970).

3. The new law may not have been entirely responsible for the Santa Cruz Timber Company's demise. Informed local opinion is that the company would soon have

discontinued operations anyway: it was prepared to handle only virgin and old-growth stands, which had virtually all been cut down; and besides, it wanted to develop the land for other purposes.

4. Allan Cox, private communication, May 1971.

5. The Stanford Workshop on Air Pollution, Ned Groth, ed., *Air Pollution in the San Francisco Bay Area* (Stanford, Calif.: SWOPSI, 1970).

6. David M. Rubin and David P. Sachs, *Mass Media and the Environment: Water Resources, Land Use and Atomic Energy in California* (New York: Praeger Publishers, 1973), pp. 108-113, 272-275. Most of the newspaper articles stuck to generalities: only three of the seventeen papers discussed the report's evaluation of the performance of local industry in meeting air pollution standards, and only three reported on the evaluation of their local BAAPCD representative. (See also Ref. 7.)

7. Peter M. Sandman, "Mass Environmental Education: Can the Media Do the Job?," to be published in *Environmental Education*, William B. Stapp and James A. Swan, eds. (Beverly Hills, Calif.: Sage Publishing Company, 1974). Sandman points out that the news media's failure to tell how to get copies of the report is typical: "News stories are constructed so as to lead the audience to believe it knows all it needs to know."

8. James D. Bjorken and Joe Califf, *The Pescadero Dam and San Mateo County Coastside Development* (Stanford, Calif.: SWOPSI, 1970).

9. Greg Bomberger and Joyce Kobayashi, *Privacy and Student Records at Stanford University* (Stanford, Calif.: SWOPSI, 1970).

10. The SWOPSI Workshop on Technological Issues, Joel Primack and Frank von Hippel, eds., *Congress and Technology* (Stanford, Calif.: SWOPSI, 1970).

11. Frank von Hippel and Joel Primack, *The Politics of Technology: Activities and Responsibilities of Scientists in the Direction of Technology* (Stanford, Calif.: SWOPSI, 1970).

12. "Report Assails Science Advisory Agencies," *Chemical and Engineering News*, January 4, 1971, p. 22; "Govt. Suppressed Scientists' Warnings of Dangers to the Health and Safety of the Public," *National Enquirer*, February 21, 1971, pp. 1-2.

13. Martin Perl has also written on the problems of science advising: "The Science Advisory System: Some Observations," *Science*, 173 (1971): 1211-1215.

14. Christopher H. Lovelock, ed., *Balanced Transportation Planning for Suburban and Academic Communities* (Stanford, Calif.: SWOPSI, 1971; supplement published 1973).

15. "Ride On!" *The Stanford Guide to Public Transportation in the Bay Area* (Stanford, Calif.: SWOPSI, 1971).

16. Stanton A. Glantz, Carol A. Farlow, Richard A. Simpson, Norm Z. Albers, Dennis E. Pocekay, William Holley, Michael S. Becker, Stephen A. Ashley, and Michael R. Headrick, *Department of Defense Sponsored Research at Stanford—Vol. 1, Two Perceptions: The Investigator's and the Sponsor's* (Stanford, Calif.: SWOPSI, 1971); Norm A. Albers, Stephen S. Ashley, Michael S. Becker, Carol A. Farlow, Stanton A. Glantz, and Richard A. Simpson, *Department of Defense Sponsored Research at Stanford—Vol. 2, Its Impact on the University* (Stanford, Calif.: SWOPSI, 1971). See also Deborah Shapley, "Defense Research: The Names Are Changed to Protect the Innocent," *Science* 175 (1972):865

17. Private communication from Stan Glantz and SWOPSI Director Dan A. Lewis.

18. *SWOPSI Quarterly Report, Winter Quarter, 1972*, Stanford University report no. CUS 250-72, p. 10.

19. Brent Appel, Vance Peterson, and Jay Schoenau, eds., *The Other Stanford* (Stanford, Calif.: SWOPSI, 1973). Gordon Lewin, *Rapid Transit and the Public Interest: A case-study of the San Francisco Peninsula* (Stanford, Calif.: SWOPSI, 1974).