

4S Society for Social Studies of Science

Fall 1980

Volume 5 Number 4

IN THIS ISSUE

4S: Progress and Prospects	
MEMBERSHIP RENEWAL FOR CALENDAR 1981	3
FIFTH ANNUAL MEETING - Program Sessions	5
SIXTH ANNUAL MEETING - 1981 Program Announcement	11
FUTURE MEETINGS ----- 1982, 1983, 1984	11
Minutes of the 4S Council Meeting	12
Minutes of the 4S Business Meeting	13
1980 4S Budget Status as of 1 October	14
Thought and Opinion	
Thoughts on Fifth Annual Meeting	
Thomas F. Gieryn	15
Action and Belief or Scientific Discourse? A Possible Way of Ending Intellectual Vassalage in Social Studies of Science	
Michael Mulkay	18
The Rehabilitation of Science of Science in China	
Aant Elzinga	25
In the Literature	
Journal Contents	27
Recent Publications	33
Announcements	
Meeting Reports	
Austrian Recipe - Trevor Pinch	41
American Sociological Association	42
Science & Technology Indicators Conference	44
Social Studies of Laboratory Life Symposium	45
Future Meetings	
History of Science Society	46
Michigan Technological University - Symposium	46
Conference on Women in the Professions: Science, Social Science and Engineering	46
Invitation to Participate	48
Call for Papers	49
Degree Program - Georgia Institute of Technology	49
Honors - Gerald R. Holton	50
New Position - Virginia Polytechnic Institute and State University	50
NEH Summer Seminar Program for College Teachers	51
New Journal - <u>Bulletin of Science, Technology & Society</u>	52
New Newsletter - History of Science in America News and Views	54

4S Society for Social Studies of Science

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NOTE: PLEASE SEND IMMEDIATELY TO SAVE SCARCE RESOURCES REQUIRED
TO SEND "REMINDER" NOTICES.

FIFTH ANNUAL MEETING - PROGRAM SESSIONS

COMPARATIVE ANALYSIS OF SCIENTIFIC AND TECHNOLOGICAL CONTROVERSIES (SSSS)

Chair: Barry M. Casper (Carleton College, Northfield, Minnesota 55057)

Dorothy Nelkin (Cornell)

Science, Technology and the Law

Frances B. McCrea and Gerald E. Markle (Western Michigan)

The Estrogen Replacement Controversy in the United States and Great Britain:
Different Answers to the Same Question

Robert Rich (Princeton)

Controversy Over Interchangeability of Drugs in the U.S. and Western Europe

CRITIQUE AND ANALYSIS OF NSF FIVE-YEAR OUTLOOK ON SCIENCE AND TECHNOLOGY:
TOWARDS A SECOND OUTLOOK (SSSS)

Chair: Daryl Chubin (Department of Social Science, Georgia Institute of
Technology, Atlanta, Georgia 30332)

Commentator: William Blanpied (NSF)

Suzan Hadden (Texas)

A Critique from the Academy I

Frederick A. Rossini (Georgia Tech)

A Critique from the Academy II

Albert Teich (AAAS)

Policy Science and the Second Outlook

Robert Balstad Miller (SSRC)

Social Science and the Second Outlook

NEW DEVELOPMENTS IN SCIENCE STUDIES: ANTHROPOLOGY OF KNOWLEDGE (SSSS)

Chair: Karin Knorr (Institute for Advanced Studies, Vienna, Austria)

Commentator: Michael Mulkay (York-UK)

Doug McKegney (Simon Fraser)

This Rope Won't Work, Give Me a Shovel: A Participant-Observer Study of
Wildlife Ecology

Karin Knorr (Institute for Advanced Studies, Vienna)

Theoretical Challenges Posed by the Anthropological Perspective

Michael Zenzen (Rensselaer)

Another Study of Laboratory Work: Empirical Results and Theoretical Issues

PATTERNS IN THE SOCIAL RELATIONS OF MATHEMATICS (SSSS)

Chair: Ron Calinger (Department of History and Political Science, Rensselaer
Polytechnic Institute, Troy, New York 12181)

Commentator: Joan Richards (Harvard)

Sal Restivo and Randall Collins (Rensselaer, Virginia)

Robber Barons and Politicians in Mathematics: A Conflict Model of Science

Robin Rider (California/Berkeley)

Patterns in the Historical Development of Mathematics: A Case Study of
Algebra

Chandler Davis (Toronto)

Where Did Twentieth-Century Mathematics Go Wrong?

PUBLIC UNDERSTANDING OF SCIENCE AND TECHNOLOGY (SSSS)

Chair: J. Tuzo Wilson (Ontario Science Centre)

Sharon Dunwoody (Ohio State)

Tracking Newspaper Science Stories from Source to Publication: A Case-Study Examination of the Popularization Process

P.C. Ritterbush (Thor Inc.)

The Federal Role in Education of the Public about Science and Technology

Alba Revenga (Museo de los Ninos, Caracas)

Science for Children: A Learning Museum in Venezuela

QUANTITATIVE SOCIAL STUDIES OF SCIENCE (SSSS)

Chair: Robert McGinnis (Department of Sociology, SASS, 323 Uris Hall, Cornell University, Ithaca, New York 14853)

Susan E. Cozzens (Institute for Scientific Information)

Emerging Problem Areas: Pain Research, 1974-79

Henry Small (Institute for Scientific Information)

Citation Studies of Early Twentieth Century Physics

Robert McGinnis and J. Scott Long (Cornell & Washington St.)

Autocorrelation Analysis of Scientific Productivity

Edward Nadel (Institute for Scientific Information)

Commitment and Co-Citation: An Indicator of Incommensurability in Patterns of Formal Communication

SOCIAL INFLUENCES ON RESEARCH CAREERS (SSSS)

Chair: Dean Harper (Department of Sociology, University of Rochester, River Campus, Rochester, New York 14627)

Daryl Chubin and Alan L. Porter (Georgia Institute of Technology)

Doctorate plus a Decade: Reconstructing the Early Careers of U.S. Scientists and Engineers

J. Scott Long and Robert McGinnis (Washington State, Cornell)

Organizational Context and Scientific Productivity

Dean Harper (Rochester)

The Socialization of Student Scientists

Edward Hackett (Boston University)

Researching an Academic Hiring Decision: Matters of Substance and Procedure

SOCIAL PSYCHOLOGY OF SCIENCE (SSSS)

Chair: Roger Krohn (Sociology Department, McGill University, Montreal, Quebec, Canada H3A 2T7)

Marc DeMey (Ghent)

Beyond Figure-Ground and Context

Derek DeSolla Price (Yale)

The Psychology of Computer Freaks--A Recurrence of Babylonian "Left-Hemisphere" Linear Sequential Thinking?

David Faust (Minnesota)

Implicit Unity in Contending Psychological Schools

Simon Marcson (Rutgers)
Collaboration in Science Laboratories

SOCIAL STUDIES OF APPLIED RESEARCH (SSSS)

Chair: Peter Weingart (USP Wissenschaftsforschung, Universitate Bielefeld,
Universitäts Strasse, West Germany)

Richard S. Campbell (Batelle Institute)
Technology Indicators Based on Patent Data: The Case of Catalytic
Converters

Mark Carpenter and Francis Narin (Computer Horizons)
Further Investigations of Links Between Patents and Scientific Journals

SOCIAL STUDIES OF ASTRONOMY (SSSS)

Chair: David Edge (Science Studies Unit, University of Edinburgh, 34 Buccleuch
Place, Edinburgh EH89JT Scotland)

Tom Gieryn and Richard Hirsh (Indiana, Virginia Tech)
Marginality and Innovation in X-ray Astronomy

John Lankford (Missouri)
The American Astronomer T.J.J. See (1866-1962): The Anatomy of a Failed
Scientific Career

Marc Rothenberg (Smithsonian)
The Use and Abuse of Amateurs Organizing American Astronomy, 1899-1918
Stephen Brush (Maryland)
Looking Up

SOCIAL STUDIES OF SOCIAL SCIENCE (SSSS)

Chair: Gabriel Haim (Center for Applied Social Science, Graduate School,
Boston University, 197 Bay State Road, Boston, Massachusetts 02215)

Commentator: Jim McCartney (University of Missouri)

Martha Dean (Syracuse)

A Quantitative Analysis of Theory Change in Experimental Operant Psychology

John Wilkes (Worcester Polytechnic)

Patterns of Publication in Sociology: A Reflection of Productivity,
Politics, or Style

Gerald Gordon (Boston University)

Cognitive Style and Innovation in Science

Maurice Finocchiaro (Nevada/Las Vegas)

The Science of Sociology and the Sociology of Science

ROUND TABLE: APPROPRIATE TECHNOLOGY (SSSS)

Chair: James Petersen (Department of Sociology, Center for Sociological
Research, Western Michigan University, Kalamazoo, Michigan 49008)

ROUND TABLE: CRITIQUE AND EVALUATION OF SOCIAL STUDIES OF SCIENCE ON THE
TENTH ANNIVERSARY OF FIRST PUBLICATION (SSSS)

Chair: David Edge (Science Studies Unit, University of Edinburgh, 34 Buccleuch
Place, Edinburgh EH89JT Scotland)

ROUND TABLE: RESISTANCE BY SCIENTISTS TO SCIENTIFIC DISCOVERY (CASE OF THE
LOCH NESS MONSTER) (SSSS)

Chair: Henry H. Bauer (Office of the Dean, Virginia Polytechnic Institute
and State University, Blacksburg, Virginia 24061)

BIG SCIENCE AND ITS INSTITUTIONAL FORMS (HSS/SHOT/SSSS)

Chair: Daniel Kevles (Humanities Division, California Institute of Technology,
Pasadena, California 91125)

Commentator: Richard G. Hewlett (Department of Energy)

Allan Needell (American Institute of Physics)

Research Reactors for Brookhaven: Post-War Expectations and Realities
Lillian Hoddeson (Fermi National Accelerator Laboratory)

Proton Accelerators and their National Contexts: America's Fermilab and
Japan's KEK, 1959-1971

Joan Bromberg (Department of Energy)

Fusion Energy: The Transition from Research to Development

ETHICAL, POLITICAL, AND SOCIAL USES OF EVOLUTIONARY THEORY (HSS/SSSS/PSA)

Chair: Hamilton Cravens (Iowa State University, Ames, Iowa 50011)

Commentators: Garland Allen (Washington University)
Stephen Toulmin (Chicago)

Robert J. Richards (Chicago)

Darwin's Theory of the Evolution of the Moral Sense

Michael Hammond (Toronto)

The Political Uses of Evolutionary Anthropology in France During the
Late 19th Century

Donna Haraway (California/Santa Cruz)

Sociobiology of Communications Systems: ergonomics, Semiotics, and the
High Cost of Information in Post World War II Evolutionary Theory

FEMINIST PERSPECTIVES ON SCIENCE AND TECHNOLOGY: REFLECTIONS FROM THE DISCI-
PLINES (HSS/SHOT/PSA/SSSS)

Chair: Margaret Rossiter (University of California, Berkeley, California 94720)

Commentator: Donna J. Haraway (California/Santa Cruz)

Caroline Whitbeck (Texas/Galveston)

Philosophy of Science

Caroline Merchant (California/Berkeley)

History of Science

Susan J. Kleinberg (Tennessee)
History of Technology/
Henrika Kuklick (Pennsylvania)
Sociology of Science

PHILOSOPHY OF SCIENCE AND SCIENCE POLICY (PSA/SSSS)

Chair: Robert J. Baw. (Rensselaer Polytechnic Institute, Troy, New York 2181)

Panelists:

Sandra Harding (Delaware)
Ruth Macklin (Hastings Center)
Jaakko Hintikka (Florida State)
Alex Michalos (Guelph)
Frederick Suppe (Maryland)

IS THERE A PARADIGM FOR TECHNOLOGY STUDIES? (SSSS SHOT)

Chair: Frederick Dooney (St. Louis)

Edward Friedman (Stevens Tech)
Technology Studies as an Academic Discipline
Paul Durbin (Delaware)
Philosophical Methods of Analysis for Technology Studies
Deborah Mayo (Virginia Tech)
The Foundation of Statistics as a Tool for Technology Studies
Sylvia Fries (Maine)
Technology and Ideology: A View from the Hill
Raymond Merritt (Wisconsin/Milwaukee)
Technology Studies as Interdisciplinary Catalyst

SCIENCE AND EMPIRE (HSS/Canadian Society for History and Philosophy of Science/
SSSS)

Chair: Trevor H. Levere (Toronto)

Richard A. Jarrell (York)
Two Scientific Revolutions that Failed: The Truncation of Science and
Colonialism in Ireland and French Canada
Vittorio de Vecchi (Sussex)
The Ideology of Imperialism and the Birth of the Profession of Science
in Canada
Raymond Duchesne (Montreal)
An Episode in the Spread of Western Science: French Canadian "Savants"
and their Foreign Mentors

SCIENCE AND TECHNOLOGY IN DEVELOPING COUNTRIES (SSSS/ICSPS)

Chair: Abdur Rahman (CSIR, India)

A.A. Sabet (Ministry of Scientific Research, Cairo)
Post-UNCSTED Policies and Actions

Marcel Roche and Yajaira Freites (Instituto Venezolano de Investigaciones Cientificas)

Factors which Affect Scientific Research in a Developing Country: The Case of Venezuela

Jim Mullen (MOSST, Canada)

Science and Technology as Issues in the North-South Debate: A Canadian Perspective

SCIENTIFIC RESEARCH IN GOVERNMENT SETTINGS (SSSS/ICSPPS)

Chair: Susan Gross Solomon (Department of Political Economy, University of Toronto, 100 St. George Street, Toronto, Canada M5S 1A1)

Hans Skoie (Norwegian Research Council for Science and Humanities)
Accountability Versus Independence in Government Research

Harvey Sapolsky (MIT)

Health and Defense Research in the United States

Otto Keck (Universitat Ulm)

Bureaucratic Politics and Technical Expertise

THE POTENTIALS AND LIMITS OF APPLIED HISTORY, PHILOSOPHY AND SOCIOLOGY OF SCIENCE (Science, Technology & Human Values/HSS/PSA/SHOT/SSSS/National Endowment for the Humanities)

Commentators:

Loren Graham (MIT)

Michael Mulkay (York-UK)

Dorothy Nelkin (Cornell)

Peter Weingart (Bielefeld)

Paul Durbin (Delaware)

Arthur Caplan (Columbia)

Ethical Engineers Need Not Apply: The State of Applied Ethics Today

Marx Wartofsky (Boston)

The Critique of Impure Reason II--Sin, Science and Society

THE PRESENT STATE OF SOCIAL STUDIES OF SCIENCE: A SYMPOSIUM (Philosophy of the Social Sciences/HSS/PSA/SHOT/SSSS)

Harold Garfinkel (UCLA)

The Work of a Discovering Science

Michael Mulkay (York-UK)

The Study of Action and Belief or the Study of Discourse?

Gerald Holton (Harvard)

Comments on Professor Garfinkel's Paper

SIXTH ANNUAL MEETING

1981 PROGRAM

The 1981 Program Committee is considering a number of topics for sessions included in that set are:

Possible Themes for 1981 4S Meeting

1. Cycle of Credit & the Reward System
2. The Strong Program in . . .
3. Controversy (Political Economy of Technical Decision-Making)
4. The Reorganization of NSF
5. Modes of Discourse: Reconstruction of Science from Text
6. Technology Assessment: Risks, Ethics . . .
7. Social Psychology of Science
8. The "Price" of Scientometrics: Science Since Babylon Revisited on its 20th Anniversary

It has also been suggested that a session on International Science Policy might be useful. The program will be the responsibility of the chairperson of each of their program element. If you have questions on session suggestions write:

Nicholas Mullins
Department of Sociology
Indiana University
Bloomington, Indiana 47405

Call me at 812-336-5465, 336-8726 (home), 337-7795 (office), if you have any comments or changes.

4S MEETING LOCATIONS 1982, 1983, 1984

Arnold Thackray has proposed that the 1982 meeting of 4S be held in the fall in Philadelphia jointly with the History of Science Society. The University of Pennsylvania Department of History and Sociology of Science would be the host institution; Henrika Kuklick has agreed to be in charge of local arrangements.

If there are any other suggested locations for 1982 (or for 1983, or 1984) please submit them to Pat Woolf, Department of Sociology, 2-N-1 Green Hall, Princeton University, Princeton, New Jersey 08544. To help us make a decision, please describe local facilities, include logistical and intellectual advantages to the proposed site, and name a person and department or institution to act as host.

In the absence of other suggestions before June 1, 1981 the 1982 meeting will be held in Philadelphia.

Minutes of the 4S Council Meeting
Toronto, Canada October 18, 1980

Present: Council members--B. Barber, D. Chubin, J. Gaston, L. Hargens,
B. Schroeder-Gudehus, H. Small, A. Thackray.
Council members elect--L. Graham, M. Mulkay
Program and Local Arrangements Committees--M. Hammond, P. Woolf.
Past President--D. Nelkin. Visitor--N. Mullins

- I. President Barber called the meeting to order at 2:10 P.M. M. Hammond reported on the status of the joint 4S-HSS-PSA-SHOT convention. The President and Council expressed their sincere thanks for the excellent work of the Local Arrangements and Program Committees.
- II. The Secretary-Treasurer reported on 4S membership and financial status as of Oct. 1, 1980 (The final 1980 report will appear in Vol. 6, No. 1 of the 4S Newsletter). The Council discussed means of determining why 4S membership renewal rates were somewhat lower during 1980 than previously. Proposals for increasing the renewal rate and plans for a membership drive in 1981 were also made. It was resolved that:

Membership in 4S shall be required of all participants
on programs of future 4S annual meetings.

The motion was approved unanimously.

- III. The Editor of the 4S Newsletter, H. Small, reported on efforts to obtain materials for publication. He also requested that a new Editor be selected in the near future so that he may be relieved of those duties. The President appointed a new Publications Committee, made up of D. Chubin, J. Gaston, and A. Thackray, to find a replacement for the current Editor.
- IV. The Committee on Future Meetings, chaired by P. Woolf, presented possible locations for the 1982 4S meetings. The Council asked the Committee to continue its work on finding a location for those meetings, and to explore the possibility of holding joint meetings with related societies, as per the Toronto arrangements. Learning that the term of the present Committee on Future Meetings is about to expire, the President appointed a new one; L. Graham, M. Mulkay, and P. Woolf being its members.
- V. The Local Arrangements Committee for the 1981 4S meetings in Atlanta, Georgia, chaired by D. Chubin, reported on current plans for that convention, tentatively scheduled for Nov. 5-7. The President appointed a Program Committee, consisting of D. Chubin, M. Mulkay, N. Mullins, and B. Schroeder-Gudehus, for the 1981 meetings. The Chair of the Local Arrangements Committee also called the State of Georgia's non-ratification of the Equal Rights Amendment to the Council's attention. After lengthy discussion in which all expressed regret that Atlanta is not in a pro-ERA state, it was resolved that:

Given prior commitments and the lack of alternatives, the
Council reaffirms its 1979 resolution to hold the 1981 4S
meetings in Atlanta, Georgia.

The motion was passed, with one Council member abstaining.

- VI. The President briefly reported on the development of more effective liason with European colleagues, and the possibility of 4S affiliation with Section L of AAAS was discussed (4S is currently affiliated with Section X).

The meeting was adjourned at 3:30 P.M.

Minutes of the 4S Business Meeting
Toronto, Canada October 18, 1980

- I. President Barber called the meeting to order at 3:31 P.M., and announced the resolutions of the preceding Council meeting.
- II. The Secretary-Treasurer reported on 4S membership and finances.
- III. The issue of holding the 1981 4S meetings in a non-ERA state was discussed, with the same general result as that obtained in the preceding Council meeting (see above).

There being no further business from the floor, the meeting adjourned at 3:45 P.M.

Results of Election of New 4S Officers, October 6, 1980:

Council members elect--Loren Graham
Michael Mulkay
Arnold Thackray

1980 4S BUDGET STATUS AS OF 1 OCTOBER

<u>EXPENSES</u>	<u>Amount Budgeted</u>	<u>Expended As of 10/1</u>	<u>Balance</u>
Newsletter printing, mailing, etc.	4300	1683.85	2616.15
Secretariat duplicating and postage	500	230.38	269.62
Secretarial	500	250.00	250.00
Telephone	100	---	100.00
Miscellaneous	<u>200</u>	<u>290.18</u>	<u>- 90.18</u>
TOTAL	5600	2454.41	3145.59

<u>INCOME</u>	<u>Expected</u>	<u>Actual</u>
Membership renewals	4000.00	4320.00
New memberships	500.00	295.00
Sale of mailing labels	---	250.00
Balance from 1979	<u>5837.42</u>	<u>6390.50</u>
TOTAL	10337.42	11255.50

INCOME TO DATE	11255.50
EXPENSES TO DATE	<u>2454.41</u>
CURRENT BALANCE	8801.09
ANTICIPATED EXPENSES	<u>3235.77</u>
POSSIBLE BALANCE 12/31	5565.32

4S 1980 MEMBERSHIP DATA AS OF 15 OCTOBER

<u>DOMESTIC</u>	<u>Number as of 12/31/79</u>	<u>Number as of 10/15/80</u>	<u>% not Renewed</u>	<u>% New Members</u>
Professional	323	207	41%	5%
Student	44	21	64%	11%
Institutional	19	7	64%	0%
<u>FOREIGN</u>				
Professional	86	64	26%	0%
Student	9	6	44%	11%
Institutional	<u>14</u>	<u>18</u>	0%	29%
TOTALS	495	323		

THOUGHTS ON FIFTH ANNUAL MEETING

Five Years from Ithaca to Toronto: Fusings or Splittings?

Thomas F. Gieryn
Indiana University

The 4S is founded on an assumption that synthesis precedes analysis, that a professional association designed to draw together scholars from different disciplines and nations would enhance our distinctive inquiries into the social nature of science. In the five years from Ithaca to Toronto, we have begun to break down these social bounds that once enclosed our separate pursuits, an accomplishment seen everywhere at the splendid meetings in Toronto. Our membership goes far beyond sociologists and historians to include increasing numbers of philosophers, psychologists, political scientists, economists, policy experts and anthropologists. Our annual gatherings (all of them in North America) have been made memorable by contributions of Europeans: Szalai comes to mind from our first meeting, and the presence of the British contingent at Toronto was greater than their number.

Having begun so optimistically, I regret having to grumble a bit just weeks after so stimulating a conference as ours in Toronto. Developments in the 4S since Cornell require a fifth-year review that may appear in time to be considered by those planning our next meeting in Atlanta. My worry is simply put: while 4S membership indicates that we have achieved a coming together of colleagues from diverse disciplines and nations, differences among us threaten to split the Society in other ways, and return us to fragments of specialists pursuing topics whose mutual relevance goes unappreciated. Worse, the organization of our last few annual meetings have reinforced, even encouraged, these splittings. A scan of session titles from the Toronto conference suggests a healthy differentiation that could, without attention, become unhealthy parochialism:

(1) Several sessions are defined by methodological preferences: "Quantitative Social Studies of Science" or "Social Psychology of Science." I was among the few attending the session on quantitative studies of science which, predictably, offered papers extending and even moving beyond statistical analysis of citation patterns. My field notes on the session make two points: first, several participants complained that substantive issues raised in their papers would have put them more comfortably in other sessions which examined the same questions in qualitative ways. To my mind, the only links among the four papers were their quantitative methods, since each addressed substantively different questions. Second, the rich debate over citation analysis and quantitative methods that I remember well from Cornell was lost, since those who elected to attend were largely true believers. The many who are skeptical of these techniques apparently attended conterminous sessions offering investigative strategies more compatible with their own. Surely these fundamental debates are why we get together face-to-face at least once each year.

(2) Sessions were also distinguished by a designated discipline serving as a research site: "Patterns in the Social Relations of Mathematics," "Social Studies of Astronomy" (which, I admit sadly, came about in part because of my request) and "Social Studies of Social Science." For sure, scientific disciplines are distinctive enough in social structural and cognitive characteristics to warrant focussed attention by sociologists and historians. But how can their distinctiveness be recognized and understood if studies on, say, scientific innovation,

are scattered among three sessions because they examine innovation in three disciplines? "Academic disciplines," neither our own nor those we choose to examine, are helpful organizing principles for sessions at 4S meetings. (Without appearing to rationalize a possibly misguided recommendation, my intent in urging a session on the social study of astronomy was simply to get the few of us with this predilection in one room; a session may not have been needed where a roundtable discussion would have served as well.)

(3) The planned session on "Policy Studies" apparently did not get off the ground as such, and that may be a good thing. Those of us who have tried to use the distinction between "pure" and "applied" in our studies of science would probably agree that the dichotomy is simplistically drawn, and of little analytic merit. Why should the 4S perpetuate a fuzzy distinction by planning sessions specifically on policy issues or the "applied" social studies of science? This, of course, is a hold-over gripe from our 1979 meetings in Washington, where the site at least provided a rationale for increased attention to science in government. I suspect that those working on science in Washington will be helped less by sessions restricted to matters of policy than by sessions organized into substantive concerns shaped by theoretical developments in the social studies of science, especially if investigators take time to extract the "applied" from their "pure" science.

(4) Finally, sessions were separated (perhaps not by design) by theoretical orientations or epistemological assumptions. The most exciting development in Toronto, to my mind, was the emergence of a line of inquiry variously termed the anthropology of science (or of knowledge), studies of scientific work or laboratory studies. The orientation is united by a concern for the construction of scientific knowledge (rather than its "discovery"), for the processes of negotiation among scientists, and for forms of rhetoric used by scientists to convince others of the truth of their claims. Mulkay's plenary paper suggests that those in the "anthropology of knowledge" do not march as one: some prefer to examine laboratory science in situ, while others examine its residue as texts in scientific journals. Happily, most sessions on these subjects were well attended, in part because Garfinkel's plenary paper brought their concerns to a wide audience. I worry, however, that as the "study of scientific work" begins to lose its newness, and carries out its ambitious and promising agenda, it will lose its large audience and go the way of the California ethnomethodologists as a sect removed. This unfortunate scenario would be helped along by sessions in future 4S conferences restricted to studies consistent with this theoretical orientation.

My grumbles are not directed toward those who planned the Toronto program; they were splendid meetings in spite of organizational flaws which are minor enough to be corrected before Atlanta. And certainly I would not want to be heard as calling for consensus over "proper" theories, methodologies, research sites or practicalities. Arguments over first principles will keep our meetings alive, but such debates cannot take place without mutual awareness and comprehension, if not agreement. The organization of recent meetings has made it increasingly easy to minimize contacts with papers dramatically different from our own.

The situation can be improved. First, only one session should be scheduled at a time, throughout the three days of meetings. Second, an ample amount of time should be left unscheduled between these sessions to encourage lingering debates in the hallways over coffee. Third, short periods of time (not overlapping the

sessions) should be set aside for informal roundtable gatherings to allow small groups of specialists to discuss matters of particular interest to them but to few others. Fourth, sessions should be identified by substantive issues and not in a way that hints of their restriction to certain theoretical orientations, methodologies or research sites. Several sessions in Toronto were identified in this way: "Big Science and Its Institutional Forms," "Science and Technology in Developing Countries," "The Public Understanding of Science and Technology" and "Social Influences on Scientific Careers."

Fifth, two criteria should guide selection of papers: each paper should be written with sufficient scope to interest a large segment of our membership, and together, the papers should offer a diversity of theoretical orientations, methodologies and research sites. Of course, with one session at a time, fewer papers will be presented; this may not be a problem since I recall that more of my time spent on the program committee for the Bloomington meetings was taken up by begging people for contributions than by choosing among too many available good ones.

The five years of the 4S offer a fine example of the Durkheim-Simmel hypothesis that increased size leads to increased social differentiation. The theory need not become policy for organizing future meetings of the Society. The organization of sessions should offer opportunities to explore and debate our differences while resisting the trend toward premature specialization.

ACTION AND BELIEF OR SCIENTIFIC DISCOURSE? A POSSIBLE WAY OF
ENDING INTELLECTUAL VASSALAGE IN SOCIAL STUDIES OF SCIENCE

Michael Mulkay
Princeton University & University of York

Action and Belief or Scientific Discourse?

This session is concerned with the present state of social studies of science. That is a huge topic. I've recently written a book-length review just on the sociology of science, without touching on the history or philosophy of science.¹ And I had to leave out various parts of the sociological literature. So, in half an hour's talk, there's no point in taking the topic of this session literally. What I have decided to do instead is to address just one issue. But I think that it is such a basic issue that it has implications for the whole of social studies of science. Furthermore, it may well be that the way we have dealt with this issue in the past has had a major influence on social studies of science. So, by tackling this issue, I may be able to imply something about the present state of affairs in general, and also about the direction that our studies should take in the future.

Phrased in its most general form, the issue that I want to examine is a methodological one: How should we go about analysing sociological and historical data on science? More specifically, I now see that question as more or less equivalent to: should we be trying to provide definitive versions of scientists' actions and beliefs or should we be analysing scientific discourse? It's clear from this formulation that the issue I am addressing has strong implications for some of the sessions which follow. My formulation does not present scientific discourse as just another topic to be covered in this area. The analysis of discourse is being presented as an alternative to the more traditional concern with describing and explaining action and belief.

What do I mean by "providing definitive versions of action and belief"? It is my impression that almost all prior work in the history and sociology of science has sought to provide definitive versions of scientists' actions and, to a lesser extent, of their beliefs. This is less true of philosophers of science. Let me give some simplified examples taken mostly from the sociological literature.

1. To a very considerable extent research contributions are judged impartially on their scientific merit, no matter where they come from or who presents them.
2. Scientists' professional actions are carried out overwhelmingly in accordance with a specific and identifiable set of prescriptions.
3. The collective action of groups of research scientists can be seen to oscillate between periods of routine action and periods of revolutionary action.
4. When we look at laboratory practice, it becomes clear that scientists do not act in terms of the correspondence-theory of truth. Scientists seek success rather than truth.

5. Scientists' ideas are tools which their adherents devise in order to achieve their purposes in specific social and cultural situations.
6. In 16th century Europe certain groups of mathematicians began to interact much more closely with those concerned with the improvement of practical techniques. This change in patterns of social action had a major impact on mathematicians' conception of number.
7. An examination of the major participants' positions in the struggle reveals the role politics plays in extending scientific perception. Behind the published results are such political manoeuvres as marketing, salesmanship, and manipulation--all of which are vital to scientific inquiry.

I am tempted to provide a much longer list. But these brief snippets give us the flavour of some of the diverse views propounded about science in the recent literature. All of these statements are clearly concerned with portraying the actions of groups or collections of scientists. Scientists are described as "judging impartially," "conforming to certain prescriptions," "engaging in revolutionary action," "seeking after success or other objectives," and so on. It's more difficult to produce brief examples of the characterization of ideas or beliefs, but the text from which quotation six is taken goes on to describe in detail the mathematical conceptions which are said to have arisen out of certain changes in social action. Earlier I said that I was going to illustrate sociologists' definitive versions of action and belief. Clearly the authors of these statements are not claiming that they could not possibly be wrong. These claims are not presented as definitive versions in that sense. Rather analysts are presenting these versions as definitive in the sense that, if the analyst has interpreted his evidence correctly, this is the way things actually happen or actually happened. Thus each author seems to be implying that, for analytical purposes, there is one best version of particular actions and beliefs or of particular classes of actions and beliefs. Each author also seems to be saying that he has examined the relevant evidence and has provided the one version which can be deemed to be best in the light of that evidence. So what I want to do in this talk is to consider whether it is possible to move from the kinds of evidence we have to the kinds of characterizations of action we find in the literature.

My series of seven quotes can be seen to display several overlapping sequences as one reads from number 1 to number 7. There is a movement away from so-called hard data towards qualitative data. There is a movement away from a traditional view of scientific knowledge to a more socially contingent view. The later quotations also imply a critique of the earlier ones. And the later quotes are more concerned with characterizing specific sets of actions in such a way that they can be seen as generating specific scientific beliefs. In a crude fashion, therefore, these quotations reflect some of the main analytical changes which have occurred in the sociology of science, and perhaps in social studies of science, during the 1970's.

What I want to ask is: Can we accept any of these kinds of attempts to characterize scientists' actions and beliefs? I am going to approach this question by looking at the kinds of data used as the basis for those claims and I am going to make a simple distinction between citation data and qualitative data. The ideas contained in the early quotes on my list were first derived

from qualitative material, but the versions I have paraphrased as quotes 1 and 2 are offered by their authors as quantified verifications established by means of citation analysis. The authors of these claims are not directly concerned with scientific ideas or knowledge, but with characterizing actions. Assumptions about the character of scientific belief only enter the analysis covertly. Thus our first task becomes that of examining how analysts manage to show, by means of citations, how scientists actually act when they carry out technical evaluations, distribute rewards, respond to prescriptions, and so on. This is not the place for a comprehensive critique of citation studies. I simply want to make one central point, namely, that the claimed correspondence between scientists' actions and the pattern of citations is not itself demonstrated, but is established solely by means of an analyst's fiat. Definition by fiat is necessary because we know virtually nothing about the production of citations; and, as I will argue later, we cannot use qualitative data to find out. Let me try to show what I mean by examining the kind of citation analysis which lies behind quotation one.

When sociologists try to show that scientific research contributions are judged impartially, they devise measures of the scientific quality of research papers and they maintain that it is quality of research more than anything else which leads to the receipt of rewards. Thus the allocation of rewards is said to be impartial. Various reservations are always expressed about the use of citations to measure quality; for instance, it is admitted that we know very little about scientists' reasons for making citations and it is recognized that measuring quality in this way means that an unknown proportion of papers will be treated as high quality even though their frequent citation probably indicates only that they have been quickly rejected by the majority of interested researchers. The response to this latter point is usually that negative citations do not lessen the appropriateness of citations as an indicator of quality, because any paper which has stimulated wide criticism must thereby have contributed valuably to clarifying scientific issues in some intellectually beneficial way. I want to draw your attention to the gradual elision of meaning which is taking place here. Although analysts are seeking to justify their use of citations as a direct measure of quality, in their texts they actually make it clear that citation is more or less equivalent, not to quality, but to "thought to be worth referring to" or "formally noticed by other authors." It is impossible, therefore, in my view to draw any valid conclusions about the impartiality of scientists' actions from this kind of citation measure.

Despite their own reservations, however, the analysts doing this work continue to insist on their definition by fiat. For the purposes of these studies, the quality of scientists' research actions is the number of citations their papers receive. Consequently, strong analytical statements about quality are presented, not as uncertain inferences from simple numerical findings about citations, but as straightforward empirical findings. Thus the following kind of statement of empirical results is typical: "It is the quality of research rather than its sheer amount that is most often recognised through honorific awards." However, this is not in fact a simple finding but a translation, by means of analysts' fiat, of the following observation: "Highly cited physicists are more likely to receive awards than those who have written as many papers but are less frequently cited." What is observed is that physicists who are often cited also receive a lot of awards. But the analysts claim to have demonstrated an empirical relationship between quality of research action and allocation of social recognition. I want to suggest that the only connection between these

two statements, the statement about numbers of citations and numbers of papers and the statement about such actions as bestowing recognition and producing high quality research, is the analysts' unjustified decision to treat citations and quality as identical. The arbitrariness of this decision is further revealed by the fact that analysts regularly choose to use each of their limited range of indicators to measure quite different variables. Thus citation is used, not only to measure quality, but also to measure recognition. Accordingly, it is quite possible to interpret the finding that highly cited physicists also receive more awards as revealing only that the analysts' two measures of recognition are correlated; or to put it another way, that both kinds of reward tend to go to the same people.

If analysts were to restrict their claims to simple statements about relationships between citations and other quantifiable variables, their findings would be unobjectionable but also relatively trivial. My general conclusion, therefore, is that this kind of analysis does not, and possibly cannot, tell us anything interesting about collective action in science. Citation analysis appears to deal with scientists' actions only because the analysts involved have consistently hidden away their speculative interpretations behind methodological fiats.

Qualitative Data

One claim of qualitative analysis is that it is not arbitrary, nor does it oversimplify the rich variety of social action in which participants engage. Qualitative analysis goes to the people under study and captures the real, complex meanings of their activities. Can we accept, then, that the conclusions contained in quotes 3-7 are more firmly established than those based on citation data? I suspect that we cannot. Let me try to say why.

The central problem on which I want to focus is that of the diversity and the apparent inconsistency of accounts of action and belief that participants produce. The analyst using qualitative data seems to be claiming to have produced a composite "best version of events" which brings together and reconciles all the versions produced by participants. My judgement, however, is that analysts have not taken seriously enough the difficulties of this task. What analysts usually do is to formulate a general, overall interpretation, which is broadly substantiated by a selective use of participants' own versions. My suggestion is that these broad qualitative conclusions are only achievable because analysts formulate their interpretation at a level which enables them to ignore much of the diversity and fine detail of their data. Although this is, of course, particularly true of sociologists, a very similar line of criticism could be applied to historical research. I want to concentrate, however, on a very condensed sociological example.

Quotation 7 claims that much of scientists' professional action is political in character. These actions are described more specifically as involving marketing, salesmanship and manipulation. How is this characterization of political action established? It is based on the results of a series of brief case studies. In each study, the procedure is as follows: The analyst collects a number of interview statements from scientists working on a particular topic. In each interview transcript he finds that the speaker offers various versions of other scientists' actions. Other scientists are said to be "fanatical, paranoid and obsessed," for instance. They are said to be driven by personal antagonisms and to be engaged in a bitter struggle to gain acceptance for their ideas, which leads them to engage regularly in a variety of political manoeuvres. Although respondents say other things as well, statements of this kind appear regularly in virtually every transcript.

What can we legitimately conclude from these data? One general conclusion might be: When researchers talk about scientific debate in the course of interviews, they regularly attribute negative personal characteristics to those with whom they disagree and they regularly explain the rejection of correct ideas, as well as the acceptance of incorrect ideas, by referring to the influence of social and political factors. This conclusion stays fairly close to the data. But it is not the analysts' conclusion. My conclusion deals with a regularity in what scientists say about each other's actions when they are discussing controversial topics. The analysts' conclusion is about scientists' real actions. The analysts' underlying methodological procedure here is to accept statements at face value if they occur often enough. If enough participants say that a certain kind of action is occurring, then you can assume that it is occurring. Unlike the citation analyst who identifies action by fiat, the qualitative analyst tends to allow participants to do the analysis; although the qualitative investigator, of course, plays a crucial role in deciding which parts of participants' analysis to treat as important and to reproduce as his own. In an important sense, participants collectively replace the qualitative analyst. What enough scientists say about action comes to be taken as a literal description of action.

Some people might regard this as an adequate procedure for establishing relatively crude conclusions about action. Working on the assumption that "there's no smoke without fire" or remembering the old adage that "50 million Frenchmen can't be wrong," one might be happy to operate in this way. But there are at least two reasons why this procedure is unacceptable. The first is that one can show that scientists' statements about political action cannot be taken as accurate. Secondly, one can show that the regularity found in scientists' statements about political action is produced by a regularity in the methods by which they construct their accounts of action, rather than by a regularity in the actions themselves. These two points are complementary. I will expand on them briefly.

The conclusion reproduced as quotation 7 is based on a study of biochemists. It so happens that Nigel Gilbert and I have recently begun a study of more or less the same research network.² In our interview material we find very similar data to that which furnished the basis for that conclusion. But we have gone one step further than that analyst and we have compared each statement about the actions of a particular scientist with every other comparable statement about that scientist. We find that these statements are remarkably inconsistent. Every statement which characterizes a given scientist's actions or ideas as X is contradicted by numerous other statements which characterize his actions or ideas as various kinds of non-X. Furthermore, any particular speaker will tend to vary and modify his accounts of actions and ideas; not only other peoples' actions and ideas, but also his own. The author of quotation 7 seems to assume that participants either see an action as a political manoeuvre or they do not. But our close analysis of qualitative data shows that a given act can be portrayed as a political manoeuvre by one person and something completely different by another person. Or the same person may call it a political manoeuvre on one occasion and a disinterested act performed out of duty on another occasion. Thus there is no way you can get from this collection of incompatible statements to a conclusion about action, unless you can find some way of sorting out reliable assertions by participants from unreliable assertions. You might try to do this, for example, by distinguishing those speakers whose statements were biased from those who were not. But to do this you would have to draw on another collection of statements, where you would face exactly the same problem of characterizing action. As a last resort, you might try using non-verbal data to help you establish the

meaning of participants' verbalisations. However, if my comments about citation data are generally applicable to non-verbal data, and I think they are, this would offer no way out.

Analysis of Discourse

My general conclusion, then, is that neither citation data nor qualitative data can be used to furnish adequate characterizations of action or belief. Of course I'm generalising wildly. It may simply be that I have picked a particularly tricky concept to cope with by citation data. And perhaps the qualitative study I chose was badly done or did not employ sufficiently subtle analytical techniques or the research area under study was unusual in some way. All these are reasonable possibilities. But let's assume for the purposes of argument that I have established my thesis in its full generality. What follows from it? Well, in the first instance, it seems to follow that all the studies quoted earlier are inadequate. It also follows that there is no point in trying to improve on that kind of study. It is simply impossible to produce definitive versions of scientists' actions and beliefs. This conclusion helps us to understand why there is so little agreement in the field. But does it not also remove all possibility of further analysis? This, of course, is where the analysis of discourse comes in. It may be that this is an alternative. What, then, is meant by analysis of discourse and in what sense is it an alternative to the analysis of social action? I'm simply using the word "discourse" here as a convenient way of referring to all forms of verbalisation; to all kinds of talk and to all kinds of written document. Let me return to my previous example of qualitative analysis to show what analysis of discourse might look like and how it can perhaps replace the traditional form of analysis.

The original analyst did not notice that all his interviewees' statements about political action were made in attempts to account for or explain the acceptance by other scientists of what the speaker regarded as incorrect scientific views. In other words, the statements were all centrally concerned with accounting for scientific error.³ In addition, he ignored the fact that reference was regularly made in these statements to various other social, but not directly political factors, and to a whole range of negative personal attributes. Thus what his data and our own clearly demonstrate is a very regular pattern of interpretation in scientists' utterances about error and correct belief. Each speaker takes correct belief, that is, his own scientific view, as unproblematic. If he is asked to explain or if he asks himself why he or others hold that belief, he does so entirely in cognitive terms, usually by a simple reference to experimental evidence. This appears to pose an interpretative problem in accounting for error. If correct belief is scientifically unproblematic, how is it that some scientists have got it wrong? This difficulty is resolved by drawing on a wide repertoire of distorting non-cognitive factors, that is, social, psychological, or political factors, to account for the acceptance of error and the rejection of correct ideas. We call this pattern that of "asymmetrical accounting for correct and incorrect belief." In our data it occurs 15 times more frequently than symmetrical accounting.

I have no time to say much more about this kind of analysis. But I hope it is clear that the traditional objective of describing and explaining what really happened has been abandoned and replaced with an attempt to describe the recurrent forms of discourse whereby participants construct their versions of social action. One focuses, not on action as such, but on the methods scientists themselves use to account for, and make sense of, their own and others' actions.

This is not, of course, a new approach in other areas of sociology. It has only just begun to be adopted, however, in the sociology of science.

There are many advantages to this form of analysis. Firstly, one is no longer trying to use observable evidence to explain unobservables such as past actions or ideas in peoples' heads. Instead one is concerned only with interpreting given documents or recorded utterances. Secondly, all the detailed inconsistencies between accounts which occur in all qualitative analyses cease to be specially troublesome as such, once one stops trying to get through to what really happened. Material which is utterly incompatible when taken literally, can nevertheless clearly reveal a highly recurrent pattern of interpretation--as in the pattern of asymmetrical accounting for error. Finally, even this preliminary analysis of accounting for error helps us to begin to understand the structure of our own scholarly literature. The traditional sociological view of science adopted the conception of correct belief embodied firmly in scientists' own pattern of asymmetrical accounting and exemplified in all sorts of ways in the formal research literature and the data that literature generates. Many of the critics of the traditional sociological position have drawn on less formalised scientific discourse, particularly on scientists' own standard interpretation of error, which has enabled them to "show" that science is directly influenced by social factors.⁴ Thus, as I have implied from the beginning, the literature of social studies of science is largely derivative from scientists' own literary products and accounting procedures for its versions of scientific action and belief. If the analysis of scientific discourse is a viable analytical alternative, it may help to set us free from this longstanding form of intellectual vassalage.

NOTES

1. Michael Mulkay and Vojin Mihe. "Sociology of Science in East and West." Current Sociology October 1980.
2. See G. Nigel Gilbert and Michael Mulkay. "Contexts of Scientific Discourse." Sociology of Science Yearbook. 1980, ed. R. Krohn: "Putting Philosophy to Work," Philosophy of Social Science, forthcoming: "Accounting for Error." under submission.
3. Last paper in note 2.
4. First paper in note 2.

The Rehabilitation of Science of Science in China

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University of Göteborg, SWEDEN

The following remarks are based on a two week visit 10-24 September 1980 to the Peoples Republic of China where I lectured on some topics in science policy and social studies of science. The visit was within the framework of a Swedish-based project "Science and Science Management in China," funded by the Swedish Agency for Research Cooperation with Developing Countries (SAREC). This was apparently the second such visit from the West by someone specializing in our field. Earlier in the summer Peter Weingart and Gunter Kupfer from Bielefeld in West Germany made a similar visit, shortly after the Chinese had formally instituted a Science of Science Association Preparatory Committee which is serving as a host organization and within China seeks to link activities in the field they call science of science.

The Chinese did have some people working on philosophy of science and talked about science of science in the early 1960s when the American-educated Chinese dynamics expert Chien Hsueh-sen pushed hard for developing this specialty. However from 1966-1976 such activities were more or less eclipsed. This was the time when ideas like "basic research is bourgeois" dominated in some quarters, and historians of science specializing in Einsteinian theory of relativity suffered because of certain attacks on Einstein's ideas as distorting proletarian thinking.

The present regime seems determined to reverse the trend and use "science of science" as an advisory service discipline. Since 1978 there has been a lot of activity in setting up new journals with names like "Potential Science," "Natural Dialectics," "Science and Philosophy," "Scienology," "Information Science" and "Science Management." These are meant to help develop various branches of science of science, and at present some of the material used to popularize the notion come from foreign books and journals. This includes a couple of chapters from Thomas Kuhn's now classic work. In 1978 there appeared an edition of "Science of Science, Selected Translations" in 9000 copies which according to the editor, Wang Xicheng of the Beijing Science of Science Association soon sold out, and now a second edition is under way.

The Beijing Science of Science Association was formally founded in June 1980, after about six months of preparations during which a series of some 22 lectures were held for wide audiences of up to 1000 people. Since June 1980 the association has begun to concentrate more on specialist lectures, and it is in this context that foreign contributions can come in as guest lecturers. There are similar local Science of Science Associations in various of the other larger cities or provincial regions, all of them keen to find out about science studies elsewhere in the world.

Besides this there is a core group of researchers doing work in the field. At the Academy of Science in Beijing there are about fourteen persons with backgrounds in different disciplines like philosophy of science, history of science, informations studies, engineering, and a not unconsiderable number of physicists. The latter may have to do with Professor Chien's influence. In line with the present regimes ambitions to modernize science and technology on a basis of realistic appraisal of existing resources, there are a couple of projects destined to provide an inventory of scientific manpower and form a basis for discussion of structural reform of the national science system as such. What is the proper balance between basic research, applied science, and

development work? What kinds of models are there for the relationships between scientists and decision-makers to enhance the autonomy of scientists but without letting them become detached from practical interests? These are the kinds of questions being asked. Such and other questions were reflected in the brainpicking one has to put up with as a foreign scholar visiting China these days. There is also an interest in experimenting with diverting profits from some firms towards contract-research making use of university people and researchers at the basic research institutions of the Academy of Science. This is something entirely new for China. Also there is discussion of bringing defense research work more under the control of civil authorities.

In general one feels very stimulated by the interest expressed in learning about all kinds of work done in a wide range of specialties in what we call "science studies" in our countries in the industrialized West. There is also an openness to the possibility of research cooperation within this area with scholars in our part of the world. A handicap right now however seems to be the relative isolation and unawareness of what is going on after ten years of internal cultural revolution and also the aggravation of being cut off from international organizations owing to the international politics surrounding the Taiwan issue. Thus there was particular concern with establishing contacts with groups and committees in both divisions of IUHPS, with ISA and IPSA, as well as with organizations (and members) like PSA, HSS, SHOT, 4-S in North America as well as PAREX in Europe. The editors of some of the journals mentioned were keen to establish contacts and exchange with counterparts in journals in the West.

For those interested in following this up the following addresses are of use:
Mr. Choao, Wenyen (Vice Secretary General of the Science of Science Preparatory Committee, Academia Sinica, Beijing 100610, China)

Mr. Li, Xiuguo (same as foregoing)

Mr. Di, Hungxun (Gen. Secr. Beijing Science of Science Association) Peking Teachers College, Xi Wai Street, Beijing, China

Mr. Fan, Dainian (Editor of the Bulletin "Dialectics of Nature," Academia Sinica, Beijing 100610, China)

Mr. Chen, Yishen (Editor of the journal "Science and Philosophy," c/o Academic Sinica, Beijing 100610, China)

Mr. Shu, Yao-tsung (Chief editor of the journal "Science Management," Information Office of the Library of Academic Sinica, Wan Tung Street 27, Beijing)

Mr. Qui, Jin-quan (Vice Director of Shanghai Science of Science Institute Shanghai Science and Technology Committee, 200002 Shanghai)

As noted above the various editors are interested in exchange with counterparts. Local Science of Science associations in many of the provincial capitals also seem interested in receiving foreign visitors that might give a lecture or two on relevant topics.

Material concerning science policy in China and some journals are collected in Sweden at the Research Policy Institute at the University of Lund.

IN THE LITERATURE

JOURNAL CONTENTS

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This is the latest issue of this journal.

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The cover date does not correspond to the actual date of publication.

VOL. 1 NO. 3 MARCH 1980	
The Structure of Society and the Nature of Social Research. J.S. Coleman	333
Information Behavior in the German Federal Government - the Case of the Social Sciences. B. Badura, M. Walz	351
Knowledge Creep and Decision Accretion. C.H. Weiss	381
R & D MANAGEMENT PRACTICES	
Planned Change and Evaluation - Practitioners Point of View. T.J. Kiresuk	405
Knowledge Utilization - What is It? J.K. Larsen	421
BOOK REVIEWS	
Using Social Research in Public Policy Making - C.H. Weiss, L.E. Lynn	453
The Federal Investment in Knowledge of Social Problems - National Research Council. T.C. Miller	459
Peer Review in the National Science Foundation - S. Cole, L. Rubin, J.R. Cole, J.D. Roessner	465

KH302

KNOWLEDGE

Creation • Diffusion • Utilization

This is the latest issue of this journal.

Sage Publ. Inc.

The cover date does not correspond to the actual date of publication.

VOL. 1 NO. 4 JUNE 1980	
The Misutilization of Evaluation Research - some Pitfalls of Definition. J.D. Cook, J. Lewinsonrose, W.E. Pollard	477
Reinvention in the Innovation Process. R.E. Rice, E.M. Rogers	499
The 2-Communities Metaphor and Models of Knowledge Use - an Exploratory Case Survey. W.N. Dunn	515
If Dissemination is the Solution, What is the Problem? J. Knorr, A. Wildavsky	537
R & D MANAGEMENT PRACTICES	
Impact of Social Programs - Issues in Implementing Research. R.T. Roessner	579
BOOK REVIEWS	
Linkages between Knowledge Creation, Diffusion, and Utilization. C. Ganz	591
Research in Progress. C. Ganz	613
Controversy - Politics of Technical Decisions - D. Nelkin, B. Bozeman	624
Knowledge and Policy - the Uncertain Connection - L.E. Lynn, K.D. Knorr	627
Utilization-Focused Evaluation - M.Q. Patton, R.F. Connor	631

KK190

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Creation • Diffusion • Utilization

This is the latest issue of this journal.

Sage Publ. Inc.

The cover date does not correspond to the actual date of publication.

VOL. 2 NO. 1 SEPTEMBER 1980	
Proactive Records - Reflections on the Village Watchman. N. Cochran, A.C. Gordon, M.S. Krause	5
Commercial Advertising as a Form of Knowledge - 10 Propositions in Search of a Theory. J.L. Horowitz	19
Providing Analytic Capacity for Local Urban Policy - the Boston Tax Policy Project. S.R. Rosenthal	27
Appropriate Methodology. B. Nevitt	59
The University Social Research Center - its Role in the Knowledge-Making Process. R.G. Hunt	77
Social Problems in Science and for Science. D. Moyer, R. Cignat	93
SPECIAL FEATURE	
Technical Assistance and Building Resource Networks. D.L. Clifford, S. Cooper	117
BOOK REVIEWS	
Insight and Social Betterment - a Preface to Applied Social Science - J.B. Rule, J.A. Weiss	143
Why Sociology does not Apply - a Study of the Use of Sociology in Public Policy - R.A. Scott, A.R. Shor, J.A. Weiss	143
Technological Innovation in American Local Governments - the Case of Computing - J. Perry, K. Kraemer, J. Feller	149

KD912

Minerva

International Council on the Future of the Univ.

This is the latest issue of this journal.

Sage Publ. Inc.

The cover date does not correspond to the actual date of publication.

VOL. 17 NO. 3 AUTUMN 1979	
The Communication of Scientific Information to the Wider Public - the Case of Seismology in California. A.J. Melzner	331
Prom Prizes to Grants in the Support of Scientific Research in France in the 19th Century - the Montyon Legacy. M. Croissant	355
The Condition of Mexican Science. M. Scholter	381
The Redistribution of Authority in National Laboratories in Western Germany. I. Deich	413
DISCUSSION	
Further Thoughts on Diversity and Adaptability in Australian Science Policy. J. Ronayne	445
REPORTS AND DOCUMENTS	
Governments, Foundations and the Bias of Research. T.W. Schultz	459
Distortions of Economic Research.	460
BOOK REVIEWS	
Americans and German Scholarship 1770-1870 - C. Diehl	469
Misapplied Science - the Crisis of Science and Scientists in the Soviet-Union Today - M. Popovsky.	472

Social Studies of Science

Sage Publications Ltd., London
Articles in English

VOL. 10 NO. 3 AUGUST 1980
P.J. Leach, A. Mazur

- 259 The Rise and Fall of Public Opposition in Specific Social Movements.
285 The Relationship of Conceptual Development to Consensus - an Exploratory Analysis of 3 Subfields.
309 Can There be a Consensus on Nuclear Power.
345 Wartime Fission Research in Japan.
351 The History and Social Studies of Science in Italy.
375 Natural Order - Historical Studies of Scientific Culture - B. Barnes, S. Shapin.
375 On the Margins of Science - the Social Construction of Rejected Knowledge - R. Wallis.
375 Images of the Earth - Essays in the History of the Environmental Sciences - L.J. Jordanova, R.S. Porter.

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research policy

Abstracts in English

- VOL. 9 NO. 3 JULY 1980**
A viewpoint on innovation and the chemical industry
U. Colombo 204
A study of technical innovation in Polish industry
K. Poznański 232
Stages of development of industrial technology in a developing country: A model
L. Kim 254
The consequences of dissent: Sociological reflections on the controversy of the low dose effects
H. Nowotny and H. Hirsch 278

North Holland Publ. Co.

research policy

Abstracts in English

- VOL. 9 NO. 4 OCTOBER 1980**
Government policy and technical choice in the West German reactor programme
O. Keck 302
The State and technical innovation: A case study of the electrical vehicle in France
M. Callon 358
The transfer of U.S. technology abroad
D. L. Bosworth 378

B 177W

FEAR OF SCIENCE—TRUST IN SCIENCE

Conditions for Change in the Climate of Opinion

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- INTRODUCTION: THE PROBLEM AT HAND
DISCUSSION OF SOME NOTES ON THE FEAR AND DIS-
TRUST OF SCIENCE. A.S. Markovits. 111
FEAR OF SCIENCE - TRUST IN SCIENCE - A MEDITA-
TION. J. Weizenbaum 129
DISCUSSION OF FEAR OF SCIENCE - TRUST IN SCIENCE.
A.S. Markovits, K.W. Deutsch 141
8 MAJOR EVOLUTIONARY JUMPS TODAY. J. Platt 149
DISCUSSION OF 8 MAJOR EVOLUTIONARY JUMPS TO-
DAY. A.S. Markovits, K.W. Deutsch 167
CRITICAL DISCUSSIONS FOR THE FUTURE:
WHAT TO DO? WHO SHOULD DO IT?
FEAR OF SCIENCE VERSUS TRUST IN SCIENCE - FU-
TURE TRENDS. M. Kasebe 177
DISCUSSION OF FEAR OF SCIENCE VERSUS TRUST IN
SCIENCE. A.S. Markovits, K.W. Deutsch 193
FEAR AND THE RHETORIC OF CONFIDENCE IN SCIENCE.
H.C. White 199
DISCUSSION OF FEAR AND THE RHETORIC OF CONFIDENCE IN SCIENCE. A.S. Markovits. 211
ON COPING WITH SCIENCE AS A TASK OF POLICY. A
TENTATIVE SUMMARY. K.W. Deutsch. 223
A.S. Markovits
- HISTORICAL ASPECTS
WISDOM, SCIENCE, AND MECHANICS - THE 3 TIERS OF
MEDIEVAL KNOWLEDGE AND THE FORBIDDEN ATH.
R.S. Lopez 15
DISCUSSION OF WISDOM, SCIENCE, AND MECHANICS.
A.S. Markovits 25
THE FEAR AND DISTRUST OF SCIENCE IN HISTORICAL
PERSPECTIVE - SOME 1ST THOUGHTS.
I.B. Cohen 29
DISCUSSION OF THE FEAR AND DISTRUST OF SCIENCE
IN HISTORICAL PERSPECTIVE. A.S. Markovits. 59
THE DISENCHANTMENT OF SUCCESS.
D.S. Landes 71
DISCUSSION OF THE DISENCHANTMENT OF SUCCESS.
A.S. Markovits, K.W. Deutsch 87
THE PRESENT SITUATION: BIG SCIENCE
AND THE BIG FEAR
SOME NOTES ON THE FEAR AND DISTRUST OF SCIENCE.
C.E. H. Brooks 97

B 182T

SCIENCE AND SOCIAL STRUCTURE

A Festschrift for Robert K. Merton

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A. Courmand 1
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S.N. Eisenstadt 28
Of Causing Reason.
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Science and the Problem of Authority in Democracy.
Y. Elkana 43
Citation Measures of the Influence of Merton.
R. K. 61
The Role of Psychological Explanations of the Rejection or Acceptance of Scientific Theories.
E. Garfield 75
A. Grünbaum
An Analysis of Psychological and Sociological Ambivalence - Nonadherence to Courses of Action Prescribed by Health-Care Professionals.
I.L. Janis 91
Interpretation and the Use of Rules - the Case of the Norms of Science.
M. Mulvey 111
Fisher Reproductive Value as an Economic Specimen in Merton Zoo.
P.A. Samuelson 126
Merton on Multiples, Dealt and Affirmed.
G.J. Stigler 143
Stigler Law of Eponymy.
S.M. Stigler 147

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B 134R

SCIENCE AND TECHNOLOGY POLICY Perspectives for the 1980s

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Overview of Science and Technology-Policy-1979.	H.I. Fusfeld	1
MAJOR AREAS OF CONCERN IN SCIENCE AND TECHNOLOGY POLICY	L. Rothchild	27
Back to the Bio-Board.	G. Piel	36
Comments Following Lord Rothschild's Paper.	F. Press	38
United-States Science and Technology-Policy.		
Technical-Advance and Economic Growth - Present Problems and Policy-Issues.		

Major Issues Facing the OECD Countries.	R.R. Nelson	47
A Perspective on Science and Technology-Policy and Energy.	B.M.J. Delapalme	58
	J.C. Sawhill	66

SCIENCE AND TECHNOLOGY POLICY IN SELECTED TECHNICAL FIELDS		
Food and Nutrition.	S.K. Reed	71
Overview of Policy-Issues - Panel Report.	G.L. Ontenao	80
Materials.	W.R. Hibbard	84
Overview of Policy-Issues - Panel Report.	N.B. Hannay	92
Energy.	U. Colombo	97
Overview of Policy-Issues - Panel Report.	E.E. David	108
The Environment.	D. Swan	116
Overview of Policy-Issues - Panel Report.	M. Etzenbud	121
Communications.	J.E. Goldman	125
Overview of Policy-Issues - Panel Report.	L.L. Davenport	131

INTERACTION OF SCIENCE AND TECHNOLOGY POLICY WITH AREAS OF NATIONAL CONCERN		
The Economy - Introductory Remarks.	E.B. Staats	135
The Economy.	A.M. Bueche	138
The Economy - Comments.	E.B. Staats	154
Overview of Policy-Issues - Panel Report.	E.B. Staats	157
Regulatory Policy.	M.C. Throdahl	163
Overview of Policy-Issues - Panel Report.	W.R. Dill	172
The Social Responsibility of Scientists.	D. Nelkin	176
Overview of Policy-Issues - Panel Report.	D.B. Merryfield	183
Foreign Policy.	R.W. Nichols	187
Overview of Policy-Issues - Panel Report.	H. Packer	200
Aid to Developing Countries.	K.H. Standke	208
Overview of Policy-Issues - Panel Report.	N. Terrell	217

RECOMMENDED GUIDELINES FOR SCIENCE AND TECHNOLOGY POLICY		
Opportunities for Cooperation between Government, Industry and the University.	L.M. Branscomb	221
Roles for Private-Sector Initiatives.	A.E. Pannenberg	228
Workable Mechanisms for Government Action.	D. Davies	236
A Summary Perspective.	W.D. Carey	245
Science and Technology-Problems and Opportunities at the State Level.	H.L. Carey	253
Role of Congress in Science and Technology-Policy.	D. Fugua	257
A Labor Perspective on Science and Technology.	W.W. Winpisinger	264

B 170W

SCIENCE, TECHNOLOGY AND SOCIETY Needs, Challenges and Limitations

PERGAMON POLICY STUDIES

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Science, Technology and Society Needs, Challenges and Limitations - Introduction.	K.H. Standke	1
Science and Technology for Development - a Turning Point - Certain Imperatives for the Future.	M.G.K. Menon	15
Historical and Cultural Perspectives of Science and Technology in the Development Process.	H.B.G. Casimir	28
Sociological Implications of Tradition and Change in Developing Countries. K. Mushkoji		34
Structure and Performance of Science and Technology in Development Process.	A.H. Jamal	47
Socio-Economic Problems and Their Possible Solution in the Generation, Application and Transfer of Agricultural Technologies.		58
Science and Technology in Agriculture as a Tool for Development.		72
Tropical Health - Special Programme for Research and Training in Tropical Diseases.		97
Natural Resources - Water and Non-Renewable Minerals.		122
Natural Resources - Earth, Water, Marine.		137
The Role of Science and Technology in Transport - Trends - State of the Art - Gaps and Solutions.		190
The Application of Telecommunication Technology to Development.		207
Population Issues for the Scientific and Technological Community.		239
Science and Technology in Human Settlements - Applications of Science and Technology for Improving Quality of Life in Human Settlements.		263
Science and Technology in Humid Tropical Ecosystems.		289
Science, Technology, Environment and Development.		313
Sustainable Energy Supplies for Our World.		331
Industrialization and Capital Goods Production - a Developing Country Perspective.		373
Appropriate Technology - an Overview.		396
Scientific and Technological Information Systems for Development.		418
Mobilizing Science and Technology to Increase Indigenous Capabilities in Developing Countries.	D.A. Bakoe	457
Science, Technology and Development Planning. V.L. Urquidí		464
Science, Technology and Global Problems. J. Gvishiani		470
Mobilizing Science and Technology for Increasing the Endogenous Capabilities in Developing Countries.		478
Science, Technology and Development Planning - a Review of Key Issues.		503
Interactions between Science and Technology and Long-Term Global Problems - an International Policy Perspective.		566

B 179L

TECHNOLOGY AND ITS IMPACT ON SOCIETY TEKNISKA MUSEET SYMPOSIA ON THE HISTORY OF TECHNOLOGY. NO. 1

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TECHNOLOGY AND ITS IMPACT ON SOCIETY - OPENING ADDRESS.	5
IRON METALLURGY AND PREHISTORIC SOCIETY.	11
SOCIETY, FOOD-BOLING AND SETTLEMENT.	21
PROVENANCE AND TRANSPORT OF THE MONOLITHIC DOME OF THEODORICS MAUSOLEUM IN RAVENNA.	31
SOME ASPECTS OF IMPACT OF TECHNOLOGY ON SOCIETY IN THE CLASSICAL AGE OF INDIA.	37
SOME ASPECTS OF TECHNOLOGY - THE SCIENTIFIC INSTRUMENTS AND THE SOCIETY OF THE MEDICI AND	45
LORENA REGIMES	61
THE IMPACT OF THE INTRODUCTION OF STEAM ENGINE TECHNOLOGY ON THE SOCIETY-OF-DANHEMURA-	71
MINES - A CASE STUDY IN TRANSFER OF TECHNOLOGY.	81
TECHNOLOGY IN THE 18TH CENTURY - A MEANS OF CONTROLLING THE EMERGING INDUSTRIAL SOCIETY.	95
THE GENESIS OF THE WHEATSTONE BRIDGE.	101
THE ELECTRICAL CONTRIBUTIONS OF FRANKLIN BENJAMIN.	109
THE GROWTH AND APPLICATION OF SCIENCE IN SWEDEN IN THE EARLY INDUSTRIAL ERA, 1870-1914.	123
TECHNOLOGICAL PROGRESS AND PROFESSIONAL MOBILITY.	131
SOCIAL INSTRUMENT AND CULTURAL COMPROMISE - TECHNICAL EDUCATION IN THE LATE 19TH CEN.	143
TURY SWEDEN	153
WATER SUPPLY SYSTEMS IN EARLY-AMERICA.	161
MOBEL, ALFRED INVENTIONS TO PREVENT DISASTERS BROUGHT ABOUT BY THE PROGRESS OF EN-	169
GINEERING.	183
DEVELOPMENT OF THE CHEMICAL INDUSTRY AT THE TURN OF THE 19TH-20TH CENTURY - THE BIRTH OF	193
REVOLUTION IN SCIENCE AND TECHNOLOGY.	203
THE ECONOMICS OF TECHNOLOGICAL BACKWARDNESS IN SMALL COUNTRIES - AN ASPECT OF SCAN-	211
DINAVIAN INDUSTRIALIZATION	235
SPIN IT - THE ORIGINS OF CENTRIFUGAL SEPARATION TECHNOLOGY.	255
TECHNOLOGY AND SOCIETY - THE FACTOR OF SCALE, AS ILLUSTRATED BY THE ALKALI INDUSTRY.	261
SCIENCE, TECHNOLOGY AND SOCIETY - PAST AND PRESENT - A PEDAGOGIC PROJECT AT THE DEUT-	273
SCHES MUSEUM MUNICH.	
TECHNOLOGY AND SOCIAL CHANGE - AN INTERDISCIPLINARY RESEARCH PROJECT AT THE UNIVERSITY	
OF LINKÖPING, SWEDEN.	
REGIONAL TECHNOLOGICAL STYLE	
TECHNOLOGY ASSESSMENT IN AMERICA	
THE ROLE OF TELECOMMUNICATIONS IN THE FORMATION OF THE SOCIETY.	
TECHNICAL DISASTERS - IMPACT ON RESEARCH AND SOCIETY.	
TECHNOLOGY AND ITS IMPACT ON SOCIETY.	

B 186A

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THE OVERVIEW

Overview of United-States Research and Develop-	3
ment. H.J. Fustfeld	
Chemical Industry Research and Innovation.	19
R. Landau	
Science, Technology, and Innovation in Europe.	51
R. Boninatti	
Innovation in Japan. C.A. Sears	57
STUDY, ASSESSMENT, AND ANALYSIS	
Innovation and Technology Assessment.	67
D. Desimone	
Systems of Innovation Macro-Micro.	73
J.M. Utterbeck	
The Economics of Innovation. E. Mansfield	95
Technological Progress and the Investment Cli-	
mate. T.A. Vanderslice	103
Personal Observations on the Dpr Process.	115
T.W. Schlie	
Research and Innovation - Joint-Economic-	
Committee Special Study on Economic Chan-	
ge. M.E. Mogee, W.A. Hahn	123

THE ROOTS OF INNOVATION— THE INDIVIDUAL

The Role of the Individual in Innovation.	133
A.H. Nissan	
The Effect of Serendipity and Specialization on	143
Invention. J.J. Damico	
The Individual in Research Innovation - 11 Hypo-	147
theses About Innovators. J.A. Sieger	
The Individual in Industrial Research and Innova-	155
tion. J.D. Idol	

The Individual in Government Research and Inno-	
vation. J. Rabinow	159
MAKING INNOVATION HAPPEN—TEAMWORK,	
CORPORATION, AND THE SYSTEM	173
Innovation within the Corporation.	
B.M. Rushion, E.H. Kottcamp	181
Organizing for Innovation. J.W. Selden	
INCENTIVES AND DISINCENTIVES	

FOR INNOVATION

The Bureaucratization of American Science.	191
O.G. Hatch	
Appropriate Role of Government in Innovation.	197
J.H. Holimon	
Recognition and Awards for Innovation.	205
E.C. Galloway	
Effect of Patent Policy on Innovation in Industry	219
and Government. D.W. Banner	
The Council for Innovation. M. Michaelis	223
WHERE U.S. INNOVATION IS HEADED	
AND RECOMMENDATIONS	
The Outlook for Innovation - a Policy View.	231
W.D. Carey	
Congressional View of Innovation and United-	235
States Research. D. Fuqua	
The Next Step for the Administration for United-	
States Research and Innovation.	241
F. Press	
Assessment of Government Impact on Innovation.	247
G. Place	
Innovation and United-States Research - Sum-	255
mary. W.N. Smith	

NO. 32 SUMMER 1980	
EDITORIAL	
Old Values, Human Needs, and Technological Tools - M. LaFollette	2
ARTICLES	
Remarks on the Portrayal of Scientists - Commentary - J. Gladstone	4
The Role of the Experts in Developing Public Policy - the Austrian Debate on Nuclear Power - H. Nowotny	10
RESEARCH REPORT	
Coal and Natural Gas - Fuel and Environmental Policy in Pittsburgh and Allegheny County, Pennsylvania, 1940-1960 - J.A. Torri, G.D. Goodman, K. Koona	19
BOOK REVIEWS	
Energy and the Way We Live - M. Kranzberg, T.A. Hall, J.L. Scheiber	41
Energy in Transition 1985-2010 - National Academy Of Sciences	41
Energy - the Next 20 Years - Ford-Foundation, Resources-For-The Future	42
The Energy Controversy - Soft Path Questions and Answers - A. Lovins	42
New Dimensions to Energy Policy - R. Lawren- ce	42
Deciding About Energy Policy - Principles and Procedures for Making Energy Policy in the UK - Council-For-Science-And-Society	43
National Energy Issues - How do We Decide Plutonium as a Test Case - R.A. Sachs	43
A Low Energy Growth 2030 Scenario and the Perspectives for Western Europe - U. Colombo, O. Bernardini	44
An Acceptable Future Nuclear Energy System - M.W. Firebaugh, M.J. Ohanian	44
Commonsense in Nuclear Energy - F. Hoyle, G. Hoyle	44
Nuclear Energy and Nuclear Proliferation - R. Imai, H.S. Rowen	45
Coal - Bridge to the Future - C.L. Wilson	45
The Urban Transportation System - Politics and Policy Innovation - A. Alan, J.P. Womack, J.R. Pucher	46
Divided Loyalties - Whistle-Blowing at BART - R.M. Anderson, R. Perrucci, D.E. Schendel, L.E. Trachman	48
Land in America - Commodity or Natural Resources - R.N.L. Andrew	47
China's Modernizations - the New Technologi- cal Revolution - R. Daum	47
Ethical Theory and Business - T.L. Beauchamp, N.E. Bowie	48
Technology Assessment - Creative Futures - M.A. Boroush, K. Chen, A.N. Christakis	48
Taking Care of Strangers - the Rule of Law in Doctor-Patient Relations - R.A. Rort	48
Making Foreign Economic Policy - I.M. Dettler	49

SPECIAL ISSUE: 3TH SYMPOSIUM, TORONTO, OCTOBER 16-19, 1980	
EDITORIAL	
Special Issue for the 3TH Symposium at the Joint Meetings of the History-Of-Science- Society, Philosophy-Of-Science-Association, Society-For-The-History-Of-Technology, and Society-For-The-Social-Studies-Of-Science, Toronto, Canada, 16-19 October 1980 - the Potentials and Limits of Applied History, Philosophy, and Sociology of Science and Technology - M.C. LaFollette	2
ARTICLES	
The Critique of Impure Reason - Z. Sin, Science, and Society - M.W. Wartofsky	5
Ethical Engineers Need not Apply - the State of Applied Ethics Today - A.L. Caplan	24
Technology Assessment as Applied Philosophy of Science - K.S. Shrader-Frechette	33
BOOK REVIEWS	
Environmental Education - Principles, Methods, and Applications - T.S. Bakshi, Z. Navch	62
The Rosetta Story - an Anatomy of Health - J.G. Bruhn, S. Wolf	62
Moral and Ethical Issues Relating to Nuclear Generation - Canadian-Nuclear-Association	69
Celebration of the 50th Anniversary of the Pu- pin-Laboratories	63
The Morality of Scarcity - Limited Resources and Social Policy - W.M. Finnin, G.A. Smith	64
Human Rights and Foreign Policy - C. Frankel	64
Time and the Sciences - F. Greenaway	64
Promethean Ethics - Living with Death, Compe- titon, and Trisage - G. Hardin	64
Manpower Policies for the Use of Science and Technology in Development - C.V. Kidd	66
Introductory Readings in the Philosophy of Science - E.D. Klemke, R. Hollinger, A.D. Kline	66
Genetic Politics - the Limits of Biological Con- trol - M. Lappe	66
New Dimensions to Energy Policy - R. Lawren- ce	67
The Post-Darwinian Controversies - J.R. Moore	68
Health - What is it Worth - Measures of Health Benefits - S.J. Muthkin, D.W. Dunlop	69

Health Planning in the United States - Issues in Guideline Development - National-Academy- Of-Sciences-Institute-Of-Medicine	69
Funding Mechanisms - Balancing Objectives and Resources in University Research - Nation- al-Commission-On-Research	69
Review Processes - Assessing the Quality of Re- search Proposals - National-Commission-On- Research	69
Women Scientists in Industry and Government - How Much Progress in the 1970s - National- Research-Council-Commission on Human- Resources-Committee on the Education and Employment of Women in Science and Engi- neering	69
The Brazil Chemistry Program-An International Experiment in Science Education - National- Research-Council-Commission-On- International-Relations-Board-On-Science- And-Technology-For-International- Development	69
Disasters and the Mass Media - National- Research-Council-Commission-On- Sociotechnical-Systems-Committee-On- Disaster-And-The-Mass-Media	70
Employment Characteristics of Recent Science and Engineering Graduates - the Effects of Work Experience, Advanced Degrees, and Business Cycles - National-Science- Foundation	70
How Basic Research Reaps Unexpected Rewards - National-Science-Foundation	71
Technology, Change and Society - E.C. Pytlak, D.P. Lauda, D.L. Johnson	71
The Sciences in the American Context - New Perspectives - N. Reingold	71
Ethical Dilemmas and Social Science Research - P.D. Reynolds	72
Nuclear Power and the Public Safety - a Study in Regulation - E.S. Rolph	72
The Darwinian Revolution - M. Ruse	73
Desserts on the March - P.B. Sears	73
Ethics for Science Policy - Report from a Noble Symposium - T. Segerstedt	73
Energy and Environmental Issues - the Making and Implementing of Public Policy - M. Steinman	73
Values and the Public Works Professional	74
Nuclear Nonproliferation - the Spent Fuel Prob- lem - F.C. Williams, D.A. Deese	75

JOURNAL OF RESEARCH COMMUNICATION STUDIES

Vol. 2 No. 3
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CONTENTS

Publisher's note	135
What is the future for new research journals in the 1980s?: a discussion	
J. Meadows, G. Page, R. Campbell, M. Balaban, A.A. Manten and H.E. Bamford, Jr.	137
CARS: computer assisted referee selection	
H. Russell Bernard (Gainesville, FL, U.S.A.)	149
Multiple authorship and author collaboration in agricultural research publications	
C. Balog (Wellington, New Zealand)	159
Limits to collaborative authorship in science publishing	
P. Hodder (Hamilton, New Zealand)	169
Learned societies and on-demand book publishing	
A. Singleton (Leicester, England)	179
Book reviews as aids to book selection	
A.I. Dallos (Leicester, England)	189
<u>Book Reviews</u>	
Scientific information transfer: the editor's role	193
Writing a scientific paper	196
Nordic biomedical manuscripts	197
Some recent publications on primary communications	201

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AAAS Professional Ethics Project

Professional Ethics Activities in the Scientific and Engineering Societies



Rosemary Chalk
Mark S. Frankel
Sallie B. Chafer

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American Association for the Advancement of Science
Committee on Scientific Freedom and Responsibility

Contents

PREFACE	vii
ACKNOWLEDGEMENTS	xi
COMMITTEE ON SCIENTIFIC FREEDOM AND RESPONSIBILITY (1979-1980).	xiii
CHAPTER ONE: INTRODUCTION.	1
CHAPTER TWO: EARLIER SURVEYS	10
CHAPTER THREE: THE PROJECT SURVEY.	17
PART I: STATEMENTS OF ETHICAL RULES	21
PART II: POLICIES AND PROCEDURES	29
PART III: THROUGH THE MAZE OF DATA: IN SEARCH OF PERSPECTIVE.	53
CHAPTER FOUR: THE WORKSHOP ON PROFESSIONAL ETHICS	55
CHAPTER FIVE: HIGHLIGHTS: ETHICS ACTIVITIES IN SELECTED SOCIETIES	73
AMERICAN ANTHROPOLOGICAL ASSOCIATION	74
AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS.	76
AMERICAN ASSOCIATION OF UNIVERSITY PROFESSORS	78
AMERICAN CHEMICAL SOCIETY.	80
AMERICAN POLITICAL SCIENCE ASSOCIATION	82
AMERICAN PSYCHIATRIC ASSOCIATION.	83
AMERICAN PSYCHOLOGICAL ASSOCIATION	85
AMERICAN SOCIETY OF CIVIL ENGINEERS	87
AMERICAN SOCIETY OF MECHANICAL ENGINEERS	89
AMERICAN SOCIOLOGICAL ASSOCIATION	91
INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS.	93
NATIONAL ASSOCIATION OF SOCIAL WORKERS	95
NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS	97
CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS	99
APPENDICES	
A. AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE	107
1979 List of Affiliated Societies.	107
1975 Report on Scientific Freedom and Responsibility.	110
B. SURVEY COVER LETTER AND QUESTIONNAIRE	113

C.	SOCIETIES WITH MEMBERSHIP OPEN TO LAYPERSONS/STUDENTS . . .	122
D.	CLASSIFICATION OF SOCIETIES BY TYPE	123
E.	SOCIETIES THAT HAVE ADOPTED ETHICAL RULES	127
F.	SOCIETIES REPORTING NO ADOPTION OF ETHICAL RULES	129
G.	SOCIETIES SUBSCRIBING TO ETHICAL RULES ADOPTED BY ANOTHER SOCIETY	131
H.	SOCIETIES WHOSE MEMBERS SUBSCRIBE TO ETHICAL RULES ADOPTED BY THEIR PRIMARY PROFESSION	133
I.	SOCIETIES CONSIDERING THE ADOPTION OF ETHICAL RULES	134
J.	CLASSIFICATION SCHEME FOR ETHICAL STATEMENTS.	135
K.	WORKSHOP MATERIAL	146
L.	List of Participants	146
	Agenda.	151
	WORKSHOP PAPERS.	154
	John Ladd "The Quest for a Code of Professional Ethics"	154
	Dorothy Melkin "Ethical Issues Facing Scientists in the Public Sector"	160
	Warren Niederhauser "Ethical Issues in Private Industry" (abstract)	163
	Joan E. Sieber "Ethical Issues in the Social Sciences" (abstract)	164
	Stephen H. Unger "How Engineering Societies Can Bolster Professional Ethics" (abstract).	165
M.	PROFESSIONAL SOCIETY ETHICS GROUP	167
N.	AMERICAN ANTHROPOLOGICAL ASSOCIATION	169
	1971 Principles of Professional Responsibility	169
O.	AMERICAN ASSOCIATION OF UNIVERSITY PROFESSORS	171
	1940 Statement of Academic Freedom and Tenure	171
	1966 Statement on Professional Ethics.	175
P.	AMERICAN CHEMICAL SOCIETY.	177
	1978 Professional Employment Guidelines	177
	1977 Member Assistance Guidelines	182
	1976 Legal Aid Loan Program	184
Q.	AMERICAN PSYCHOLOGICAL ASSOCIATION	186
	1967 Casebook on Ethical Standards of Psychologists.	186



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A CENTENNIAL HISTORY OF THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS 1880-1980

BRUCE SINCLAIR

In 1980 the American Society of Mechanical Engineers celebrates the centenary of its founding. The occasion has provided an opportunity for the Society to look back and survey its accomplishments, its distinguished members, and its constant dialogue - among its members and with the American people - concerning the

role of engineering in a technological society. The dynamic tensions within the ASME make a fascinating background to this centennial history. The central role of the Society's headquarters in New York is examined in the light of various movements for regional and professional sections within (and occasionally outside) the Society. The technical question of standards is shown to be a constant and creative problem for members - reflecting their attitudes towards their role in a political system often reluctant to enforce nationwide standards in business and industry. From the Progressive Era, and its attempts to reform city government and check the power of private utilities, to the 1970s and its renewed concern with ecology and business ethics, the Society has provided a microcosm of informed debate about technical engineering problems which - as this book makes clear - concern us all.

BRUCE SINCLAIR is director of the Institute for the History and Philosophy of Science and Technology in the University of Toronto. He is the author of *Philadelphia's Philosopher Mechanics: A History of the Franklin Institute 1824-1865*, which won the Dexter Prize in 1975 for the best book in the history of technology.

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HOW TO GROW SCIENCE

Michael J. Moravcsik

CONTENTS: What Is Science? ● Why Science? ● How Science Is Made ● How Scientists Communicate ● How to Measure Science ● The Science of Science ● Science Policy ● How Much Science? ● How to Create and Maintain Scientists ● What Keeps Scientists Happy? ● How to Give Out Money for Science ● How to Provide Friends for Science ● Who Is Doing Science Around the World? ● Appendixes: How to Correct One-Dimensional Thinking / Evolving the Organism of Science: A Fable / Two Ways of Mountaineering / How Can Two Scientists Disagree?

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INFORMATION TRANSFER IN ENGINEERING by Hedvah L. Shuchman, Ph.D., published by The Futures Group, reports on a study of engineers employed primarily in U.S. industry. It provides data on the use and production of information in the industrial technical community, including data on the relationship of company size to patenting by engineers, and to how engineers value information sources and information technology.

For further information contact: G. Leroy, Publications
The Futures Group
76 Eastern Boulevard
Glastonbury, Connecticut 06033

SCIENCE IN INDIA, Research Without Programmes--Scientists Without a Community by V. Shiva and J. Bandyopadhyay, Indian Institute of Management, Bangalore 560 027, India

Contents

<u>Sections</u>	<u>Page</u>
ACKNOWLEDGEMENT	
1. INTRODUCTION	1
1.1 Need for a Cognitive Sociology of Science	1
1.2 The Kuhnian Model of Scientific Development	6
1.3 Growth of Contemporary Scientific Institutions in India	9
2. METHODOLOGICAL APPROACH TO THE PROBLEM	15
3. THE ELEMENTS OF COGNITIVE ACTIVITY: PROBLEMS, PROGRAMMES AND RESEARCH FRONTS	23
4. RESEARCH WITHOUT PROGRAMMES	38
4.1 Problem Choice--Starting With a Handicap	38
4.2 Research Fronts and Marginalisation of Problems	48
5. SCIENTISTS WITHOUT A COMMUNITY	62
5.1 Interactions Among Indian Scientists	63
5.2 Interactions Between Science and Society	75
6. COGNITIVE COMPONENTS IN THE SOCIAL ORGANISATION OF SCIENCE	86
6.1 The Dilemma of Rationality and Relevance	86
6.2 The Cognitive Fallacies in Science Planning in India	92
7. CONCLUSIONS	103
NOTES	105
APPENDICES	

Nico Stehr und Volker Meja (Hrsg.), Wissenssoziologie - Studien und Materialien. Sonderheft 22 der Kölner Zeitschrift für Soziologie und Sozialpsychologie. Opladen: Westdeutscher Verlag, 1980.

Inhaltsübersicht (Table of contents)

I. Teil: Einleitung (I. Part: Introduction)

Wissen und Gesellschaft (Knowledge and society). Von Nico Stehr und Volker Meja

II. Teil: Zur Grundlegung der Wissenssoziologie (II. Part: The Foundations of the sociology of knowledge)

Klassifikation und Wissenssoziologie: Durkheim und Mauss neu betrachtet (Durkheim and Mauss revisited: Classification and the sociology of knowledge). Von David Bloor

Wissen und Nutzen: Implikationen für die Soziologie des Wissens (Knowledge and utility: Implications for the Sociology of Knowledge). Von Michael Mulkay

III. Teil: Wissenssoziologie, Erkenntnistheorie und Philosophie (Sociology of knowledge, epistemology and philosophy)

Zur Strategie einer Soziologie der Erkenntnis (Strategies toward a sociology of cognition). Von Günter Dux

Die Ausdifferenzierung von Erkenntnisgewinn: Zur Genese von Wissenschaft (The differentiation of advances in knowledge: The Genesis of science). Von Niklas Luhmann

Die Eigenart der Geschichtsphilosophie aus der Sicht der Wissenssoziologie (The specificity of philosophy of history from the aspect of the sociology of knowledge). Von Agnes Heller

Wissenssoziologie der Naturwissenschaften: Bedingungen und Grenzen ihrer Möglichkeit (Sociology of knowledge of the natural sciences: Limits and possibilities). Von Gad Freudenthal

IV. Teil: Theoretische Perspektiven in der Wissenssoziologie (IV. Part: Theoretical perspectives of the sociology of knowledge)

Über den konventionellen Charakter von Wissen und Erkenntnis (On the conventional character of knowledge and cognition). Von Barry Barnes

Die dreifache Legitimation: Ein Modell für eine Soziologie des Wissens (The triple legitimation: A model of the sociology of knowledge). Von Gérard Namer

Soziokulturelle Evolution: Ein epistemologisches Modell für die Studie menschlicher Geschichte (Socio-cultural evolution: A model for the analysis of human history). Von Bernd Baldus

Die Fabrikation von Wissen: Versuch zu einem gesellschaftlich relativierten Wissensbegriff (The fabrication of knowledge: Toward a socially relativized conception of knowledge). Von Karin Knorr

Motivation und Wissen (Motivation and knowledge). Von Friedrich Sixel

V. Teil: Wissen und Macht (V. Part: Knowledge and power)

Über Kultur und Macht: Die moderne Kultivierung des Wissens (On culture and power: The modern husbandry of knowledge). Von Juan Corradi

Gedankliche Radikalität und gesellschaftliche Macht (Cognitive radicalism and societal power). Von Johannes Weiß

VI. Teil: Geschichte und Kritik der Wissenssoziologie (The history and criticism of the sociology of knowledge)

Wissenssoziologie als Selbstkritik (The sociology of knowledge as self-criticism). Von Werner Stark

Saint-Simon als Wissens- und Wissenschaftssoziologe (Saint-Simon as a sociologist of knowledge and science). Von Martinus Enge

Gedanken zu Max Schelers Erkenntnis und Arbeit (Thoughts on Max Schelers Erkenntnis und Arbeit). Von Kurt Wolff

Max Scheler: Eine wissenssoziologische Alternative (Max Scheler: An alternative program for the sociology of knowledge). Von Ilja Srubar

Mannheims Soziologie des Wissens und C.W. Mills Wissen von der Soziologie (Mannheim's sociology of knowledge and Mills' knowledge of sociology). Von Irving Horowitz

Lucien Goldman als Leser Karl Mannheims (Lucien Goldman as a reader Karl Mannheim's). Von Joseph Gabel

VII. Teil: Empirische Wissenssoziologie (VII. Part: Empirical sociology of knowledge)

Kausalität, Anschaulichkeit und Individualität. Oder: Wie Wesen und Thesen, die der Quantenmechanik zugeschrieben, durch kulturelle Werte vorgeschrieben wurden (Kausalität, Anschaulichkeit und Individualität). Von Paul Forman

Strukturen des Wissens: Dinge, Geld, Personen (Structures of Knowledge: Things, money, persons). Von Robert Cumming

Das Problem Lehre von der Ideologie in der Kunstsoziologie (The problem of ideology in the sociology of art). Von Janet Wolff

Verwissenschaftlichung der Geburtshilfe (Scientification of obstetrics). Von Gernot Böhme

Zur Soziologie der formalen Logik (Toward a sociology of formal logic). Von W. Balducci

MEETING REPORTS

Austrian Recipe

by

Trevor Pinch

Ingredients

48 Sociologists of Science representing 19 different countries; 1 conference programme of 16 papers; 2 conference organisers (J. Gotschl--University of Graz; P. Weingart--University of Bielefeld); 1 Austrian castle; 1 Sponsor (Ludwig Boltzmann Forschungsstelle); copious supplies of food and drink.

Instructions

Mix ingredients well.

Cooking Time

3-4 days and nights.

Outcome

ISA/PAREX Conference on Sociology of Science, Deutschlandsberg, Austria, September 25-29, 1980. Most of the papers presented were of work in progress or research recently completed. The many different approaches and traditions represented indicated that sociology of science continues to flourish in Europe. Perhaps the nicest taste in the mouth left by this meeting was the feeling that at last European sociologists of science are starting to build up informal networks to go alongside the more public face of their research efforts. All credit for this must go to this unique Austrian recipe.

For those interested in the fine details of culinary preparation, we reprint the conference programme below:

Historical Studies: Social History of Science

1. P. Wright, "On the Boundaries of Science in Seventeenth Century England"
2. J.L. Fabiani, "Les représentations de l'activité scientifique dans l'enseignement philosophique français (1880-1914)"
3. Z. Kowalewski, "Cultural Order and the Types of Sciences"

The Constructivist Approach to Science

1. H.M. Collins, "The Social Function of Calibration in Experimental Research"
 2. T. Pinch, "The Three-Sigma Enigma"
 3. Y. Minkov, "On the Interrelation Consensus-Dissensus in Scientific Knowledge"
- Additional papers by T.H. Schnelle and R.G. Stansfield.

Theoretical and Methodological Issues in the Sociology of Science

1. N. Yahiel, "Sociology of Science in Bulgaria. Some Theoretical Premises, Problem Areas and Tendencies"
2. G. Kamphausen, N. Ulitzka, "Science Studies: Big Studies--Little Science?"

3. G. Lemaine, "Normal Science and Hypernormal Science"

Additional papers by L. Cannavo, J. Farkas, U. Geibler/K. Lüdtke, J. Tripoczky, M. Nowakowska, G. Paton, V. de Vecchi, C. Woesler, Yahiel/Petkova, Y.R. Taylor, I. Magyari-Beck, R. Whitley

Science and its Socio-Political Context

1. M. Bertilsson, "Ethics of Inquiry: Professionalization or Politicization"
2. E. Barker, "The Role of Science in the Religious Beliefs of the Contemporary West"
3. Barmark/Elzina/Wallen, "The Transition from Vocational Craft-based Knowledge to Scientific Knowledge: Nursing Care"
4. G. Losito, "First Result of a Sociological Inquiry on a National Scientific Research Center"
5. R. Sala-Gomezgil/Chavero/Tobar, "Scientists and Scientific Activity in Mexico: Communication and Diffusion"
6. D. Wahl, "Science in Developing Countries"

Additional papers by M. Fourniér, A. Harazthy/V. Stolte-Heiskanen/L. Szántó, D. Mackenzie.

AMERICAN SOCIOLOGICAL ASSOCIATION Annual Meeting, August, 1980. Abstracts of papers presented in sociology of science session:

SOCIOLOGY OF SCIENCE

"Experts and Specialization: Vertical Vs. Horizontal Differentiation of Science"
James R. Beniger and Cathy Leeco, Princeton University

Despite the increasing prominence of experts in post-industrial society, their role has largely been ignored by social scientists. This paper outlines several approaches to the subject, including the historical development of the concept of "expert" in relation to structural differentiation, specialization of knowledge, and integration in society. Specialists are viewed as results of horizontal differentiation, experts of vertical differentiation. Historical evidence is presented that the words "specialist" and "expert" (and derivatives) first appeared at the time (1825-65) of the earliest division of intellectual labor, and that the former diffused more quickly through professions and areas of knowledge. The number of experts is shown to be proportionate to the number of specialists, while the ratio of experts to specialists may be increasing, with implications that: (1) the importance of individual experts is decreasing; (2) the aggregate importance of experts as a group is increasing; (3) checks on the competence of experts are diminishing; (4) as scientific knowledge differentiates, its "generalist" component, ranging from popularizers to synthesizers, increases; and (5) reallocations in favor of new areas is increasingly restricted, while incentives for individuals to participate in these areas decreases.

"Effects of Changes in Funding Upon Rates of Scientific Knowledge Growth"
Steven F. Cohn, University of Maine

It is widely believed that changes in levels of basic research funding have major impacts upon rates of scientific knowledge growth. However, there is

little systematic data on this point. This study represents an initial attempt to fill this knowledge gap. The study indicates for the field of topology the extent to which changes in funding levels are correlated with changes in the rate of knowledge growth.

The rate of knowledge growth is defined as the rate at which important papers are produced. The study proposes a model on the effects of changes in funding, manpower and research facilities upon the rate of knowledge growth. The model implies that, within wide limits, funding changes will not effect knowledge growth rates in the short term. In the long term funding changes are hypothesized to effect the rate of knowledge growth through their effects on the recruitment and training of highly qualified scientists. The extent of medium term effects is hypothesized to be dependent upon the structure of funding and the utility of research done by less eminent scientists.

The rate of knowledge growth in topology is measured by the judgments of scientific consultants of the rate at which important papers have appeared between 1956 and 1976. The consultants were chosen to represent the diverse foci of research within topology. Data on funding and manpower changes have been obtained from public records. Correlation, multiple regression and distributed lag procedures are used to estimate the effects of funding level changes. Additional analyses estimate the size of the contribution of the research of less qualified scientists to the production of important papers.

"On the Predictive Power of Theory Group Affiliation: An Indirect Test of the Presence of Consensual Standards in Sociology"

William E. Snizek, E.R. Fuhrman and Michael R. Wood, Virginia Polytechnic Institute and State University

Given the importance of rationality and objectivity in the conduct of science, the present study analyzes the affect of theory group affiliation upon the evaluative content of book reviews in sociology. Analysis of 219 book reviews written on 79 major works in sociology over a 30 year period reveals no significant differences in the evaluative content of reviews written by reviewers affiliated with the same, when compared to those affiliated with a different theory group than that of a book's author. Some evidence is presented which indicates that members of one's own theory group are the most critical of an author's work. The implications of these findings and general mode of inquiry are discussed within a sociology of science framework.

"Research Productivity in Academia: A Comparative Study of the Sciences, Social Sciences, and Humanities"

Richard A. Wanner, University of Calgary; Lionel S. Lewis, State University of New York, Buffalo; David I. Gregorio, State University of New York, Geneseo

Though a significant number of studies of scholarly productivity have accumulated in the past decade, the majority have focused on limited samples of specialists in one or only a few scientific disciplines, making it difficult to generalize findings across scientific specialties, let alone across more dissimilar academic disciplines. This paper tests a model incorporating both academic and nonacademic factors as determinants of productivity with samples of physical and biological scientists, social scientists, and humanists taken from the 1972-73 American Council on Education survey of faculty at U.S. institutions of higher learning. We find considerable variation in the process determining productivity both across the broad disciplinary categories as well

as within categories when article and book productivity are compared. We also examine the relative influence on productivity of the disciplinary context and attributes of scholars in these disciplines. Our evidence suggests that the decisive edge that physical and biological scientists enjoy over social scientists and humanists in article productivity is largely the result of a favorable disciplinary milieu, while the lower rate of productivity among humanists is decisively determined by their attributes.

SCIENCE & TECHNOLOGY INDICATORS CONFERENCE held at the Château de la Muette, Paris, from 15th-19th September 1980 and sponsored by the Organisation for Economic Co-operation and Development, Directorate for Science, Technology and Industry. Papers presented at Workshop III:

"Bibliometric Indicator Series in US Science Indicators Data Base"
Francis Narin and Mark P. Carpenter, Computer Horizons, Inc., Cherry Hill, N.J.

"What Citation Counts Cannot Count"
Saunders Mac Lane, Department of Mathematics, The University of Chicago, Chicago, Illinois 60637

"A Methodology for Assessing the Scientific Performance of Research Groups"
John Irvine and Ben R. Martin, Science Policy Research Unit, University of Sussex, United Kingdom

"A Family of Research Indicators Derived from a Bibliometric Analysis"
James MacAulay, Science Council of Canada

"Some Remarks on Publication Counts as a Measure for the Output of Research"
A. van Heeringen, Dutch Advisory Council for Science Policy, The Hague, The Netherlands

"Assessing Basic Research: Some Partial Indicators of Scientific Progress"
Ben R. Martin and John Irvine, Science Policy Research Unit, University of Sussex, United Kingdom

"The Economic Effects of Big Science: The Case of Radio Astronomy"
John Irvine and Ben R. Martin, Science Policy Research Unit, University of Sussex, United Kingdom

"Citation Tracing of Key Publications as a Bibliometric Indicator of the Cognitive Dynamics of a Scientific Specialty"
Marc De Mey, University of Ghent, Belgium

"Tracking Scientific Specialities: Indicator Applications of Time Series Co-Citation Clusters"
H. Roberts Coward, Institute for Scientific Information, Philadelphia, PA.

"Periodisation of Insecticide History Using Bibliometric Indicators"
Harry Rothman and George Lester, Technology Policy Unit, University of Aston, Birmingham, United Kingdom

SOCIAL STUDIES OF LABORATORY LIFE SYMPOSIUM, sponsored by The Center for The Study of The Human Dimensions of Science & Technology and the Office of the Provost, Rensselaer Polytechnic Institute; Corporate Research and Development Center, General Electric Company and Hudson-Mohawk Association of Colleges and Universities, was held at Rensselaer Polytechnic Institute in Troy, New York, and the Corporate Research and Development Center of the General Electric Corporation, Schenectady, New York on Friday, November 14 and Saturday, November 15, 1980. Papers presented:

"Constructing Context in Science"

Steve Woolgar, Brunel University, Uxbridge, Middlesex, UK; Visiting Professor,
Department of Sociology, McGill University

"Laboratory Shop Talk"

Michael Lynch, Department of Sociology, UCLA

"The Problem of Micro- and Macro-Relations in Scientific Practice"

Karin Knorr, Institute for Advanced Studies, Vienna; Visiting Professor,
Department of Sociology, University of Pennsylvania

"Inquiry into Inquiry: The Case of Wildlife Biology"

Doug McKegney, Department of Communication, Simon Fraser University

"Studying Scientists at Work: The Challenges and Difficulties"

June Goodfield, Rockefeller University

"Colloids, Chemists, and Outside Agitators: Delights and Dilemmas of Laboratory Life Research"

Sal Restivo, Department of Sociology, and Michael Zenzen, Department of
Philosophy, RPI

"Putting Facts Together: A Study in Scientific Persuasion"

John Law, University of Keele, Keele, Staffs, UK; Visiting Professor,
Department of Sociology and Anthropology, University of New Hampshire

"Inside Medical Research: Reports on Research in Progress"

Robert Baker, Department of Philosophy, Union College; and Barry Hoffmaster,
Department of Philosophy, University of Western Ontario

Future Meetings

The 1981 annual meeting of the HISTORY OF SCIENCE SOCIETY will be held in Los Angeles, December 27-30, 1981 (jointly with the American Historical Association). Program co-chairs are David Lindberg and Ronald Numbers. Local arrangements chair is Robert Frank. Those wishing to organize or participate in regular sessions should write to Professor Lindberg or Professor Numbers, Department of the History of Science, South Hall, University of Wisconsin, Madison, Wisconsin 53706; or call them at (608/262-1406--Lindberg) or (608/262-1460--Numbers). Preliminary contact is advised as soon as possible; final proposals are due by March 1. Proposals for 15-minute work-in-progress papers (including an abstract and brief vita) are due by May 1.

MICHIGAN TECHNOLOGICAL UNIVERSITY is hosting a SYMPOSIUM focused on POWER, TRANSPORT, AND PUBLIC POLICY IN MODERN AMERICA. The session titles are: The Ideology and Culture of Energy Production; Communities, Energy, and Transport: Economic Growth and Decline; Energy, Transport, and the Social Organization of Communities; Government and Policy; and a Panel, which will provide an overview. The date for the symposium is September 25-27, 1981. For additional information and local arrangements contact: George H. Daniels and Mark H. Rose, Department of Social Sciences, Michigan Technological University, Houghton, Michigan 49931 (906/487-2113).

CONFERENCE ON WOMEN IN THE PROFESSIONS: SCIENCE, SOCIAL SCIENCE, AND ENGINEERING. A conference on "Women in the Professions: Science, Social Science, and Engineering" will be held at Purdue University on March 20-21, 1981.

The major objectives of the conference are to review the opportunities for women, assess the current status of professional women, identify factors affecting their success, and generate methods for increasing the visibility and influence of professional women. The organization of this conference comes at a time when the combination of economic pressures and social attitudes makes it important to critically evaluate the changes of the 1970s and to establish new goals for the 1980s.

This conference is the first that focuses on Women in Science, Social Science, and Engineering to be held in the Mid-West. Women who are nationally recognized for their outstanding contributions in these disciplines have been invited as speakers and workshop leaders during the Symposium. The proceedings of the conference will be published, providing a comprehensive collection of the talks and discussions to serve as a framework for future conferences.

For further information and application forms, contact:

Cary Bowditch
Division of Conferences
Stewart Center
Purdue University
West Lafayette, Indiana 47907
Telephone: (317) 749-2533

Intended Purposes of the Proposed Conference on "Women in the Professions: Science, Social Science, Engineering" to be held at Purdue University, March 20-21, 1981.

The primary purpose of this conference is to generate new ideas for

1. improving the work environment for professionals in general and women professionals in particular, in Science, Social Science, Engineering.
2. increasing the participation of women in the science related workforce and for enhancing their opportunities for success and advancement in their careers,
3. increasing the visibility and influence of women in the scientific community.

Secondary purposes are to

1. promote networking among women in education, government and industry that will enhance their opportunities,
2. offer encouragement and emotional support to practicing professional women in science related areas by providing them with opportunities to share experiences about and advice for coping in a predominantly male environment,
3. to raise the consciousness of faculty, administrators and other staff on the Purdue University campus about the roles of women working in Science, Social Science and Engineering, and by inference, also about the roles of women in all professional areas.

In order to accomplish these objectives, and to provide background information, the conference participants will

1. survey the history of opportunities for women in the United States to enter into professional careers in these areas and to document the successes and failures of women choosing these careers,
2. assess the current status of women desiring to enter these professions with regard to their proportion in the total available relevant workforce and the relative quality of their educations,
3. assess the current status of women practicing professionals in Science and Social Science related fields with regard to their relative accomplishments and influence on their peers,
4. discuss the impact of legislation and employment opportunities for women and their changing patterns of employment, and
5. evaluate the impact of scientific, social scientific and pseudo scientific theories on the relative status of women in these professions.

Several outstanding women have agreed to participate as major speakers at this conference. Those who have agreed to address the conference are:

Professor Ruth Hubbard, Biology Laboratories, Harvard University

Professor Anne Briscoe, Department of Medicine, Columbia University

Ms. Betty Vetter, Executive Director, U.S. Scientific Manpower Commission

Dr. Jewel Plummer Cobb, Dean, Douglass College

Professor Donna Haraway, Department of History of Science, University of California in Santa Cruz

Ms. Naomi McAfee, Manager, Design Assurance, Westinghouse Corporation

Dr. Esther Hopkins, Patent Attorney, Polaroid Corporation

Dr. Lilli Hornig, Executive Director, Higher Education Resources Services

Ms. Martha Trescott, Research Associate on History of Women in Engineering, School of Engineering, University of Illinois

Dr. Jesse Bernard, Professor Emerita of Sociology, Pennsylvania State University

Dr. Rachel Rosenfeld, National Opinion Research Institute, University of Chicago

Professor Mildred Dresselhaus, Department of Electrical Engineering, MIT

Invitation to Participate

An NSF sponsored workshop on philosophy of science and science policy was held in Washington, D.C. on May 22-23, 1980, to lay the groundwork for a sustained long-term interaction between philosophers of science and persons in various federal offices and agencies dealing with science/technology policy. The results were very promising. One of the meeting's recommendations is to establish a working list of philosophers of science interested and able to interact with science policy analysts. If you are a philosopher who is open to participating in further, more substantive projects along these lines, and if you wish to have your name added to those who participated in the workshop (Robert Baum, Ronald Giere, Lewis Gray, Sandra Harding, Jaakko Hintikka, Lynn Lindholm, Ruth Macklin, Alex Michalos, Kenneth Schaffner, John Schumacher, Stephen Stich and Frederick Suppe), contact either John Schumacher, Center for the Study of the Human Dimensions of Science and Technology, Rensselaer Polytechnic Institute, Troy, New York 12181, or Lynn Lindholm, Philosophy Department, University of New Hampshire, Durham, New Hampshire 03824. Please include a brief description of your areas of competence and interest, both in philosophy of science and in science policy. We will be using this list as a resource for future activities.

Call for Papers

INFORMATION TRANSFER/TECHNOLOGY TRANSITION. The Technology and Society Division and the Management Division of the American Society of Mechanical Engineers are cosponsoring a session at the ASME Winter Annual Meeting in November 1981 on Information Transfer/Technology Transition. It will address the interface between the Research, Exploratory Development, Advanced Development, Manufacturing and Production units of an organization and the continuing flow required to realize optimum benefits from research in the production process. To work best the cycle must be completed by including feedback from the production unit to the research unit.

Full benefits will be realized only when the flow of new information/technology goes from the research end to the production end of the spectrum and is actually used in production items. There is need for new and improved techniques/methods/procedures to insure that:

- (a) New technology is made known and available to the ultimate user--production.
- (b) The research and development facilities know what the technology needs are in the manufacturing/production facilities.
- (c) The full cycle is completed and flow is in both directions.
- (d) The government and industry sectors are involved in productive discussions.

Papers are solicited in these or other related areas pertinent to the subject area. Emphasis should be on means by which increased and improved Information Transfer/Technology Transition can be realized. Acceptable papers will be published in a bound volume, separately as an ASME reprint or in an appropriate Journal. If response indicates enough interest, a panel session may be arranged.

Prospective authors and panel members are invited to submit abstracts of proposed papers by March 15, 1981 to: Clark E. Beck, P.E.; AFWAL/FIBTC; Wright-Patterson AF Base, Ohio 45433, (513)255-2274. Abstracts should be between 200 and 500 words in length with an indication of the type of presentation (paper with presentation or panel participant) and author(s) name(s), organization, address and phone number. Full manuscripts will be required no later than 1 June 1981. Submitters of accepted abstracts will be notified by April 7, 1981.

Degree Program

THE MASTER OF SCIENCE DEGREE PROGRAM IN TECHNOLOGY AND SCIENCE POLICY (TASP) is located in the School of Social Sciences of Georgia Institute of Technology. The degree is designed for students and professionals with technical and scientific backgrounds. Course work, research, and internships will focus on the identification and analysis of policy issues emerging from technological and scientific developments in contemporary societies. Students will prepare for technical and staff positions in government agencies and private firms. Graduates will be involved in tasks such as preparing technology assessments and environmental impact statements, formulating corporate responses to governmental policies affecting energy and the environment, evaluating the

effects of governmental and corporate policies affecting technological innovation, and dealing with problems of transferring technologies to developing nations.

Degree requirements include at least 33 hours of course work as well as a thesis. Course work is centered on an intensive 18-hour multidisciplinary core curriculum involving theory and both quantitative and qualitative methodology plus an elective concentration of at least 15 hours designed for the individual student's career needs. The thesis requirement in many cases will place the student in a work environment similar to his/her anticipated professional employment

Applications for the 1981-82 academic year are welcome. For further information, write: Professor F.A. Rossini, Director, TASP Program, School of Social Sciences, Georgia Institute of Technology, Atlanta, Georgia 30332.

Honors

The History of Science Society, founded in 1924, seeks to foster interest in the history of science and its social and cultural relations, to provide a forum for discussion, and to promote scholarly research in the history of science. The Society is an international professional group of about 1600 individual members whose activities include the publication of its journal ISIS and an annual meeting, last year held in Toronto, October 17-19, 1980.

The History of Science Society is pleased to announce that

Gerald R. Holton

has been elected vice president and president elect of the Society. Following a two-year term as vice president, Holton will become the president of the History of Science Society on January 1, 1983. Gerald Holton is currently Mallinckrodt Professor of Physics and Professor of the History of Science at Harvard University, and concurrently James R. Killian Visiting Professor at Massachusetts Institute of Technology.

For 1981 the Executive Committee will also include: Frederic L. Holmes, President; Sally Gregory Kohlstedt, Secretary; Seymour Mauskopf, Treasurer; and Arnold Thackray, Isis editor. New Council Members are: Bernard Finn, William Provine, Cecil Schneer, Brigitte Schroeder-Gudehus, and Spencer Weart.

New Position

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY. SCIENCE STUDIES: Visiting Assistant Professor in Center for the Study of Science in Society for academic year 1981-82, to conduct research in science studies and assist in program development. The Center organizes multidisciplinary studies of science and technology in their social and cultural contexts. Research projects addressing ethical issues in biology, the physical sciences and engineering; social impact of energy development; and similar topics are currently being developed. Planning for a graduate program in science studies is also underway. Candidates must have degree in hand by September, 1981. One year appointment with possibility of renewal. Salary competitive. Applications, including brief description of current research and complete dossier, due by 1 April 1981 to Arthur Donovan, Director, Center for the Study of Science in Society, Derring Hall, Virginia Polytechnic Institute and State University, Blacksburg, VA 24061. EO/1

HUMANITIES ENDOWMENT ANNOUNCES
1981 Summer Seminar Program for College Teachers

WASHINGTON, D.C.--The National Endowment for the Humanities (NEH) has announced the 1981 schedule and application deadline for the Agency-sponsored Summer Seminars for Teachers Program that annually supports approximately 115 eight-week sessions nationwide for some 1400 college teachers.

The summer program is offered to two-year, four-year, and five-year college and university teachers to provide advanced study and research opportunities in the teachers' own fields or in fields related to their interests.

Each of the seminars accommodates 12 teachers. Participants receive a stipend of \$2,500 for travel to and from the seminar site, and for research and living expenses.

The sessions, held at institutions which have major libraries suitable for advanced research work, are directed by distinguished scholars whose academic interests coincide with the seminar topic.

Eligible applicants must be full- or part-time teachers at private or state undergraduate institutions, or at junior or community colleges.

The 1981 NEH Summer Seminar brochure listing seminar topics, dates, locations, and directors may be obtained in January, 1981 from department chairpersons at higher education institutions across the country [Two seminars highly relevant for members of 4S are described below.--Eds.].

Childress, James F.
Department of Religious Studies
University of Virginia
Charlottesville, Virginia 22903

Principles and Metaphors in Biomedical Ethics

June 15 - August 7, 1981

Major writings in biomedical ethics tend to emphasize principles and rules, on the one hand, or images, metaphors, and analogies, on the other. This seminar will offer a systematic account of the way practical and theoretical discourse is shaped in biomedical ethics by the differing emphases of these related approaches. Various principles and metaphors will be used to explore major problems such as euthanasia, the allocation of resources, and the authority of professionals, and to subject the most important recent literature (Fried, Gustafson, Ramsey, and Veatch among others) to critical analysis. Actual and hypothetical cases will be examined. Applications are invited from teachers of religious studies, philosophy, sociology, and the sciences, as well as from those teachers in other fields with an interest in biomedical ethics.

Ferguson, Eugene S.
Department of History
University of Delaware
Newark, Delaware 19711

Engineers and Conflict: An Historical Analysis

June 15 - August 7, 1981

Social conflicts that accompany large engineering projects--nuclear power plants, urban highways, the SST--have become more visible as citizen groups have questioned the authority and wisdom of technical experts. Such conflicts have their roots in the nature of engineering, as it has developed in the West since the fifteenth century. After opposing views of current projects are developed and argued, the seminar will trace the rise of engineering in Europe and America, noting the characteristics that historically have led to conflict. Due to the importance of engineering to the quality of life, of central concern in this seminar will be the nature of engineering and its compatibility with an open, pluralistic society. The seminar is open to teachers of engineering and history interested in the relationship of technology and society, as well as teachers in other disciplines whose teaching or research touches on the issues of the topic.

New Journal

BULLETIN OF SCIENCE, TECHNOLOGY & SOCIETY. An international journal devoted to the publication of short articles, news of the STS community and regular educational material.

Editor-in-Chief, Rustum Roy; Co-Editors, Jacques Ellul, S.L. Goldman, and W.F. Williams

Aims & Scope: The Bulletin of Science, Technology & Society is designed to serve as wide a spectrum of the STS community as possible. This includes newly emerging faculty groups on university and college campuses who are teaching integrative STS subject matter; professionals in government, industry and universities, ranging from philosophers and historians of science to social scientists concerned with the effects of science and technology and scientists and engineers concerned with the study and policy-making aspects of their own craft; and the interested general reader.

The Bulletin will feature short articles or letters of a general nature and provide a venue for scholarly debate or discussion on selected issues in STS. The editors and associate editors will select suitable topics and invite authors to present a variety of viewpoints on them.

The Bulletin will contain professional society meeting announcements and news, and will exhibit some of the flavor of the News and Comments sections of Science and Nature. It will supplement (and indeed may eventually replace) the numerous newsletters in different sub-areas of STS.

In addition, it will help in a small way to create and shape a new community of those actively concerned about the interaction of science, technology and society. The Bulletin is a complementary publication to the Pergamon journal Technology In Society, which publishes major research articles and symposia directed to a more specialized professional audience.

For the academic community, the Bulletin will be a unique vehicle for the acquisition of up-to-date, relevant teaching materials. Papers or instructional "modules" which have been designed and/or formatted specifically for classroom use, or which can be used as required outside reading in courses, will be published on a regular basis. Outlines of course and related bibliographic materials will also be included.

The publisher has arranged subscription pricing to institutions to include free reproduction rights. This new, fast-growing method of on-site, on-demand reproduction provides reviewed teaching materials at costs well below traditional textbook expense. Course outlines, curricula descriptions and reviews of all kinds of educational materials (i.e., in various media) will be included.

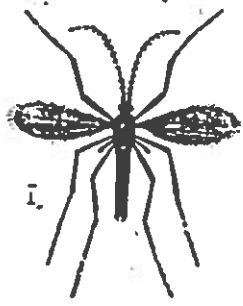
Call For Papers: The editors welcome the submission of appropriate manuscripts, which should be in the following form: short articles of relatively general interest in the STS field; news items regarding public and scholarly events in the area of STS; and instructional modules ready to use in STS courses. Free reproduction rights for the latter will be provided for certain subscribers.

Appropriate subjects include: the place of science and technology in societies; the impact of technology upon human values and religious insights; the history of science; technology, science and public policy; technology assessment; and the public understanding of technology and science.

Manuscripts may be written in English, French or German, but all should contain an abstract (ca. 100 words) in English, along with complete address(es) and short (60 word) biography of author(s). Manuscripts should be submitted in duplicate (including figures), typed single-spaced on bond paper in an area measuring 6 1/2 x 9 1/2" (165 X 240 mm) and should not exceed 12 pages. During the first year, camera-ready typing requirements for manuscript submission will not be rigidly enforced; after that, reproduction will be from author's manuscript submitted in a prescribed format.

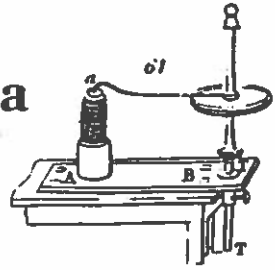
Authors are invited to submit contributions directly to the associate or co-editor of their choice (if they prefer open reviewing and personal communication of their manuscripts); or to the editorial office: 203 Materials Research Laboratory, The Pennsylvania State University, University Park, Pennsylvania 16802 (if they prefer anonymous review).

[Announcing a New Newsletter--Eds.]



History of Science in America

NEWS AND VIEWS



Vol. I, number 1

September, 1980

Coordinating Group

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This newsletter is a social experiment. It grew out of discussions among the coordinating group beginning at the Madison meeting of the History of Science Society in 1978, and continued in New York in 1979. We were drawn together by a sense of common interest, and a growing realization that the history of American science is, at the very least, a subdiscipline within the history of science. We also feel strong ties with American social and intellectual history in general, and yet with a special focus and a common concern to illuminate the career of science in its American setting. If we are not ready for a separate society or a special journal, we have felt the need for some more effective means of communication, beyond our informal gatherings at larger meetings, or letters exchanged among friends with special needs.

At the outset, the newsletter is intended only to appear as an occasional publication, *at least* once a year. It can only succeed if there is a felt need among its potential readers, who also must be willing contributors as well. It is envisioned as a means of accomplishing two ends--to exchange news, and to circulate views. Given the relative infrequency of appearance, this communication will have to concede the most timely news to other organs emanating from more formal groups.

Among the possible categories of content are the following:

1. Descriptions or outlines of courses; summaries or reviews of conferences, meetings, committee reports and other projects; announcements of the granting of awards, prizes, research funds, etc.; announcements of new, long-term projects, the establishment of new societies or facilities, and the like.
2. Book reviews, and announcements of new books, including works on the border line with other historical fields.
3. Announcements of recent manuscript or archival accessions.
[If any reader(s) would be willing to accept responsibility for preparing such a regular feature for News and Views, please contact the editor.]
4. Queries regarding availability of sources, special expertise, etc.

5. Descriptions or reviews of manuscript and archival resources, approached either in terms of single collections, multiple collections relating to a particular subject, or the holdings of an individual repository.
6. Short descriptive or critical articles on methods, sources, interpretations, propositions for general discussion, essay reviews, etc. Items of this sort should be a focal point for News and Views--a place where ideas can be tried out on colleagues for feedback or for their information, without a commitment to a more formal publication medium.
7. Brief descriptions of research in progress. This can be an important part of News and Views, and probably could be the point of origin of many contributions to categories 4, 5, and 6 above.
8. Responses to any items previously published in News and Views.
9. The distribution of a directory. This item appears last in the list, but must be the first step, before anything else is done. In fact, if nothing else other than a directory appears, it may prove an invaluable help to researchers frequently isolated from one another, and will justify these efforts. On a later page, instructions are given for the preparation of directory entries. Please return your entry as soon as possible. Items for other categories also are welcome at any time.

Boundaries

The borders of News and Views are both conceptual and real. The focus is intended to be the study of science within the social, political and cultural context of the past, as that multi-faceted experience was played out within the American geographical setting. It is hoped that *science* as used here will not discourage the interest or involvement of persons whose primary interests lie in technology, medicine, the sociology of science, science and current politics, etc. The focal points, however, are intended to be science, and the past. Beyond these initial guideposts, the definition of content can be interpreted very broadly. In time, the readership itself should define what interests will be included. Hopefully, internalists and externalists will meet here on an equal plane, where a much needed dialogue may ensue.

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Preparation of News and Views is carried out as a volunteer activity. However, help will be needed with printing and mailing costs. For this purpose, an initial \$5.00 contribution is urged. Checks should be made payable and sent to the editor. In the event this venture does not prove successful, any money left over will be donated to the History of Science Society. On the other hand, if we *are* successful, we will be back for more money.

Distribution

This first issue of News and Views has been sent chiefly to persons listed in the History of Science Society membership directory as interested in American science. *Please bring this newsletter to the attention of other persons who might not have been contacted* in that way. The coordinating group is anxious to give the newsletter as wide a distribution as possible, to include graduate students as well as advanced scholars. The planned directory will be effective to the extent that it can show the range of individuals and perspectives currently at work on the history of science in America.



4S Society for Social Studies of Science

The 4S Newsletter is published four times each year at the Department of Sociology, Southern Illinois University, Carbondale, Illinois 62901, and sent to all members of the Society for Social Studies of Science. Membership is on a calendar year basis. Membership dues (\$15 for professionals, \$5 for students) and institutional subscriptions (\$25) should be sent to: The Secretary/Treasurer, 4S, Department of Sociology, Indiana University, Bloomington, Indiana 47405.

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4S

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