

EXPLORATIONS IN SOCIOLOGY

British Sociological Association conference volume series

- | | | |
|---|----|---|
| Sami Zubaida (editor) | 1 | <i>Race and Racism</i> |
| Richard Brown (editor) | 2 | <i>Knowledge, Education and Cultural Change</i> |
| Paul Rock and Mary McIntosh (editors) | 3 | <i>Deviance and Social Control</i> |
| Emanuel de Kadt and Gavin Williams (editors) | 4 | <i>Sociology and Development</i> |
| Frank Parkin (editor) | 5 | <i>The Social Analysis of Class Structure</i> |
| Diana Leonard Barker and Sheila Allen (editors) | 6 | <i>Sexual Divisions and Society: Process and Change</i> |
| Diana Leonard Barker and Sheila Allen (editors) | 7 | <i>Dependence and Exploitation in Work and Marriage</i> |
| Richard Scase (editor) | 8 | <i>Industrial Society: Class, Cleavage and Control</i> |
| Robert Dingwall, Christian Heath, Margaret Reid and Margaret Stacey (editors) | 9 | <i>Health Care and Health Knowledge</i> |
| Robert Dingwall, Christian Heath, Margaret Reid and Margaret Stacey (editors) | 10 | <i>Health and the Division of Labour</i> |
| Gary Littlejohn, Barry Smart, John Wakeford and Nira Yuval-Davis (editors) | 11 | <i>Power and the State</i> |
| Michèle Barrett, Philip Corrigan, Annette Kuhn and Janet Wolff (editors) | 12 | <i>Ideology and Cultural Production</i> |
| Bob Fryer, Alan Hunt, Doreen MacBarnet and Bert Moorhouse (editors) | 13 | <i>Law, State and Society</i> |
| Philip Abrams, Rosemary Deem, Janet Finch and Paul Rock (editors) | 14 | <i>Practice and Progress: British Sociology 1950–1980</i> |
| Graham Day, Lesley Caldwell, Karen Jones, David Robbins and Hilary Rose (editors) | 15 | <i>Diversity and Decomposition in the Labour Market</i> |
| David Robbins, Lesley Caldwell, Graham Day, Karen Jones and Hilary Rose (editors) | 16 | <i>Rethinking Social Inequality</i> |

- Eva Gamarnikow, David Morgan, June Purvis and Daphne Taylorson (editors) 17 *The Public and the Private*
- Eva Gamarnikow, David Morgan, June Purvis and Daphne Taylorson (editors) 18 *Gender, Class and Work*
- * Gareth Rees, Janet Bujra, Paul Littlewood, Howard Newby and Teresa L. Rees (editors) 19 *Political Action and Social Identity: Class, Locality and Ideology*
- * Howard Newby, Janet Bujra, Paul Littlewood, Gareth Rees, Teresa L. Rees (editors) 20 *Restructuring Capital: Recession and Reorganization in Industrial Society*
- * Sheila Allen, Kate Purcell, Alan Waton and Stephen Wood (editors) 21 *The Experience of Unemployment*
- * Kate Purcell, Stephen Wood, Alan Waton and Sheila Allen (editors) 22 *The Changing Experience of Employment: Restructuring and Recession*
- * Jalna Hanmer and Mary Maynard (editors) 23 *Women, Violence and Social Control*
- * Colin Creighton and Martin Shaw (editors) 24 *The Sociology of War and Peace*
- * Alan Bryman, Bill Bytheway, Patricia Allatt and Teresa Keil 25 *Rethinking the Life Cycle*
- * Patricia Allatt, Teresa Keil, Alan Bryman and Bill Bytheway (editors) 26 *Women and the Life Cycle*
- * Ian Varcoe, Maureen McNeil and Steven Yearley (editors) 27 *Deciphering Science and Technology: The Social Relations of Expertise*
- * Maureen McNeil, Ian Varcoe and Steven Yearley (editors) 28 *The New Reproductive Technologies*
- Stephen Kendrick, Pat Straw and David McCrone (editors) 29 *The Making of Scotland: Nation, Culture and Social Change*
- * Stephen Kendrick, Pat Shaw and David McCrone (editors) 30 *Interpreting the Past, Understanding the Present*
- * Helen Corr and Lynn Jamieson 31 *Politics of Everyday Life: Continuity and Change in Work and the Family*
- * Lynn Jamieson and Helen Corr 32 *State, Private Life and Political Change*

* *Published by Macmillan*

Deciphering Science and Technology

The Social Relations of Expertise

Edited by

Ian Varcoe

University of Leeds

Maureen McNeil

University of Birmingham

and

Steven Yearley

Queen's University, Belfast

M

MACMILLAN

© British Sociological Association 1990

All rights reserved. No reproduction, copy or transmission of this publication may be made without written permission.

No paragraph of this publication may be reproduced, copied or transmitted save with written permission or in accordance with the provisions of the Copyright Act 1956 (as amended), or under the terms of any licence permitting limited copying issued by the Copyright Licensing Agency, 33 – 4 Alfred Place, London WC1E 7DP.

Any person who does any unauthorised act in relation to this publication may be liable to criminal prosecution and civil claims for damages.

First published 1990

Published by
THE MACMILLAN PRESS LTD
Houndmills, Basingstoke, Hampshire RG21 2XS
and London
Companies and representatives
throughout the world

British Library Cataloguing in Publication Data
Deciphering science and technology: the social
relations of expertise.—(Explorations in sociology: 27).
1. Technological development. Social aspects
I. Varcoe, Ian II. McNeil, Maureen III. Yearley,
Steven IV. Series
306'.46

ISBN 978-0-333-46555-4 ISBN 978-1-349-20520-2 (eBook)
DOI 10.1007/978-1-349-20520-2

Series Standing Order

If you would like to receive future titles in this series as they are published, you can make use of our standing order facility. To place a standing order please contact your bookseller or, in case of difficulty, write to us at the address below with your name and address and the name of the series. Please state with which title you wish to begin your standing order. (If you live outside the United Kingdom we may not have the rights for your area, in which case we will forward your order to the publisher concerned.)

Customer Services Department, Macmillan Distribution Ltd,
Houndmills, Basingstoke, Hampshire, RG21 2XS, England.

Contents

<i>List of Tables and Figures</i>	vi
<i>Acknowledgements</i>	vii
<i>Notes on the Contributors</i>	viii
Introduction: The Centrality of Science and Technology <i>Ian Varcoe and Steven Yearley</i>	1
1 The State, War and Technical Innovation in Great Britain, 1930–50: The Contrasts of Military and Civil Industry <i>David Edgerton</i>	29
2 Who Gets Science Education? <i>Alison Kelly</i>	50
3 Conceptions of British Employment Restructuring in the 1980s <i>Anna Pollert</i>	74
4 Unhealthy Displays? Trade Unions, VDUs and the Social Construction of a Health Hazard <i>Peter Glasner and David Travis</i>	104
5 New Technology and the Self-Disciplined Worker in the Insurance Industry <i>David Knights and Andrew Sturdy</i>	126
6 The Automation of Grain-terminal Elevators in Canada <i>Joel Novek</i>	155
7 The Incorporation of Biotechnology into Plant-breeding in Cambridge <i>Andrew Webster</i>	177
8 The Story of \hat{f}_2 : Interest, Enrolment and Analogy in a Public Health Debate <i>Mel Bartley</i>	202
9 The Conduct of Medical Consultations in an Echocardiography Unit <i>Jeanne Daly, Ian McDonald and Evan Willis</i>	227
<i>Index</i>	247

List of Tables and Figures

Tables

2.1 Percentage of fourth-year pupils taking a given number of science subjects by sex, class and academic ability	58
2.2 Percentage of fourth-year pupils taking each combination of science subjects by sex, class and academic ability	60
2.3 Percentage of pupils taking each science subject within each sex, class and academic ability group	61
2.4 Eta and beta values for an analysis of enrolment in each science subject by sex, class and academic ability	62
2.5 Eta and beta values for the difference between groups in science achievement in the first, third and fifth years	64
2.6 Average achievement-rank of girls and boys from different ethnic backgrounds at 16-plus	67

Figure

4.1 Sets of actors in the negotiating complex	110
---	-----

Acknowledgements

This book, which is a pair with *The New Reproductive Technologies*, has its origins in the annual conference of the British Sociological Association in 1987, held in the University of Leeds on the theme 'Science, Technology and Society'. The papers are a selection from among those presented in Leeds.

The editors wish to thank all those who took part in the discussions at the Conference, and particularly the Association's officers, Dr Mike Milotte and Anne Dix, whose patient encouragement and advice helped to make the task of organisation such a pleasant and rewarding one. The editors would also like to thank Mrs Jeanne Bellovics and Dr Ann Varcoe for their assistance in typing the manuscript.

IAN VARCOE, *Leeds*
MAUREEN McNEIL, *Birmingham*
STEVEN YEARLEY, *Belfast*

Notes on the Contributors

Mel Bartley is a medical sociologist who has worked on the British Regional Heart Study and the Edinburgh Breast Screening Survey (the Forrest Report). Her special interests are in the history of public health and the relationship between research and policy. She wrote the paper in the present volume while studying for a PhD in the Department of Social Policy and Social Work at Edinburgh University.

Jeanne Daly is Research Officer on a study assessing the effectiveness of echocardiography with particular emphasis on social aspects of the test. The study is run jointly by La Trobe University and St Vincent's Hospital, Melbourne. She is co-editor of *Technology in Health Care: Policies and Politics* (1987).

David Edgerton is a Lecturer in the History of Science and Technology in the Centre for the History of Science, Technology and Medicine, University of Manchester. He has published articles on the history of science and technology in British industry and the armed services. He is currently completing a history of the British aircraft industry.

Peter Glasner is Professor and Head of the Department of Economics and Social Science at Bristol Polytechnic. He has published several books and a number of reports and articles in the areas of the sociology of religion, the sociology of science and science policy. He has been a Morris Ginsberg Fellow at the London School of Economics and an Honorary General Secretary of the British Sociological Association. He is currently working on an ESRC–Science Policy Support Group funded project on the Public Understanding of Science with colleagues in the polytechnic's Science and Technology Policy Centre.

Alison Kelly has been a teacher of mathematics and physics in Africa and a lecturer in the sociology of education at the University of Manchester. She was co-director of the Girls into Science and Technology project, and has published extensively on gender and education, including the edited collection *Science for Girls?* (1981). She

has recently given up the academic life and is now Performance Review Officer with Stockport Borough Council.

David Knights is a Senior Lecturer in the Department of Management Sciences, UMIST, Manchester, and has published widely in the area of the labour process and associated fields. He is currently engaged in a Trustee Savings Bank funded project on corporate development in the light of new regulations in financial services, and an ESRC–PICT programme project on the design and development of information technology and its relationship to the labour process.

Ian McDonald is Director of the Cardiac Investigation Unit at St Vincent's Hospital, Melbourne. His publications include *Introduction to Echocardiography* (1976). His current interest is in technology assessment and research methodology. He is a member of the Australian Federal Government's National Health Technology Advisory Panel.

Maureen McNeil is a Lecturer in the Cultural Studies Department of the University of Birmingham. She is the author of *Under the Banner of Science: Erasmus Darwin and his Age* (1987) and editor of *Gender and Expertise* (1987). Her research and teaching are centred on (but not restricted to) science, technology and popular culture, and gender relations and science and technology.

Joel Novek is Professor of Sociology at the University of Winnipeg in Winnipeg, Manitoba. His research and teaching interests include social policy and technological change in the workplace. He is the editor of *The Future of Work: People and Technology* (1973).

Anna Pollert is a Senior Research Fellow at the Industrial Relations Research Unit, University of Warwick. She is author of *Girls, Wives, Factory Lives* (1981), and has published on government labour market and youth training policies and equal opportunities. She is currently doing research into contemporary employment policies and patterns, with a special interest in the question of labour 'flexibility', both at the empirical and ideological levels.

Andrew Sturdy is a Research Fellow in the Centre for the Study of Information Technology at the Bristol Business School. He is

currently organising an academic programme for the centre, in particular, a project on expert systems, power and the professions in insurance. He has published widely in this field and is completing a PhD thesis on clerical labour in the context of changes in information technology in the insurance industry.

David Travis is a Research Officer in the Science Studies Centre at the University of Bath. He has published articles on the 'memory transfer' controversy in neuroscience and, with David Bennett and Peter Glasner, a book: *The Politics of Uncertainty: Regulating Recombinant DNA Research in Britain* (1986). His present research is an ESRC-funded project on the operation of the Research Council peer-review system.

Ian Varcoe is a Lecturer in Sociology in the University of Leeds. He is the author of *Organising for Science in Britain: A Case Study* (1974) and articles on scientists, government and organised research during the First World War and the ecology of research establishments sponsored by industry in Britain between the wars. He is currently engaged on studies of new technology in the wool textiles industry and of technocracy and politics in France and Germany in the 1920s.

Andrew Webster is a Senior Lecturer in Sociology and a member of the Genetic Engineering and Biotechnology Group at the Cambridgeshire College of Arts and Technology, Cambridge. He is author of *Science and Society: New Directions* (forthcoming) and various articles on the commercialisation of public sector science, and is completing a report on this topic for the Science Policy Support Group.

Evan Willis is a Senior Lecturer in Sociology and associate of the Health Sociology Research Group at La Trobe University, Melbourne. He is author of *Medical Dominance* (1983) and co-editor of *Technologies in Health Care: Policies and Politics* (1987). His current work includes projects on medical technology assessment and occupational health and safety.

Steven Yearley is a Lecturer in Sociology at the Queen's University, Belfast. His main research interests are in the sociology of science, science and development and the study of environmental organisa-

tions. His publications include *Science and Sociological Practice* (1984) and *Science, Technology and Social Change* (1988). He has recently acted as a consultant for the Science Policy Support Group, London.