

# PSA 1978

## Volume One

**Edited by P. D. Asquith and I. Hacking**

**PSA 1978**

**VOLUME ONE**

# **PSA 1978**

**PROCEEDINGS OF THE 1978  
BIENNIAL MEETING  
OF THE  
PHILOSOPHY OF SCIENCE  
ASSOCIATION**

**volume one**

**Contributed Papers**

**edited by**

***PETER D. ASQUITH***  
**&**  
***IAN HACKING***

**1978**

**Philosophy of Science Association  
East Lansing, Michigan**

Copyright © 1978 by the  
Philosophy of Science Association

All Rights Reserved  
No part of this book may be utilized, or  
reproduced in any form or by any means  
electronic or mechanical, without written  
permission from the publishers except in the  
case of brief quotations embodied in critical  
articles and reviews.

Library of Congress Catalog Card Number 78-61248

Cloth Edition: ISBN 0-917586-06-9

Paperback Edition: ISBN 0-917586-05-0

Manufactured in the United States of America  
by Edwards Brothers, Ann Arbor, Michigan

# CONTENTS

Preface	ix
1978 PSA Program	xi
Synopsis	xix

## PART I. HISTORY OF PHILOSOPHY OF SCIENCE

1. <i>Perception and Primary Qualities</i> Nancy Maul	3
2. <i>The Development of Kant's Conception of Scientific Explanation</i> Edward MacKinnon	18
3. <i>John Stuart Mill, John Herschel, and the "Probability of Causes"</i> John V. Strong	31

## PART II. PHILOSOPHY OF PHYSICS

4. <i>Non-local Hidden Variable Theories and Bell's Inequality</i> Jeffrey Bub & Vandana Shiva	45
5. <i>The Only Real Probabilities in Quantum Mechanics</i> Nancy Cartwright	54
6. <i>A Universal Axiomatization of Kinematical Theories</i> Carlo Giannoni	60

## PART III. OBSERVATION AND THEORY

7. <i>The Interplay Between Theory and Observation in the Solar Model of Hipparchus and Ptolemy</i> Kathleen Okruhlik	73
8. <i>Theory-ladenness and Theory Comparison</i> William B. Jones	83

- |     |  |     |
|-----|--|-----|
| 9.  | <i>Observationality: Quine and the Epistemological Nihilists</i><br>P. William Bechtel & Eric Stiffler | 93  |
| 10. | <i>Analyticity Without an Observational-Theoretical Distinction</i><br>Mark G. Tamthai                 | 109 |

#### PART IV. CASE STUDIES WITH APPLICATIONS TO THE PHILOSOPHY OF SCIENCE

- |     |  |     |
|-----|--|-----|
| 11. | <i>The Role of Psychology in Functional Localization Research</i><br>Barbara Klein | 119 |
| 12. | <i>Scientific Problems and Constraints</i><br>Thomas Nickels                       | 134 |
| 13. | <i>Discoveries and the Emergence of New Fields in Science</i><br>Lindley Darden    | 149 |

#### PART V. EXPLANATION

- |     |   |     |
|-----|---|-----|
| 14. | <i>Explanation and Subsumption</i><br>Robert Cummins                | 163 |
| 15. | <i>Reasons, Causes, and Empathetic Understanding</i><br>J.K. Derden | 176 |
| 16. | <i>Approximative Explanation</i><br>T.R. Givili                     | 186 |

#### PART VI. ASPECTS OF RATIONALITY

- |     |  |     |
|-----|--|-----|
| 17. | <i>Four Contributions Values Can Make to the Objectivity of Social Science</i><br>Sandra Harding | 199 |
| 18. | <i>Four Basic Concepts of Medical Science</i><br>Caroline Whitbeck                               | 210 |
| 19. | <i>Why Astrology is a Pseudoscience</i><br>Paul Thagard  | 223 |

20. *Rhetoric and Scientific Rationality* 235  
Maurice Finocchiaro

## PART VII. QUANTUM LOGIC

21. *The Metalogic of Quantum Logic* 249  
Peter Mittelstaedt
22. *A Role for Categories in the Foundations  
of Quantum Theory* 257  
David Holdsworth
23. *Only if Quanta had Logic* 268  
James McGrath

## PART VIII. APPLICATIONS OF STATISTICAL IDEAS

24. *On the Likelihood Principle and an  
Alleged Antinomy* 279  
B. Loewer, R. Laddaga & R. Rosenkrantz
25. *Belief and Incremental Confirmation of  
One Hypothesis Relative to Another* 287  
Andre Mirabelli
26. *Salmon, Statistics, and Backwards Causation* 302  
David Papineau