

# **PSA 1988**

**Volume One**

**Edited by A.Fine and J.Leplin**

**PSA 1988**

**VOLUME ONE**

# **PSA 1988**

PROCEEDINGS OF THE 1988  
BIENNIAL MEETING  
OF THE  
PHILOSOPHY OF SCIENCE  
ASSOCIATION

**volume one**

Contributed Papers

edited by

**ARTHUR FINE**  
**&**  
**JARRETT LEPLIN**

**1988**

Philosophy of Science Association  
East Lansing, Michigan

Copyright © 1988 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 72-624169

Cloth Edition: ISBN 0-917586-27-1

Paper Edition: ISBN 0-917586-26-3

ISSN: 0270-8647

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

## CONTENTS

Preface	ix
PSA 1988 Program	xi
Synopsis	xix

### Part I. Confirmation and Scientific Laws

- |  |    |
|--|----|
| 1. <i>The Confirmation of Common Component Causes</i><br>Malcolm R. Forster, University of Wisconsin | 3  |
| ✓ 2. <i>Confirming Inexact Generalizations</i><br>Ernest W. Adams, University of California-Berkeley | 10 |
| 3. <i>Regarding the Raven Paradox</i><br>Robert J. Levy, Wittenberg University                       | 17 |
| 4. <i>Which Universal?</i><br>Philip L. Peterson, Syracuse University                                | 24 |

### Part II. Epistemology and the Dynamics of Science

- |   |    |
|---|----|
| 5. <i>On the Intertheoretic Competition Hypothesis</i><br>A. David Kline, Iowa State University                             | 33 |
| ○ 6. <i>Reasoning From Imagery and Analogy in Scientific Concept Formation</i><br>Nancy J. Nersessian, Princeton University | 41 |
| 7. <i>One Epistemological Interfield Relation</i><br>Joyce Kinoshita, College of the Holy Cross                             | 48 |
| 8. <i>Explaining the Success of Science</i><br>Rose-Mary Sargent, University of New Mexico                                  | 55 |

### Part III. Physics

- |   |    |
|---|----|
| 9. <i>Lorentz's Local Time and the Theorem of Corresponding States</i><br>Robert Rynasiewicz, The Johns Hopkins University            | 67 |
| 10. <i>Is Our Universe a Mere Fluke? The Cosmological Argument and Spinning the Universes</i><br>J. van Brakel, University of Utrecht | 75 |

## CONTENTS (Continued)

- |  |    |
|--|----|
| 11. <i>Minimal Disturbance in Quantum Logic</i><br>Sergio Martinez, De Pauw University                         | 83 |
| 12. <i>Simplicity and Observability: When are Particles Elementary?</i><br>Kostas Gavroglu, Harvard University | 89 |

### Part IV. History of Science

- |  |     |
|--|-----|
| 13. <i>Reconstruction of the Optical Revolution: Lakatos vs. Laudan</i><br>Xiang Chen, Zhongshan University, People's<br>Republic of China                                       | 103 |
| 14. <i>Schlick's Critique of Positivism</i><br>Joa Lewis, Indiana University   | 110 |
| 15. <i>The Explanatory Coherence of Continental Drift</i><br>Paul Thagard and Gregory Nowak, Princeton University  | 118 |
| 16. <i>Was There a Crisis Before the Copernican Revolution?</i><br><i>A Reappraisal of Gingerich's Criticisms of Kuhn</i><br>Robert I. Griffiths, Virginia Polytechnic Institute | 127 |

### Part V. Perception and Psychology

- |  |     |
|--|-----|
| 17. <i>A Defense of a Non-Computational, Interactive Model<br/>of Visual Observation</i><br>Bonnie Tamarkin Paller, California State University—Northridge | 135 |
| 18. <i>Neo-Skinnerian Psychology: A Non-Radical Behaviorism</i><br>Terry L. Smith, University of the District of Columbia                                  | 143 |
| 19. <i>The Pragmatics of Observation</i><br>Richard Creath, Arizona State University   | 149 |
| 20. <i>Marr's Theory of Vision and the Argument From Success</i><br>Peter A. Morton, University of Western Ontario   | 154 |

### Part VI. Realism

- |   |     |
|---|-----|
| 21. <i>Five Theses on Instrumental Realism</i><br>Davis Baird, University of South Carolina             | 165 |
| 22. <i>Constructive Empiricism and Anti-Realism</i><br>Sam Mitchell, University of California—San Diego | 174 |

## CONTENTS (Continued)

- |  |     |
|--|-----|
| 23. <i>Scientific Anti-Realism and the Epistemic Community</i><br>William Seager, University of Toronto  | 181 |
| 24. <i>Testing for Convergent Realism</i><br>Jerrold L. Aronson, State University of New York–Binghamton | 188 |

### Part VII. Biology

- |  |     |
|--|-----|
| 25. <i>Natural Selection, Hypercycles, and the Origin<br/>of Life</i><br>Sahotra Sarkar, University of Chicago                     | 197 |
| 26. <i>Fitness and Explanation</i><br>Gregory Cooper, University of Minnesota  | 207 |
| 27. <i>Individuality and Macroevolutionary Theory</i><br>Marc Ereshefsky, University of Wisconsin                                  | 216 |
| 28. <i>Philosophy Versus Science: The Species Debate and<br/>the Practice of Taxonomy</i><br>Alan Gross, Purdue University Calumet | 223 |

### Part VIII. Formal Sciences

- |  |     |
|--|-----|
| 29. <i>On the Logic of Interrogative Inquiry</i><br>Jaakko Hintikka and Stephen Harris, Florida<br>State University  | 233 |
| 30. <i>Scientific Reasoning or Damage Control: Alternative<br/>Proposals for Reasoning with Inconsistent Representations<br/>of the World</i><br>Joel M. Smith, Indiana University | 241 |
| 31. <i>Non-Formal Properties of Real Mathematical Proofs</i><br>Jean Paul Van Bendegem, Vrije Universiteit Brussels  | 249 |
| 32. <i>Understanding Regression</i><br>James Woodward, California Institute of Technology  | 255 |

### Part IX. Interpreting Scientific Inference

- |   |     |
|---|-----|
| 33. <i>Prediction, Accommodation, and the Logic of Discovery</i><br>Patrick Maher, University of Michigan | 273 |
|---|-----|

## CONTENTS (Continued)

- |  |     |
|--|-----|
| 34. <i>Reduction and Realism</i><br>Margaret Morrison, Stanford University   | 286 |
| 35. <i>Arguing for the Natural Ontological Attitude</i><br>Joseph Rouse, Wesleyan University   | 294 |
| 36. <i>The Role of Skill in Experimentation: Reading Ludwik Fleck's Study of the Wasserman Reaction as an Example of Ian Hacking's Experimental Realism</i><br>David Stump, California State University—Long Beach | 302 |

### Part X. Causation

- |  |     |
|--|-----|
| 37. <i>General Causation</i><br>John W. Carroll, New York University   | 311 |
| 38. <i>Jarrett's Locality Condition and Causal Paradox</i><br>Allen Stairs, University of Maryland   | 318 |
| 39. <i>Impartiality and Causal Decision Theory</i><br>Brad Armendt, Ohio State University  | 326 |
| 40. <i>Causal Explanation in Laboratory Ecology: The Case of Competitive Indeterminacy</i><br>James R. Griesemer, University of California—Davis | 337 |