# Philosophy of Science

Volume 40 1973

Reprinted with the permission of the original publisher by

Periodicals Service Company

Hudson, NY

2021

Printed on acid-free paper.

This reprint was reproduced from the best original edition copy available.

#### NOTE TO THE REPRINT EDITION:

In some cases full page advertisements which do not add to the scholarly value of this volume have been omitted.

As a result, some reprinted volumes may have irregular pagination.

## PHILOSOPHY OF SCIENCE

Official Journal of the Philosophy of Science Association



March, 1973

#### PHILOSOPHY OF SCIENCE

#### JOURNAL OF THE PHILOSOPHY OF SCIENCE ASSOCIATION **EDITORIAL BOARD:**

RICHARD S. RUDNER, Department of Philosophy, Washington University, St. Louis, Missouri 63130, Editor in Chief

PETER ACHINSTEIN, Department of Philosophy, The Johns Hopkins University, Baltimore, Maryland 21218

PETER D. ASQUITH, Department of Philosophy, Michigan State University, East Lansing, Michigan 48823, Managing Editor

GUSTAV BERGMANN, Department of Philosophy, University of Iowa, Iowa City, Iowa 52240

MAY BRODBECK, Department of Philosophy, University of Minnesota, Minneapolis, Minnesota 55455

ARTHUR BURKS, Department of Philosophy, University of Michigan, Ann Arbor, Michigan 48104

C. WEST CHURCHMAN, Graduate School of Business Administration, University of California, Berkeley, California 94720

THEODOSIUS DOBZHANSKY, Department of Genetics, University of California, Davis, California 95616

ADOLF GRÜNBAUM, Department of Philosophy, University of Pittsburgh, Pittsburgh, Pennsylvania 15213

EDWARD MADDEN, Department of Philosophy, State University of New York, Buffalo, New York 14214

HENRY MARGENAU, Department of Physics, Yale University, New Haven, Connecticut 06520

GERALD J. MASSEY, Department of Philosophy, University of Pittsburgh, Pittsburgh, Pennsylvania 15213

Alberto Pasquinelli, Facoltà di Lettere e Filosofia, Università degli Studi di Bologna, University of Bologna, Bologna, Italy

WESLEY C. SALMON, Department of History and Philosophy of Science, Indiana University, Bloomington, Indiana 47401

KENNETH F. SCHAFFNER, Department of Philosophy, University of Pittsburgh, Pittsburgh, Pennsylvania 15213

DUDLEY SHAPERE, Department of Philosophy, University of Illinois at Urbana, Urbana, Illinois 61801

J.J.C. SMART, Department of Philosophy, La Trobe University, Bundoora, Australia MELFORD E. SPIRO, Department of Anthropology, The University of California at San Diego, La Jolla, California 92038

PATRICK C. SUPPES, Department of Philosophy, Stanford University, Stanford, California 94305

LEWIS K. ZERBY, Department of Philosophy, Michigan State University, East Lansing, Michigan 48823

#### **BOOK REVIEWS:**

James Van Evra, Department of Philosophy, University of Waterloo, Waterloo, Ontario, Canada ASSISTANT EDITORS:

Patricia Ann Fleming and Paul C. L. Tang, Department of Philosophy, Washington University, St. Louis, Missouri 63130

#### GOVERNING BOARD OF THE ASSOCIATION:

Israel Scheffler, President (1975) Mary B. Hesse, Vice-President (1973)

Peter D. Asquith, Secretary-Treasurer (1975)

Mario A. Bunge (1974) Richard S. Rudner Robert Cohen (1973) Wesley C. Salmon (Past Pres.)

Adolf Grünbaum (Past Pres.) Michael J. Scriven (1975) Patrick C. Suppes (1975) Ian Hacking (1974)

Stephen Toulmin (1973) Ernest Nagel (Past Pres.)

MADE AND PRINTED IN GREAT BRITAIN BY WILLIAM CLOWES & SONS, LIMITED, LONDON, BECCLES AND COLCHESTER

PHILOSOPHY OF SCIENCE is published quarterly by the Philosophy of Science Association, 18 Morrill Hall, Department of Philosophy, Michigan State University, East Lansing, Michigan 48823. Subscription price \$15.00 per Volume. Single numbers \$6.00. Membership dues, which include subscription, \$10.00. Subscription inquiries should be directed to the Managing Editor. Second-class postage paid at East Lansing, Michigan 48823. © 1973 by the Philosophy of Science Association.

### **CONTENTS\***

| ON BEING UNREASONABLE, MORTON L. SCHAGRIN                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| REALIST FOUNDATIONS OF MEASUREMENT, HENRY BYERLY and VINCENT A. LAZARA                                                                                                                                                                                                                                                                                                                                                                                                                 | 10  |
| ANNOUNCEMENT: Philosophy of Science Association Election Results                                                                                                                                                                                                                                                                                                                                                                                                                       | 28  |
| CONDITIONS AND LIMITATIONS OF PREDICTION-MAKING IN BIOLOGY, ZDZISLAW KOCHANSKI                                                                                                                                                                                                                                                                                                                                                                                                         | 29  |
| ANNOUNCEMENT: The International Congress for Logic, Methodology and Philosophy of Science Meetings                                                                                                                                                                                                                                                                                                                                                                                     | 51  |
| RECIPROCITY IN THE UNCERTAINTY RELATIONS, PETER KIRSCHENMANN                                                                                                                                                                                                                                                                                                                                                                                                                           | 52  |
| DISPOSITIONS REVISITED, WILLIAM W. ROZEBOOM                                                                                                                                                                                                                                                                                                                                                                                                                                            | 59  |
| THE IDEAL SCIENTIFIC THEORY: A THOUGHT EXPERIMENT, ERVIN LASZLO                                                                                                                                                                                                                                                                                                                                                                                                                        | 75  |
| DISCUSSION: BASIC PARTICULARS, DONALD BROWNSTEIN                                                                                                                                                                                                                                                                                                                                                                                                                                       | 88  |
| DISCUSSION: REFLEXIVE PREDICTIONS, GEORGE ROMANOS                                                                                                                                                                                                                                                                                                                                                                                                                                      | 97  |
| DISCUSSION: OMER ON SCIENTIFIC EXPLANATION, CHARLES G. MORGAN                                                                                                                                                                                                                                                                                                                                                                                                                          | 110 |
| DISCUSSION: ON FODOR'S DISTINCTION BETWEEN STRONG<br>AND WEAK EQUIVALENCE IN MACHINE SIMULATION,<br>A. ROSENBERG and N. J. MACKINTOSH                                                                                                                                                                                                                                                                                                                                                  | 118 |
| DISCUSSION: BUTTS ON WHEWELL'S VIEW OF TRUE CAUSES, DAVID B. WILSON                                                                                                                                                                                                                                                                                                                                                                                                                    | 121 |
| DISCUSSION: REPLY TO DAVID WILSON: WAS WHEWELL INTERESTED IN TRUE CAUSES?, ROBERT E. BUTTS                                                                                                                                                                                                                                                                                                                                                                                             | 125 |
| DISCUSSION: THEORETICAL TERMS IN INFINITE THEORIES, PAUL BERENT                                                                                                                                                                                                                                                                                                                                                                                                                        | 129 |
| The Logical Structure of Mathematical Physics, Joseph D. Sneed; C. A. Hooker—Philosophy of Logic, Hilary Putnam; John Corcoran—Patterns of Discovery in the Social Sciences, Paul Diesing; Andrew McLaughlin—Theory of Science. Attempt at a Detailed and in the main Novel Exposition of Logic with Constant Attention to Earlier Authors, Bernard Bolzano; Joseph J. Kockelmans—The Matter of Chance, D. H. Mellor; Alex C. Michalos—Visual Thinking, Rudolf Arnheim; Marc Bornstein | 130 |
| RECENT BOOKS                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 145 |
| ABSTRACTS FROM INQUIRY                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 148 |
| MEMBERSHIP LIST                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 153 |

<sup>\*</sup> The contents of Philosophy of Science are indexed in Science Citation Index and ABC Pol Sci.