

I

The Foundations of Science and the Concepts of Psychology and Psychoanalysis

Minnesota Studies in the
PHILOSOPHY OF SCIENCE

VOLUME I

*The Foundations of Science and the Concepts
of Psychology and Psychoanalysis*

EDITED BY

HERBERT FEIGL AND MICHAEL SCRIVEN

FOR THE MINNESOTA CENTER FOR PHILOSOPHY OF SCIENCE

UNIVERSITY OF MINNESOTA PRESS, MINNEAPOLIS

© Copyright 1956 by the
UNIVERSITY OF MINNESOTA

All rights reserved. No part of this book may be reproduced in any form without the written permission of the publisher. Permission is hereby granted to reviewers to quote brief passages in a review to be printed in a magazine or newspaper.

PRINTED IN THE UNITED STATES OF AMERICA

Library of Congress Catalog Card Number: 56-11610

PUBLISHED IN GREAT BRITAIN, INDIA, AND PAKISTAN BY
GEOFFREY CUMBERLEGE: OXFORD UNIVERSITY PRESS, LONDON, BOMBAY, AND KARACHI

Preface

This first volume of *Minnesota Studies in the Philosophy of Science* presents some of the relatively more consolidated research of the Minnesota Center for the Philosophy of Science and its collaborators. Established in the autumn of 1953 by a generous grant from the Hill Family Foundation, the Center has so far been devoted largely, but not exclusively, to the philosophical, logical, and methodological problems of psychology. Some papers in the present volume are concerned with the broader philosophical foundations, others with more specific problems of method or interpretation.

All but one* of the papers included here have in some measure either grown out of Center discussions or been modified by them. As one would expect, in a group of ten contributors, there are some significant disagreements on issues of importance. Nevertheless, a substantial common core in the views represented here—amounting in the case of the Center staff virtually to unanimity—will not escape the reader. An important example is our view regarding the meaning of theoretical concepts as defined by their locus in the “nomological net,” and the related rejection of the reductionist forms of operationism and positivism.

The core of the Center’s staff during the first three years of operation was drawn from the University of Minnesota’s faculty and consisted of Paul E. Meehl (Chairman, Psychology Department), Wilfrid S. Sellars (Chairman, Philosophy Department), Michael Scriven (Philosophy Department; Center Research Fellow), and Herbert Feigl (Philosophy Department; Director of the Center). For various periods at various times, consistent with its original intentions, the Center added to its

* Professor Skinner’s paper was originally presented at a symposium involving two members of the Center staff, and it is discussed in such detail in one of the papers in this volume that we considered it advisable to reproduce it in full.

Preface

staff and enjoyed the collaboration of Kenneth MacCorquodale (Psychology Department, University of Minnesota), Antony Flew (University College of North Staffordshire, England), and Arthur Pap (Philosophy Department, Yale University). We benefited greatly by conferences that we arranged with H. G. Bohnert (University of California at Los Angeles), C. D. Broad (Cambridge University), R. C. Buck (Duke University), Robert Bush (Harvard University), Rudolf Carnap (University of California at Los Angeles), L. J. Cronbach (University of Illinois), Albert Ellis (New York City), Else Frenkel-Brunswik (University of California, Berkeley), Starke R. Hathaway (University of Minnesota), C. G. Hempel (Princeton University), Abraham Kaplan (University of California at Los Angeles), Howard Kendler (New York University), Sigmund Koch (Duke University), Gardner Lindzey (Harvard University), Henry Margenau (Yale University), Ernest Nagel (Columbia University), C. S. Pepper (University of California, Berkeley), Hilary Putnam (Princeton University), John R. Reid (University of Maryland), B. F. Ritchie (University of California, Berkeley), Gilbert Ryle (Oxford University), B. F. Skinner (Harvard University), K. W. Spence (University of Iowa), P. F. Strawson (Oxford University), Donald Thistlethwaite (University of Illinois), L. L. Whyte (London), and Karl Zener (Duke University). To all these scholars, we wish to express our sincere appreciation for the help and stimulation the Center has obtained from them.

Apart from the papers included in this and the subsequent volumes, members of the Center staff have produced a great deal of less complete material. Most of our local discussions, especially those with outside visitors, were tape-recorded; the core staff and several of our collaborators have written hundreds of pages of memoranda, and longer papers not deemed suitable for reproduction; these materials have been—and we hope will continue to be—utilized by students and faculty; the conferences we have arranged have made possible a large number of public lectures of a more general nature which reached a wide audience at the University of Minnesota; and the individual teaching and research of the Center's staff has of course benefited from our joint discussions. We hope that any judgment of the Center's activities will take into account the full range of these activities.

We set out with the hope and in the belief that intensive investigations in the logical foundations of the sciences would more or less

Preface

directly aid in substantive scientific research. It must be left to the judgment of our readers in what measure the present analyses contribute to the clarification of issues in psychological theory and indirectly to research practice. A second volume, currently in preparation, will also concentrate on the foundations of psychology, and will contain an extended comparison of the methods of definition and explanation in various sciences. Our current plans for the near future include research in the philosophy of physics and will perhaps later expand into other fields of the philosophy of science.

Research in the Center has been an exciting intellectual adventure. We are profoundly grateful to the Louis W. and Maud Hill Family Foundation as well as to the administration of the University of Minnesota for affording us the splendid opportunities that made our concerted efforts possible. Our particular thanks are due to the friendly and efficient assistance of our secretaries, Betty Jacobsen and Betty Unger; to Grover E. Maxwell, who helped prepare the index; and to the staff of the University of Minnesota Press.

Herbert Feigl, *Director*

Michael Scriven, *Research Associate*

MINNESOTA CENTER FOR PHILOSOPHY OF SCIENCE

June 1956

Synopsis

It MAY be useful to indicate very briefly the content of the papers in this volume, which is in some cases very inadequately conveyed by their titles. The volume begins with a paper of general philosophical interest.

1. *Some Major Issues and Developments in the Philosophy of Science of Logical Empiricism*: HERBERT FEIGL. After a brief introductory survey of current trends in the philosophy of science, the author selects for more detailed discussion the following three issues: the attempt to distinguish the formal from the factual sciences in terms of the distinction between analytic and synthetic statements; the attempt to provide a criterion for factual meaningfulness and the difficulties with the operationist account; and the view that science requires metaphysical presuppositions, particularly those invoked for the justification of induction.

The second paper deals with one of these themes more fully and precisely.

2. *The Methodological Character of Theoretical Concepts*: RUDOLF CARNAP. The author attempts a clarification of the relations of theoretical to observational terms in the scientific language. It contains a new formulation of the (empiricist) criterion of factual meaningfulness for theoretical concepts—here worked out with considerable precision. A further critique of the operationist view of dispositional concepts and an analysis of theoretical concepts as determined by postulates is applied toward a better understanding of psychological concepts.

After this paper on the general logic of theoretical concepts, there follows a series of specific discussions of important theoretical concepts employed in psychology, beginning with the concepts of psychoanalysis.

3. *Critique of Psychoanalytic Concepts and Theories*: B. F. SKINNER. The author sets out very briefly some of his objections to Freudian concepts on the joint grounds of superfluity and adverse heuristic effect, and indicates the approach he prefers—that of radical behaviorism.

4. *A Study of Radical Behaviorism*: MICHAEL SCRIVEN. The author undertakes an extensive analysis of Skinner's reasons for criticizing Freudian theory, and of Skinner's own approach. The argument is that (a) Skinner's approach violates his own methodological principles; (b) these principles cannot be defended on Skinner's grounds; and (c) in the modified form in which they can be defended, they justify a much more thorough and effective behavioristic analysis of psychological concepts than Skinner gives, but relatively few of his more striking conclusions.

5. *An Operational Reformulation of Some of the Basic Principles of Psychoanalysis*: ALBERT ELLIS. In this paper the author attempts to provide an account of behavior genesis and psychotherapy, which is less radical than Skinner's and less highly abstract and metaphorical than Freud's.

6. *Motives and the Unconscious*: ANTONY FLEW. The author, a philosopher, attempts to provide a logical analysis of certain concepts in Freud, and includes new comments on the long discussion of psychoanalytic explanation in the pages of *Analysis*.

7. *Construct Validity in Psychological Tests*: L. J. CRONBACH and P. E. MEEHL. The authors present a detailed analysis of the concept "the validity of a test," arguing for a clearer recognition of four quite different but related sub-types, and show how the procedures used to establish what they call "construct validity" are special cases of the general scientific methods for giving inductive support to regions of a theoretical network.

8. *Problems in the Actuarial Characterization of a Person*: P. E. MEEHL. The author extends his consideration of the empirical studies demonstrating the superiority of mathematical over subjective prediction methods to a new domain, that of the descriptive and dynamic characterization of a single personality. He offers tentative suggestions, based upon theoretical analysis of the clinical process, as to which areas of behavior prediction can be expected to yield similar results, and which will probably not.

9. *On the Logic of General Behavior Systems Theory*: R. C. BUCK. In this paper the author points out some profound logical difficulties and inadequacies of the currently popular approach to psychology via General Systems Theory.

In the ensuing two papers, the approach is carried into the borderlands of psychology and philosophy.

10. *The Concept of Emergence*: P. E. MEEHL and WILFRID SELLARS. Re-examining the fundamental paper on *emergence** published by S. C. Pepper thirty years ago, the authors criticize his attempted proof that emergents must necessarily be epiphenomenal. They try to show that the notion of genuine emergence (e.g., raw feels of color) does not involve any contradictions within the scientific framework; and, in particular, that such emergents might possess efficient-causal properties without doing violence to the usual scientific conceptions of causality and explanation.

11. *Empiricism and the Philosophy of Mind* (The University of London Special Lectures in Philosophy for 1955-56): WILFRID SELLARS. The paper works up to an account of the logic of private episodes (thoughts; immediate experiences) by an argument the earlier stages of which constitute a sustained attack on what the author calls "the myth of the given." It begins with a critique of sense-datum theories (both classical and heterodox) but emphasizes that the myth is not limited to the sense-datum form. In addition to the concluding discussion of private episodes (Parts XV and XVI), the constructive steps of the argument include an analysis of facts of the form *x* looks red to *S* (Part II, Secs. 10-18), an interpretation of Locke, Berkeley, and Hume on the nature of ideas and impressions (Part VI, Secs. 26-29), a defence of an empiricist version of a 'coherence theory of meaning' (Part III, Sec. 20; Part VIII, Secs. 35-38), some remarks on the logic of semantical statements (Part VII, Sec. 31), and a discussion of the methodology of theory construction in psychology (Parts XII and XIV).

12. *A Possible Distinction between Traditional Scientific Disciplines and the Study of Human Behavior*: MICHAEL SCRIVEN. In this brief note, an attempt is made to provide what the author believes to be a more natural balance to our assessment of the comparative achievements and methods of the traditionally termed "natural" and "social" sciences.

* The idea that when physical systems (e.g., developing animal organisms) reach a certain complexity they acquire properties of an essentially new kind (e.g., life or consciousness).

Contents

SYNOPSIS	ix
SOME MAJOR ISSUES AND DEVELOPMENTS IN THE PHILOSOPHY OF SCIENCE OF LOGICAL EMPIRICISM, <i>by Herbert Feigl</i>	
	3
THE METHODOLOGICAL CHARACTER OF THEORETI- CAL CONCEPTS, <i>by Rudolf Carnap</i>	
	38
i. Our Problems, 38. ii. The Observation Language L_0 , 40. iii. The Theoretical Language L_T , 42. iv. The Problem of the Admissibility of Theoretical Entities, 43. v. The Correspondence Rules C, 47. vi. A Cri- terion of Significance for Theoretical Terms, 49. vii. The Adequacy of the Criterion of Significance, 52. viii. A Criterion of Significance for Theoretical Sentences, 59. ix. Disposition Concepts, 62. x. The Differ- ence between Theoretical Terms and Pure Disposition Terms, 66. xi. Psychological Concepts, 69.	
CRITIQUE OF PSYCHOANALYTIC CONCEPTS AND THEORIES, <i>by B. F. Skinner</i>	
	77
A STUDY OF RADICAL BEHAVIORISM, <i>by Michael Scriven</i>	
	88
AN OPERATIONAL REFORMULATION OF SOME OF THE BASIC PRINCIPLES OF PSYCHOANALYSIS, <i>by Albert Ellis</i>	
	131
What Operationism Is, 131. A Basic Operational Vocabulary, 137. Re- formulating Psychoanalytic Principles, 140. Limitations of the Opera- tional Reformulation of Freudian Principles, 150. Summary, 151.	
MOTIVES AND THE UNCONSCIOUS, <i>by Antony Flew</i>	
	155
CONSTRUCT VALIDITY IN PSYCHOLOGICAL TESTS, <i>by</i> <i>L. J. Cronbach and P. E. Meehl</i>	
	174

Contents

Four Types of Validation, 175. Kinds of Constructs, 178. The Relation of Constructs to "Criteria," 179. Inadequacy of Validation in Terms of Specific Criteria, 180. Experimentation to Investigate Construct Validity, 182. The Logic of Construct Validation, 187. Conclusions Regarding the Network after Experimentation, 192. Validation of a Complex Test "As a Whole," 197. Recapitulation, 200.

PROBLEMS IN THE ACTUARIAL CHARACTERIZATION
OF A PERSON, by P. E. Meehl 205

ON THE LOGIC OF GENERAL BEHAVIOR SYSTEMS
THEORY, by R. C. Buck 223

THE CONCEPT OF EMERGENCE, by P. E. Meehl and
Wilfrid Sellars 239

EMPIRICISM AND THE PHILOSOPHY OF MIND, by
Wilfrid Sellars 253

i. An Ambiguity in Sense-Datum Theories (Secs. 1-7), 253. ii. Another Language? (Secs. 8-9), 261. iii. The Logic of 'Looks' (Secs. 10-20), 267. iv. Explaining Looks (Secs. 21-23), 277. v. Impressions and Ideas: a Logical Point (Secs. 24-25), 282. vi. Impressions and Ideas: an Historical Point (Secs. 26-29), 285. vii. The Logic of 'Means' (Secs. 30-31), 290. viii. Does Empirical Knowledge Have a Foundation? (Secs. 32-38), 293. ix. Science and Ordinary Usage (Secs. 39-44), 300. x. Private Episodes: the Problem (Sec. 45), 305. xi. Thoughts: the Classical View (Secs. 46-47), 307. xii. Our Rylean Ancestors (Secs. 48-50), 309. xiii. Theories and Models, (Secs. 51-52), 311. xiv. Methodological versus Philosophical Behaviorism (Secs. 53-55), 314. xv. The Logic of Private Episodes: Thoughts (Secs. 56-59), 317. xvi. The Logic of Private Episodes: Impressions (Secs. 60-63), 321.

A POSSIBLE DISTINCTION BETWEEN TRADITIONAL
SCIENTIFIC DISCIPLINES AND THE STUDY OF HUMAN
BEHAVIOR, by Michael Scriven 330

NAME INDEX 340

SUBJECT INDEX 343

MINNESOTA STUDIES IN THE PHILOSOPHY OF SCIENCE