

CONTENTS

Translators' Note	6
Preface to the First Edition, 1934	13
Preface to the First English Edition, 1959	15

PART I

Introduction to the Logic of Science

Chapter I. A SURVEY OF SOME FUNDAMENTAL PROBLEMS	27
1. The Problem of Induction.	
2. Elimination of Psychologism.	
3. Deductive Testing of Theories.	
4. The Problem of Demarcation.	
5. Experience as a Method.	
6. Falsifiability as a Criterion of Demarcation.	
7. The Problem of the 'Empirical Basis'.	
8. Scientific Objectivity and Subjective Conviction.	
Chapter II. ON THE PROBLEM OF A THEORY OF SCIENTIFIC METHOD	49
9. Why Methodological Decisions are Indispensable.	
10. The Naturalistic Approach to the Theory of Method.	
11. Methodological Rules as Conventions.	

PART II

Some Structural Components of a Theory of Experience

Chapter III. THEORIES	59
12. Causality, Explanation, and the Deduction of Predictions.	
13. Strict and Numerical Universality.	
14. Universal Concepts and Individual Concepts.	
15. Strictly Universal and Existential Statements.	
16. Theoretical Systems.	
17. Some Possibilities of Interpreting a System of Axioms.	
18. Levels of Universality. The Modus Tollens.	

CONTENTS

<i>Chapter IV.</i> FALSIFIABILITY	78
19. Some Conventionalist Objections.	
20. Methodological Rules.	
21. Logical Investigation of Falsifiability.	
22. Falsifiability and Falsification.	
23. Occurrences and Events.	
24. Falsifiability and Consistency.	
<i>Chapter V.</i> THE PROBLEM OF THE EMPIRICAL BASIS	93
25. Perceptual Experiences as Empirical Basis: Psychologism.	
26. Concerning the So-Called 'Protocol Sentences'.	
27. The Objectivity of the Empirical Basis.	
28. Basic Statements.	
29. The Relativity of Basic Statements. Resolution of Fries's Trilemma.	
30. Theory and Experiment.	
<i>Chapter VI.</i> DEGREES OF TESTABILITY	112
31. A Programme and an Illustration.	
32. How are Classes of Potential Falsifiers to be Compared?	
33. Degrees of Falsifiability Compared by Means of the Subclass Relation.	
34. The Structure of the Subclass Relation. Logical Probability.	
35. Empirical Content, Entailment, and Degrees of Falsifiability.	
36. Levels of Universality and Degrees of Precision.	
37. Logical Ranges. Notes on the Theory of Measurements.	
38. Degrees of Testability Compared by Reference to Dimensions.	
39. The Dimension of a Set of Curves.	
40. Two Ways of Reducing the Number of Dimensions of a Set of Curves.	
<i>Chapter VII.</i> SIMPLICITY	136
41. Elimination of the Aesthetic and the Pragmatic Concepts of Simplicity.	
42. The Methodological Problem of Simplicity.	
43. Simplicity and Degree of Falsifiability.	
44. Geometrical Shape and Functional Form.	
45. The Simplicity of Euclidean Geometry.	
46. Conventionalism and the Concept of Simplicity.	

CONTENTS

Chapter VIII. PROBABILITY

146

47. The Problem of Interpreting Probability Statements.
48. Subjective and Objective Interpretations.
49. The Fundamental Problem of the Theory of Chance.
50. The Frequency Theory of von Mises.
51. Plan for a New Theory of Probability.
52. Relative Frequency within a Finite Class.
53. Selection, Independence, Insensitiveness, Irrelevance.
54. Finite Sequences. Ordinal Selection and Neighbourhood Selection.
55. n -Freedom in Finite Sequences.
56. Sequences of Segments. The First Form of the Binomial Formula.
57. Infinite Sequences. Hypothetical Estimates of Frequency.
58. An Examination of the Axiom of Randomness.
59. Chance-Like Sequences. Objective Probability.
60. Bernoulli's Problem.
61. The Law of Great Numbers (Bernoulli's Theorem).
62. Bernoulli's Theorem and the Interpretation of Probability Statements.
63. Bernoulli's Theorem and the Problem of Convergence.
64. Elimination of the Axiom of Convergence. Solution of the 'Fundamental Problem of the Theory of Chance'.
65. The Problem of Decidability.
66. The Logical Form of Probability Statements.
67. A Probabilistic System of Speculative Metaphysics.
68. Probability in Physics.
69. Law and Chance.
70. The Deducibility of Macro Laws from Micro Laws.
71. Formally Singular Probability Statements.
72. The Theory of Range.

Chapter IX. SOME OBSERVATIONS ON QUANTUM THEORY

215

73. Heisenberg's Programme and the Uncertainty Relations.
74. A Brief Outline of the Statistical Interpretation of Quantum Theory.
75. A Statistical Re-Interpretation of the Uncertainty Formulae.
76. An Attempt to Eliminate Metaphysical Elements by Inverting Heisenberg's Programme; with Applications.
77. Decisive Experiments.
78. Indeterminist Metaphysics.

CONTENTS

<i>Chapter X.</i> CORROBORATION, OR HOW A THEORY STANDS UP TO TESTS	251
79. Concerning the So-Called Verification of Hypotheses.	
80. The Probability of a Hypothesis and the Probability of Events: Criticism of Probability Logic.	
81. Inductive Logic and Probability Logic.	
82. The Positive Theory of Corroboration: How a Hypothesis may 'Prove its Mettle'.	
83. Corroborability, Testability, and Logical Probability.	
84. Remarks Concerning the Use of the Concepts 'True' and 'Corroborated'.	
85. The Path of Science.	

APPENDICES

i Definition of the Dimension of a Theory.	285
ii The General Calculus of Frequency in Finite Classes.	287
iii Derivation of the First Form of the Binomial Formula.	290
iv A Method of Constructing Models of Random Sequences.	292
v Examination of an Objection. The Two-Slit Experiment.	296
vi Concerning a Non-Predictive Procedure of Measuring.	299
vii Remarks Concerning an Imaginary Experiment.	303

NEW APPENDICES

*i Two Notes on Induction and Demarcation, 1933-1934.	311
*ii A Note on Probability, 1938.	318
*iii On the Heuristic Use of the Classical Definition of Probability.	323
*iv The Formal Theory of Probability.	326
*v Derivations in the Formal Theory of Probability.	349
*vi On Objective Disorder or Randomness.	359
*vii Zero Probability and the Fine-Structure of Probability and of Content.	363
*viii Content, Simplicity, and Dimension.	378
*ix Corroboration, the Weight of Evidence, and Statistical Tests.	387
*x Universals, Dispositions, and Natural or Physical Necessity.	420
*xi On the Use and Misuse of Imaginary Experiments, Especially in Quantum Theory.	442
*xii The Experiment of Einstein, Podolsky and Rosen. A Letter from Albert Einstein, 1935.	457
INDICES, compiled by Dr. J. Agassi.	465