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# Scientific Research II

The Search for Truth

Mario Bunge

With 61 Figures



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## **Preface**

This volume is a logical sequel of Volume I, *The Search for System*: indeed, it concerns the ways theoretical systems are put to work and subjected to test. Yet it can be read independently by anyone familiar with some factual theories, referring back to Volume I when necessary.

## Special Symbols

$A \subseteq B$	the set $A$ is included in the set $B$
$A \cup B$	the union of the sets $A$ and $B$
$A \cap B$	the common part of the sets $A$ and $B$
$a \in B$	the individual $a$ is in (or belongs to) the set $A$
$\text{Card}(A)$	cardinality (numerosity) of the set $A$
$A \times B$	Cartesian product of the sets $A$ and $B$
$Cn(A)$	consequence(s) of the set $A$ of assumptions
$\stackrel{df}{=}$	equals by definition
$Df.$	definition
$(\exists x)$	some $x$ (or there is at least one $x$ such that)
$e$	empirical datum
$e^*$	translation of $e$ into a semiempirical, semitheoretical language
$h$	hypothesis
$m(\dot{r})$	measured value of the degree $\dot{r}$
$\bar{m}(\dot{r})$	average (or mean) value of a set of measured values of $\dot{r}$
$P \dashv T$	$T$ presupposes $P$
$p, q$	arbitrary (unspecified) propositions (statements)
$P(x)$	$x$ has the property $P$ (or $x$ is a $P$ )
$\{x \mid P(x)\}$	set of the $x$ such that every $x$ is a $P$
$p \vee q$	$p$ and/or $q$ (inclusive disjunction)
$p \& q$	$p$ and $q$ (conjunction)
$p \rightarrow q$	if $p$ , then $q$ (conditional or implication)
$p \leftrightarrow q$	$p$ if and only if $q$ (biconditional or equivalence)
$\Sigma_i$	sum over $i$
$t$	theorem, testable consequence
$t^*$	translation of $t$ into a semiempirical, semitheoretical language
$T$	theory
$A \vdash t$	$A$ , therefore $t$ (or $A$ entails $t$ , or $t$ follows logically from $A$ )
$\emptyset$	the empty set
$U$	the universal set
$x$	arbitrary (unspecified) individual
$(x)$	for every $x$
$\langle x, y \rangle$	ordered pair of the elements $x$ and $y$

# Contents

## Part III

### Applying Scientific Ideas

9. Explanation . . . . .	3
9.1. Answering Whys . . . . .	3
9.2. Nonscientific Explanation . . . . .	9
9.3. Scientific Subsumption . . . . .	17
9.4. Interpretive Explanation . . . . .	25
9.5. *Interpretive Explanation and Reduction of Laws . . . . .	34
9.6. Explanatory Power . . . . .	44
9.7. Functions and Reach . . . . .	54
Bibliography . . . . .	65
10. Prediction . . . . .	66
10.1. Projection . . . . .	66
10.2. Stochastic Projection . . . . .	74
10.3. Historical Projection . . . . .	85
10.4. Projective Power . . . . .	96
10.5. Riddles . . . . .	107
Bibliography . . . . .	120
11. Action . . . . .	121
11.1. Truth and Action . . . . .	121
11.2. Technological Rule . . . . .	132
11.3. Technological Forecast . . . . .	139
Bibliography . . . . .	149

## Part IV

### Testing Scientific Ideas

12. Observation . . . . .	153
12.1. Fact . . . . .	153
12.2. Observability . . . . .	162
12.3. Objectification . . . . .	171
12.4. Data and Evidence . . . . .	177
12.5. Function . . . . .	186
Bibliography . . . . .	193
13. Measurement . . . . .	194
13.1. Numerical Quantification . . . . .	194
13.2. Measured Value . . . . .	206
13.3. Counting . . . . .	213
13.4. Scale and Unit . . . . .	219
13.5. Techniques . . . . .	232
13.6. Upshot . . . . .	242
Bibliography . . . . .	249

14. Experiment . . . . .	251
14.1. Planned Change . . . . .	251
14.2. Control . . . . .	260
14.3. Design . . . . .	268
14.4. Significance . . . . .	273
14.5. Testing the Test . . . . .	279
14.6. Functions . . . . .	283
Bibliography . . . . .	289
15. Concluding . . . . .	290
15.1. Inferring . . . . .	290
15.2. Testing Observational Propositions . . . . .	298
15.3. Testing Hypotheses . . . . .	305
15.4. Confirmation and Refutation . . . . .	315
15.5. A Case History: Torricelli . . . . .	328
15.6. Testing Theories . . . . .	336
15.7. Theory Assaying . . . . .	346
Bibliography . . . . .	360
Author Index . . . . .	362
Subject Index . . . . .	366