

# INTRODUCTION TO LOGIC

FIFTH EDITION

Irving M. Copi

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Irving M. Copi University of Hawaii

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# INTRODUCTION TO LOGIC

*This book is dedicated to  
my mother and father*

#### HOW THE ART OF REASONING IS NECESSARY

When one of his audience said, "Convince me that logic is useful," he said,

Would you have me demonstrate it?

"Yes."

Well, then, must I not use a demonstrative argument?

And, when the other agreed, he said, How then shall you know if I impose upon you? And when the man had no answer, he said, You see how you yourself admit that logic is necessary, if without it you are not even able to learn this much—whether it is necessary or not.

—Discourses of Epictetus

# Preface

*In a republican nation, whose citizens are to be led by reason and persuasion and not by force, the art of reasoning becomes of first importance.*

—Thomas Jefferson

*Civilized life depends upon the success of reason in social intercourse, the prevalence of logic over violence in interpersonal conflict.*

—Juliana Geran Pilon

There are obvious benefits to be gained from the study of logic: heightened ability to express ideas clearly and concisely, increased skill in defining one's terms, enlarged capacity to formulate arguments rigorously and to analyze them critically. But the greatest benefit, in my judgment, is the recognition that reason can be applied in every aspect of human affairs.

Democratic institutions require that citizens think for themselves, discuss problems freely with one another, and decide issues on the basis of deliberation and the weighing of evidence. Through the

study of logic we can acquire not only practice in reasoning but also respect for reason, and thus reinforce and secure the values we prize.

To help achieve these goals a textbook of logic should contain an ample selection of illustrations and exercises of human, scientific, and philosophical interest. These should have been presented by significant writers in their serious efforts to solve real problems. Ideally, they should include fallacies as well as paradigms of demonstrations. This new edition contains well over four hundred new examples and exercises, many of which were selected specifically to fulfill this requirement. Others were introduced to provide a more gradual transition from easier to more challenging exercises that the student should master in order to acquire logical skills as well as logical understanding.

The first course in logic is often the only philosophy course taken by many college and university students. It is therefore highly desirable to include philosophical issues and arguments in the logic course, if not to interest students in additional philosophy courses, at least to interest them in further thinking and reading in philosophy.

The rate of expansion of human knowledge, especially scientific information, has been accelerating so rapidly in recent years that there is increasing danger that by the time many students graduate, much of the substantive material taught them in their courses may already be out of date. It is only partly in jest that some research laboratories hang on their walls a placard reading, "If it works, it's obsolete." There is also an increasing tendency for people to change careers at least once in the course of their lives. So the most valuable thing a student can learn in college is how to think, how to study, how to learn, how to acquire and process new knowledge. Ideally, every course taken should contribute to this end. In fact, many do not. But it is squarely within the province of logic to focus on this all-important task. I have tried to make each succeeding edition of this textbook a more effective instrument for such learning and teaching.

There are several ways in which this edition differs from earlier ones. In organization, Chapter 1 contains a new section on analyzing passages containing more than one argument. There are several changes in terminology, of differing degrees of importance. A more narrow use of "express" has been adopted, in which it is restricted to *expressive discourse*, while acknowledging that there are other and wider uses of the term. Because so many uses of the term "property" center around the notions of *possession* and legal title, most of its logical occurrences in the text have been replaced by such



terms as "attribute" or "characteristic." There is a sharper contrast between the language used in discussing substitution in Chapter 8 and that used in discussing replacement in Chapter 9, which should help to prevent confusion of these two quite different notions. Perhaps to be placed under the heading of style, the text contains more frequent and clearer summaries, and more explicit directions are given for some of the exercises. There are some improved formulations: in the explanations of fallacies in Chapter 3 and in the discussion of necessary and sufficient conditions in Chapter 8. And a number of corrections and improvements have been made. In Chapter 4 some apparent circularities in the statements of definitions have been removed, and better definitions offered. In Chapter 5 more adequate discussions of contraries and subcontraries are presented. In Chapter 6 one of the syllogistic rules is reformulated to suggest a more direct use of it in appraising syllogisms. And in Chapter 8, taking account of published criticisms of more usual presentations, there are more adequate discussions of component statements, compound statements, and truth-functional components and compound statements.

Since the appearance of the previous edition, many readers, both teachers and students, have written to suggest changes in the book. In many cases I have gratefully accepted their recommendations. Among those whose correspondence was particularly helpful are Professor Benjamin C. Abellera of the University of the Philippines College-Baguio; Dr. Keith Ballard; Professor James A. Bell of the University of South Florida; Professor Robert W. Beard of the Florida State University; Professor John R. Billings of the University of Wisconsin at Stevens Point; Professor Alex Blum of Bar-Ilan University (Israel); Mr. Marc Burrows of Bentley College; Mr. Ismael Martinez Calderon of Santa Ana, California; Professor John W. Copeland of Drew University; Mr. Dennis E. Culver of San Francisco State University; Mr. Michael Danko of Dartmouth College; Professor Howard DeLong of Trinity College; Professor Robert L. Gibson of Loretto Heights College; Mr. David R. Groen of the University of Cincinnati; Mr. James Hallam of Spokane, Washington; Mr. Loren M. Hamersley of The Ohio State University; Professor Peter Hutcheson of The University of Oklahoma; Professor Robert James of the Community College of Allegheny County in Pittsburgh, Pennsylvania; Mr. Chaim Kaplan of Brooklyn, New York; Professor John Knox, Jr., of Drew University; Mr. William M. Lowerre, Jr., of Manassas, Virginia; Professor James A. Martin of The University of Wyoming; Mr. Raymond J. McCarthy of Roger Williams College in Providence, Rhode Island; Professor Paul Mercken of The Florida State University; Mr. Craig Morrison

of Long Beach City College; Professor Robert E. Myers of Bethany College; Professor Robert A. Oakes of the University of Missouri at Rolla; Professor William M. Orr of Centenary College for Women in Hackettstown, New Jersey; Professor Humphrey Palmer of University College, Cardiff, Wales; Professor Sri Chandrakant P. Patel of Gurukul Mahila Arts College in Porbandar, India; Professor Hollibert E. Phillips of Walla Walla College; Professor Robert Redmon of Monmouth College; Professor Edward Regis, Jr., of Howard University; Ms. Maria L. Roth of Rutgers University; Ms. Maureen Sanders of The University of Toronto; Ms. Virginia Schuerenberg of Richland College in Dallas, Texas; Mr. Rick Thomas of Washington High School in New York City; Ms. Linda Wallen of the University of Michigan; Professor Frank C. Williams of Eastern Kentucky University; Professor Arnold Wilson of the University of Cincinnati; and Professor Robert J. Yanal of Wayne State University. I have also benefited from discussion with Professor Milton Bloombaum of the Sociology Department and Professor Edward Harter of the Philosophy Department of the University of Hawaii, and with my former colleague Professor Carl Cohen of the University of Michigan. I am grateful for a number of very helpful suggestions made by Professor Robert Gurland of New York University, who reviewed an early version of the new edition.

Several of my correspondents relayed student complaints about what they perceived as a tendency in the book to refer to women in stereotyped terms of limited and inferior role assignments. What earlier editions of the text contained of antifeminist bias was certainly unintentional. In this edition I have made many changes to eliminate the appearance of such prejudice. In doing so I was greatly helped by Ms. Cynthia Henry Thielen, Ms. Margaret Ruth Copi, and Ms. Judy Parrish.

Finally, most of all I thank my wife for help and encouragement in preparing this new edition.

I. M. C.

# Contents

## **PART ONE LANGUAGE**

<i>Chapter 1</i>	Introduction	3
1.1	What Is Logic?	3
1.2	Premises and Conclusions	6
1.3	Passages Containing Several Arguments	15
1.4	Recognizing Arguments	22
1.5	Deduction and Induction	32
1.6	Truth and Validity	41
<i>Chapter 2</i>	The Uses of Language	55
2.1	Three Basic Functions of Language	55
2.2	Discourse Serving Multiple Functions	59
2.3	The Forms of Discourse	61
2.4	Emotive Words	70
2.5	Kinds of Agreement and Disagreement	73
2.6	Emotively Neutral Language	81

**Chapter 3 Informal Fallacies 86**

- 3.1 Classification of Fallacies 86
- 3.2 Fallacies of Relevance 87
- 3.3 Fallacies of Ambiguity 110
- 3.4 The Avoidance of Fallacies 119

**Chapter 4 Definition 126**

- 4.1 Five Purposes of Definition 126
- 4.2 Verbal Disputes and Definition 131
- 4.3 Five Types of Definition 135
- 4.4 Various Kinds of Meaning 142
- 4.5 Techniques for Defining 147
- 4.6 Rules for Definition by Genus and Difference 154

**PART TWO DEDUCTION****Chapter 5 Categorical Propositions 165**

- 5.1 Categorical Propositions and Classes 165
- 5.2 Quality, Quantity, and Distribution 169
- 5.3 The Traditional Square of Opposition 173
- 5.4 Further Immediate Inferences 178
- 5.5 Existential Import 187
- 5.6 Symbolism and Diagrams for Categorical Propositions 191

**Chapter 6 Categorical Syllogisms 198**

- 6.1 Standard-Form Categorical Syllogisms 198
- 6.2 The Formal Nature of Syllogistic Argument 202
- 6.3 Venn Diagram Technique for Testing Syllogisms 205
- 6.4 Rules and Fallacies 215

**Chapter 7 Arguments in Ordinary Language 224**

- 7.1 Reducing the Number of Terms in a Syllogistic Argument 224
- 7.2 Translating Categorical Propositions into Standard Form 228
- 7.3 Uniform Translation 234
- 7.4 Enthymemes 241
- 7.5 Sorites 246
- 7.6 Disjunctive and Hypothetical Syllogisms 249
- 7.7 The Dilemma 255

*Chapter 8*    **Symbolic Logic** **263**

- 8.1    The Value of Special Symbols 263
- 8.2    The Symbols for Conjunction, Negation, and  
Disjunction 265
- 8.3    Conditional Statements and Material Implication 277
- 8.4    Argument Forms and Arguments 288
- 8.5    Statement Forms and Statements 300
- 8.6    The Paradoxes of Material Implication 305
- 8.7    The Three "Laws of Thought" 306

*Chapter 9*    **The Method of Deduction** **309**

- 9.1    Formal Proof of Validity 309
- 9.2    The Rule of Replacement 318
- 9.3    Proof of Invalidity 330
- 9.4    Inconsistency 332

*Chapter 10*    **Quantification Theory** **340**

- 10.1    Singular Propositions 340
- 10.2    Quantification 343
- 10.3    Traditional Subject-Predicate Propositions 346
- 10.4    Proving Validity 353
- 10.5    Proving Invalidity 361
- 10.6    Asyllogistic Inference 366

**PART THREE    INDUCTION**

*Chapter 11*    **Analogy and Probable Inference** **377**

- 11.1    Argument by Analogy 377
- 11.2    Appraising Analogical Arguments 386

*Chapter 12*    **Causal Connections: Mill's Methods of  
Experimental Inquiry** **399**

- 12.1    The Meaning of "Cause" 399
- 12.2    Mill's Methods 406
- 12.3    Criticisms of Mill's Methods 431
- 12.4    Vindication of Mill's Methods 437

*Chapter 13*    **Science and Hypothesis** **458**

- 13.1    The Values of Science 458
- 13.2    Explanations: Scientific and Unscientific 461

13.3	Evaluating Scientific Explanations	467
13.4	The Detective as Scientist	472
13.5	Scientists in Action: The Pattern of Scientific Investigation	481
13.6	Crucial Experiments and Ad Hoc Hypotheses	486
13.7	Classification as Hypothesis	492
 <i>Chapter 14</i> Probability		510
14.1	Alternative Conceptions of Probability	510
14.2	The Probability Calculus	514
14.3	Expectation or Expected Value	525
 Solutions to Selected Exercises		531
Special Symbols		572
Index		573

# *Part One*      Language





# Chapter 1

## Introduction

*... this we do affirm—that if truth is to be sought in every division of Philosophy, we must, before all else, possess trustworthy principles and methods for the discernment of truth. Now the Logical branch is that which includes the theory of criteria and of proofs; so it is with this that we ought to make our beginnings.*

—Sextus Empiricus

*... everyone knows the distinction of cogent reasoning from fallacy. The study of logic appeals to no criterion not already present in the learner's mind. That logical error is, in the last analysis some sort of inadvertence, is an indispensable assumption of the study. Even if it should be in some part an unwarranted assumption, we could not escape it, for the very business of learning through reflection or discussion presumes our logical sense as a trustworthy guide.*

—C. I. Lewis, *Mind and the World-Order*

### 1.1 What Is Logic?

Logic is the study of the methods and principles used to distinguish good (correct) from bad (incorrect) reasoning. This definition must not be taken to imply that only the student of logic can