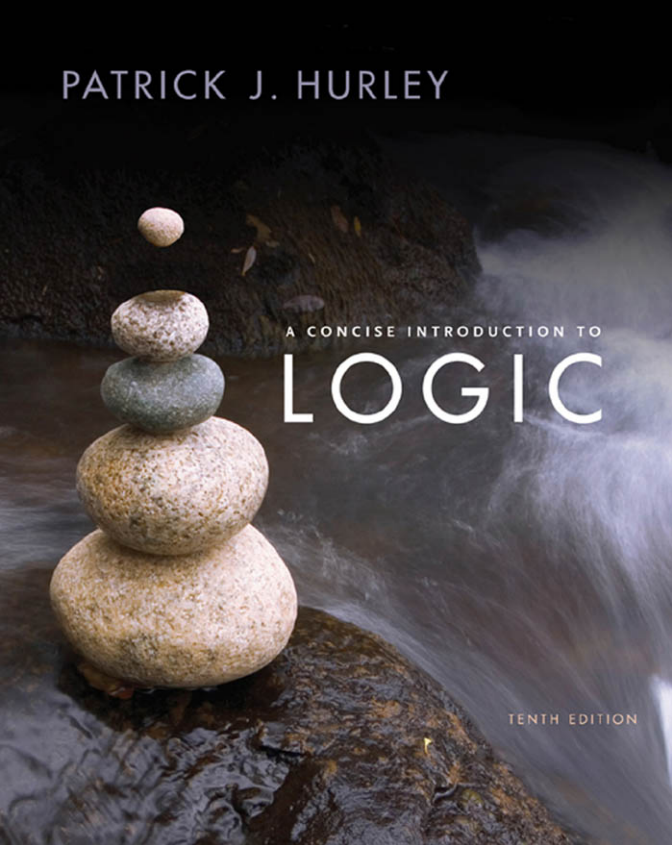


PATRICK J. HURLEY



A CONCISE INTRODUCTION TO  
**LOGIC**

TENTH EDITION



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**TENTH EDITION**

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# A Concise Introduction to Logic

TENTH EDITION

Patrick J. Hurley

University of San Diego

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Thomson Higher Education  
10 Davis Drive  
Belmont, CA 94002-3098  
USA

Library of Congress Control Number: 2007929649

ISBN-13: 978-0-495-50383-5

ISBN-10: 0-495-50383-5

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*To the memory of my  
brother Stephen*

*It is wrong always, everywhere, and for anyone,  
to believe anything upon insufficient evidence.*

W. K. CLIFFORD

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# Brief Contents

## Part I INFORMAL LOGIC

- 1** Basic Concepts 1
- 2** Language: Meaning and Definition 74
- 3** Informal Fallacies 113

## Part II FORMAL LOGIC

- 4** Categorical Propositions 189
- 5** Categorical Syllogisms 244
- 6** Propositional Logic 290
- 7** Natural Deduction in Propositional Logic 350
- 8** Predicate Logic 406

## Part III INDUCTIVE LOGIC

- 9** Analogy and Legal and Moral Reasoning 468
- 10** Causality and Mill's Methods 487
- 11** Probability 510
- 12** Statistical Reasoning 526

---

**13** Hypothetical/Scientific Reasoning 546

**14** Science and Superstition 568

Appendix: Logic and Graduate-Level Admissions Tests 595

Answers to Selected Exercises 605

Glossary/Index 672



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# Contents

*Preface xvii*

## **Part I INFORMAL LOGIC**

### **1 Basic Concepts 1**

#### **1.1 Arguments, Premises, and Conclusions 1**

- Note on the History of Logic 5
- EMINENT LOGICIANS: *Aristotle* 6
- EXERCISE 1.1 8

#### **1.2 Recognizing Arguments 14**

- Simple Noninferential Passages 16
- Expository Passages 18
- Illustrations 19
- Explanations 20
- Conditional Statements 21
- Summary 24
- EXERCISE 1.2 24

#### **1.3 Deduction and Induction 32**

- Deductive Argument Forms 33
- Inductive Argument Forms 34
- Further Considerations 36
- Summary 37
- EXERCISE 1.3 38

#### **1.4 Validity, Truth, Soundness, Strength, Cogency 42**

- Deductive Arguments 42
- Inductive Arguments 45
- Summary 49
- EMINENT LOGICIANS: *Chrysippus* 50
- EXERCISE 1.4 51

---

## **1.5 Argument Forms: Proving Invalidity 54**

Counterexample Method 57

EXERCISE 1.5 60

## **1.6 Extended Arguments 61**

EXERCISE 1.6 66

Summary 72

# **2 Language: Meaning and Definition 74**

## **2.1 Varieties of Meaning 74**

EXERCISE 2.1 78

## **2.2 The Intension and Extension of Terms 84**

EXERCISE 2.2 87

## **2.3 Definitions and Their Purposes 88**

Stipulative Definitions 89

Lexical Definitions 91

Precising Definitions 91

EMINENT LOGICIANS: *Peter Abelard* 92

Theoretical Definitions 93

Persuasive Definitions 94

EXERCISE 2.3 95

## **2.4 Definitional Techniques 97**

Extensional (Denotative) Definitions 97

Intensional (Connotative) Definitions 99

EXERCISE 2.4 103

## **2.5 Criteria for Lexical Definitions 106**

Rule 1: A Lexical Definition Should Conform to the Standards of Proper Grammar 106

Rule 2: A Lexical Definition Should Convey the Essential Meaning of the Word Being Defined 107

Rule 3: A Lexical Definition Should Be Neither Too Broad nor Too Narrow 107

Rule 4: A Lexical Definition Should Avoid Circularity 107

Rule 5: A Lexical Definition Should Not Be Negative When It Can Be Affirmative 108

Rule 6: A Lexical Definition Should Avoid Figurative, Obscure, Vague, or Ambiguous Language 108

Rule 7: A Lexical Definition Should Avoid Affective Terminology 109

Rule 8: A Lexical Definition Should Indicate the Context to Which the Definiens Pertains 109

EXERCISE 2.5 110

Summary 111

# **3 Informal Fallacies 113**

## **3.1 Fallacies in General 113**

EXERCISE 3.1 115

---

### **3.2 Fallacies of Relevance 116**

1. Appeal to Force (*Argumentum ad Baculum*: Appeal to the “Stick”) 116
  2. Appeal to Pity (*Argumentum ad Misericordiam*) 117
  3. Appeal to the People (*Argumentum ad Populum*) 118
  4. Argument Against the Person (*Argumentum ad Hominem*) 119
  5. Accident 122
  6. Straw Man 123
  7. Missing the Point (*Ignoratio Elenchi*) 124
  8. Red Herring 125
- EXERCISE 3.2 126

### **3.3 Fallacies of Weak Induction 131**

9. Appeal to Unqualified Authority (*Argumentum ad Verecundiam*) 131
  10. Appeal to Ignorance (*Argumentum ad Ignorantiam*) 133
  11. Hasty Generalization (Converse Accident) 134
  12. False Cause 136
  13. Slippery Slope 139
  14. Weak Analogy 140
- EMINENT LOGICIANS: *William of Ockham* 141
- EXERCISE 3.3 142

### **3.4 Fallacies of Presumption, Ambiguity, and Grammatical Analogy 149**

15. Begging the Question (*Petitio Principii*) 149
  16. Complex Question 152
  17. False Dichotomy 154
  18. Suppressed Evidence 155
  19. Equivocation 156
  20. Amphiboly 157
  21. Composition 159
  22. Division 161
- EXERCISE 3.4 164

### **3.5 Fallacies in Ordinary Language 172**

- Detecting Fallacies 172
- Avoiding Fallacies 173
- EXERCISE 3.5 178
- Summary 187

## **Part II FORMAL LOGIC**

# **4** **Categorical Propositions 189**

### **4.1 The Components of Categorical Propositions 189**

EXERCISE 4.1 191

### **4.2 Quality, Quantity, and Distribution 191**

EXERCISE 4.2 195

---

### **4.3 Venn Diagrams and the Modern Square of Opposition 196**

Aristotle and Boole 196  
EMINENT LOGICIANS: *George Boole* 197  
Venn Diagrams 198  
The Modern Square of Opposition 201  
Testing Immediate Inferences 202  
EXERCISE 4.3 204

### **4.4 Conversion, Obversion, and Contraposition 205**

Conversion 206  
Obversion 208  
Contraposition 210  
EXERCISE 4.4 213

### **4.5 The Traditional Square of Opposition 215**

Testing Immediate Inferences 218  
EXERCISE 4.5 221

### **4.6 Venn Diagrams and the Traditional Standpoint 225**

Proving the Traditional Square of Opposition 226  
Testing Immediate Inferences 228  
EXERCISE 4.6 231

### **4.7 Translating Ordinary Language Statements into Categorical Form 232**

1. Terms Without Nouns 233
2. Nonstandard Verbs 233
3. Singular Propositions 234
4. Adverbs and Pronouns 235
5. Unexpressed Quantifiers 235
6. Nonstandard Quantifiers 236
7. Conditional Statements 237
8. Exclusive Propositions 237
9. "The Only" 238
10. Exeptive Propositions 239

EXERCISE 4.7 240  
Summary 242

## **5 Categorical Syllogisms 244**

### **5.1 Standard Form, Mood, and Figure 244**

EXERCISE 5.1 248

### **5.2 Venn Diagrams 251**

EMINENT LOGICIANS: *John Venn* 252  
Boolean Standpoint 254  
Aristotelian Standpoint 259  
EXERCISE 5.2 261

---

<b>5.3 Rules and Fallacies</b>	<b>264</b>
Boolean Standpoint	264
Aristotelian Standpoint	267
Proving the Rules	268
EXERCISE 5.3	270
<b>5.4 Reducing the Number of Terms</b>	<b>272</b>
EXERCISE 5.4	273
<b>5.5 Ordinary Language Arguments</b>	<b>274</b>
EXERCISE 5.5	276
<b>5.6 Enthymemes</b>	<b>277</b>
EXERCISE 5.6	280
<b>5.7 Sorites</b>	<b>282</b>
EXERCISE 5.7	284
Summary	288

## **6** Propositional Logic 290

<b>6.1 Symbols and Translation</b>	<b>290</b>
EMINENT LOGICIANS: <i>Gottfried Wilhelm Leibniz</i>	298
EXERCISE 6.1	299
<b>6.2 Truth Functions</b>	<b>302</b>
Definitions of the Logical Operators	302
Computing the Truth Value of Longer Propositions	306
Further Comparison with Ordinary Language	308
EXERCISE 6.2	311
<b>6.3 Truth Tables for Propositions</b>	<b>313</b>
Classifying Statements	316
Comparing Statements	317
EXERCISE 6.3	319
<b>6.4 Truth Tables for Arguments</b>	<b>321</b>
EXERCISE 6.4	324
<b>6.5 Indirect Truth Tables</b>	<b>325</b>
Testing Arguments for Validity	326
Testing Statements for Consistency	329
EMINENT LOGICIANS: <i>Augustus De Morgan</i>	330
EXERCISE 6.5	331
<b>6.6 Argument Forms and Fallacies</b>	<b>333</b>
Common Argument Forms	333
Refuting Constructive and Destructive Dilemmas	336
Note on Invalid Forms	338
Summary and Application	339
EXERCISE 6.6	343
Summary	348

---

## 7 Natural Deduction in Propositional Logic 350

### 7.1 Rules of Implication I 350

EXERCISE 7.1 356

### 7.2 Rules of Implication II 361

EXERCISE 7.2 366

### 7.3 Rules of Replacement I 370

EXERCISE 7.3 376

### 7.4 Rules of Replacement II 381

EXERCISE 7.4 386

### 7.5 Conditional Proof 391

EMINENT LOGICIANS: *Gottlob Frege* 393

EXERCISE 7.5 395

### 7.6 Indirect Proof 397

EXERCISE 7.6 401

### 7.7 Proving Logical Truths 402

EXERCISE 7.7 404

Summary 404

## 8 Predicate Logic 406

### 8.1 Symbols and Translation 406

EXERCISE 8.1 413

### 8.2 Using the Rules of Inference 415

EXERCISE 8.2 424

### 8.3 Change of Quantifier Rule 425

EMINENT LOGICIANS: *Alfred North Whitehead and Bertrand Russell* 426

EXERCISE 8.3 428

### 8.4 Conditional and Indirect Proof 430

EXERCISE 8.4 434

### 8.5 Proving Invalidity 435

Counterexample Method 436

Finite Universe Method 437

EXERCISE 8.5 440

### 8.6 Relational Predicates and Overlapping Quantifiers 441

Translating Relational Statements 442

Using the Rules of Inference 446

EXERCISE 8.6 450

### 8.7 Identity 453

Simple Identity Statements 453

EMINENT LOGICIANS: *Kurt Gödel* 454

“Only,” “The Only,” and “No ... Except” 455

---

"All Except" 455  
Superlatives 456  
Numerical Statements 456  
Definite Descriptions 458  
Using the Rules of Inference 459  
EXERCISE 8.7 462  
Summary 467

## Part III INDUCTIVE LOGIC

### 9 Analogy and Legal and Moral Reasoning 468

#### 9.1 Analogical Reasoning 468

#### 9.2 Legal Reasoning 471

#### 9.3 Moral Reasoning 475

EXERCISE 9 479

Summary 486

### 10 Causality and Mill's Methods 487

#### 10.1 "Cause" and Necessary and Sufficient Conditions 487

#### 10.2 Mill's Five Methods 488

Method of Agreement 489

Method of Difference 490

EMINENT LOGICIANS: *John Stuart Mill* 491

Joint Method of Agreement and Difference 493

Method of Residues 495

Method of Concomitant Variation 496

#### 10.3 Mill's Methods and Science 498

EXERCISE 10 504

Summary 509

### 11 Probability 510

#### 11.1 Theories of Probability 510

#### 11.2 The Probability Calculus 513

1. Restricted Conjunction Rule 514

2. General Conjunction Rule 515

3. Restricted Disjunction Rule 515

4. General Disjunction Rule 516

5. Negation Rule 518

6. Bayes's Theorem 519

Additional Applications 521

EXERCISE 11 523

Summary 525



---

## **12 Statistical Reasoning 526**

**12.1 Evaluating Statistics 526**

**12.2 Samples 526**

**12.3 The Meaning of “Average” 530**

**12.4 Dispersion 532**

**12.5 Graphs and Pictograms 537**

**12.6 Percentages 539**

EXERCISE 12 541

Summary 545

## **13 Hypothetical/Scientific Reasoning 546**

**13.1 The Hypothetical Method 546**

**13.2 Hypothetical Reasoning: Four Examples from Science 548**

Radium 549

Neptune 550

Atmospheric Pressure 551

Spontaneous Generation 552

**13.3 The Proof of Hypotheses 554**

EMINENT LOGICIANS: *Charles Sanders Peirce* 555

**13.4 The Tentative Acceptance of Hypotheses 557**

EXERCISE 13 559

Summary 566

## **14 Science and Superstition 568**

**14.1 Distinguishing Between Science and Superstition 568**

**14.2 Evidentiary Support 569**

**14.3 Objectivity 573**

**14.4 Integrity 578**

**14.5 Concluding Remarks 582**

EXERCISE 14 583

Summary 593

**Appendix: Logic and Graduate-Level Admissions Tests 595**

**Answers to Selected Exercises 605**

**Glossary/Index 672**

---

## Preface

The most immediate benefit derived from the study of logic is the skill needed to construct sound arguments of one's own and to evaluate the arguments of others. In accomplishing this goal, logic instills a sensitivity for the formal component in language, a thorough command of which is indispensable to clear, effective, and meaningful communication. On a broader scale, by focusing attention on the requirement for reasons or evidence to support our views, logic provides a fundamental defense against the prejudiced and uncivilized attitudes that threaten the foundations of our democratic society. Finally, through its attention to inconsistency as a fatal flaw in any theory or point of view, logic proves a useful device in disclosing ill-conceived policies in the political sphere and, ultimately, in distinguishing the rational from the irrational, the sane from the insane.

To realize the benefits offered by the study of logic, one must thoroughly understand the central concepts of the subject and be able to apply them in actual situations. To promote the achievement of these goals, this text presents the central concepts of logic clearly and simply. Examples are used extensively, key terms are introduced in boldface type and defined in the glossary/index, and major points are illustrated in graphic boxes. Furthermore, to ensure sufficient practice in applying the basic principles, the book includes over 2,000 exercises selected to illustrate the main points and guard against the most typical mistakes. In most cases, every third exercise is answered in the back of the book.

### New to This Edition

- In this Tenth Edition, the coverage of **Inductive Logic** in Part III has been broken up into six separate chapters to allow for greater flexibility in using the text in class. This change also facilitates customization through our Custom program, which lets you select course materials to create an affordable text that matches your syllabus. For more information, visit [www.thomsoncustom.com/makeityours/hurley10e](http://www.thomsoncustom.com/makeityours/hurley10e).
- Also new in this edition, thirteen pages devoted to “**Eminent Logicians**” highlight the contributions of key logicians in history. The inclusion of these features should help to humanize logic and make it more interesting by connecting it with historical figures who devoted much of their lives to advancing the science of logic.

- 
- A new method for testing sorites has been introduced into **Section 5.7**. This method, which resembles the rules method for syllogisms, is often simpler to apply because it does not require that intermediate conclusions be drawn.
  - In **Section 8.6** the restriction on universal generalization for arguments involving relational predicates and overlapping quantifiers has been replaced by a slightly stricter version. To my considerable surprise, a very good logician came up with an invalid argument that got past the earlier formulation of this restriction.
  - Also, in **Chapter 14** (formerly Section 9.6) more treatment is accorded Ockham's razor in connection with explanations.
  - The “**Logic and Graduate-Level Admissions Tests**” appendix, which draws a connection between logic and earning a good score on tests such as the LSAT, GMAT, and MCAT, has been completely rewritten and expanded, paying greater attention to logical strategies.
  - Beginning with this edition, the *Learning Logic* program is available online at **ThomsonNOW™** ([www.thomsonedu.com/ThomsonNOW](http://www.thomsonedu.com/ThomsonNOW)). As a result, the CD-ROM containing that program has been removed from the book, but it is available as a bundled item at no additional cost, and separately at minimal cost. *Learning Logic* is a multimedia program that vastly simplifies the teaching of logic, allowing classroom time to be spent on troubleshooting and special interests.
  - Two new multimedia offerings are available with this edition. Audio files that help students comprehend and retain the central concepts of logic, and that can be used as a final preparation before taking an exam, are available as mp3 files. They can be purchased and downloaded at [www.iChapters.com](http://www.iChapters.com). Video clips will be available through **ThomsonNOW** (formerly **iLrn**), as well as on the multimedia manager. These clips cover topics that students often find difficult, such as the concept of validity, conversion, obversion, and contraposition, indirect truth tables, and natural deduction. Each video is devoted to a brief lecture on one of these topics, together with pointers on how to work the exercises at the end of the pertinent section.
  - In addition, numerous smaller changes have been introduced throughout the book. A list of the more significant ones can be found in the instructor's manual.

### Note to the Student

Imagine that you are interviewing for a job. The person across the desk asks about your strengths, and you reply that you are energetic, enthusiastic, and willing to work long hours. Also, you are creative and innovative, and you have good leadership skills. Then the interviewer asks about your weaknesses. You hadn't anticipated this question, but after a moment's thought you reply that your reasoning skills have never been very good.

The interviewer quickly responds that this weakness could create big problems.

“Why is that?” you ask.

“Because reasoning skills are essential to good judgment. And without good judgment your creativity will lead to projects that make no sense. Your leadership skills will direct our other employees in circles. Your enthusiasm will undermine everything we have accomplished up until now. And your working long hours will make things even worse.”

---

“But don’t you think there is some position in your company that is right for me?” you ask.

The interviewer thinks for a moment and then replies, “We have a competitor on the other side of town. I hear they are hiring right now. Why don’t you apply with them?”

The point of this little dialogue is that good reasoning skills are essential to doing anything right. The business person uses reasoning skills in writing a report or preparing a presentation; the scientist uses them in designing an experiment or clinical trial, the department manager uses them in maximizing worker efficiency, the lawyer uses them in composing an argument to a judge or jury. And that’s where logic comes in. The chief purpose of logic is to develop good reasoning skills. In fact, logic is so important that when the liberal arts program of studies was formulated fifteen hundred years ago, logic was selected as one of the original seven liberal arts. Logic remains to this day a central component of a college or university education.

From a more pragmatic angle, logic is important to earning a good score on any of the several tests required for admission to graduate professional schools—the LSAT, GMAT, MCAT, and so on. Obviously, the designers of these tests recognize that the ability to reason logically is a prerequisite to success in these fields. The appendix in the back of the book, which has been expanded for this edition, contains sample questions and cues on answering them. Also, logic is a useful tool in relieving what has come to be called math anxiety. For whatever reason, countless students today are terrified of any form of reasoning that involves abstract symbols. If you happen to be one of these students, you should find it relatively easy to master the use of logical symbols, and your newly found comfort with these symbols will carry over into the other, more difficult fields.

To improve your performance in logic, I strongly urge you to take full advantage of a multimedia program called *Learning Logic*. This is an interactive tutorial that teaches the essentials of this textbook in a very user-friendly way. However, your computer must be equipped with loudspeakers or headphones, because the audio component is essential. With earlier editions of this textbook, *Learning Logic* was written on a CD that came bundled with the book, and if your instructor has ordered it (at no additional cost), it may still be bundled with the book. However, *Learning Logic* is now available online through ThomsonNOW, and new books contain an access card that gives instructions on how to open the program. If you have a used book, you can still access *Learning Logic* through ThomsonNOW for a small fee or, alternately, purchase the CD separately.

Also available online through [www.thomsonedu.com/ThomsonNOW](http://www.thomsonedu.com/ThomsonNOW) are brief video lectures on key topics. The videos include pointers on how to work the pertinent exercises in the textbook. They cover topics such as the concept of validity, conversion, obversion, and contraposition, indirect truth tables, and natural deduction. If, as you work through the content of this book, you encounter a subject that you have trouble understanding, one of these videos may solve the problem.

Additionally, a set of audio summaries for each chapter in the book is available online at [www.thomsonedu.com/philosophy/hurley](http://www.thomsonedu.com/philosophy/hurley). These are designed so that you

can download them onto your iPod, mp3 player, or computer and listen to them before taking a test.

Because proficiency in logic involves developing a skill, it helps to work through the practice problems in *Learning Logic* and the exercises in the textbook more than once. This will help you see that good reasoning (and bad reasoning, too) follows certain patterns whose identification is crucial to success in logic. As you progress, I think you will find that learning logic can be lots of fun, and working with the online resources should enhance your overall learning experience.

## Note to the Instructor: Alternative Course Approaches to the Textbook

Depending on the instructor's preferences, this textbook can be approached in several ways. The following chart presents possible approaches for three different kinds of courses.

In general, the material in each chapter is arranged so that certain later sections can be skipped without affecting subsequent chapters. For example, those wishing a brief treatment of natural deduction in both propositional and predicate logic may want to skip the last three sections of Chapter 7 and the last four (or even five) sections of Chapter 8. Chapter 2 can be skipped altogether, although some may want to cover the first section of that chapter as an introduction to Chapter 3. Finally, Chapters 9 through 14 depend only slightly on earlier chapters, so these can be treated in any order one chooses. However, Chapter 14 does depend in part on Chapter 13.

### Type of Course

	<b>Traditional logic course</b>	<b>Informal logic course, critical reasoning course</b>	<b>Course emphasizing modern formal logic</b>
<b>Recommended material</b>	Chapter 1 Chapter 3 Chapter 4 Chapter 5 Chapter 6 Sections 7.1–7.4	Chapter 1 Chapter 2 Chapter 3 Chapter 4 Sections 5.1–5.3 Sections 5.5–5.6 Sections 6.1–6.4 Section 6.6 Chapter 9 Chapter 12 Chapter 13 Chapter 14 Writing Supplement	Chapter 1 Sections 4.1–4.3 Section 4.7 Sections 6.1–6.5 Chapter 7 Chapter 8 Truth Tree Supplement
<b>Optional material</b>	Chapter 2 Sections 7.5–7.7 Chapters 9–14	Section 5.4 Section 5.7 Section 6.5 Chapter 10 Chapter 11	Chapter 3 Sections 4.4–4.6 Sections 5.1–5.2 Section 5.7 Section 6.6

---

## Acknowledgements

For their reviews and suggestions leading to this tenth edition I want to thank the following:

Joseph Asike, Howard University  
Jerome Balmuth, Colgate University  
Ida Baltikauskas, Century College  
Robert Barnard, University of Mississippi  
Victoria Berdon, IUPU Columbus  
Tom Browder, University of Nevada, Las Vegas  
Kevin Browne, Indiana University Southeast  
Michael Byron, Kent State University  
Charles Carr, Arkansas State University  
Jennifer Caseldine-Bracht, IUPU Fort Wayne  
John Casey, Northern Illinois University  
Robert Greg Cavin, Cypress College  
Prakash Chenjeri, Southern Oregon University  
Timothy Christian, University of North Texas  
Michael Cole, College of William and Mary  
William Cornwell, Salem State College  
Victor Cosculluela, Polk Community College  
Joseph DeMarco, Cleveland State University  
Mary Domski, University of New Mexico  
Paul Draper, Purdue University  
Paul Eckstein, Bergen Community College  
Anne M. Edwards, Austin Peay State University  
Michael Epperson, California State University, Sacramento  
Cassandra Evans, San Diego City College  
Frank Fair, Sam Houston State University  
Timothy C. Fout, University of Louisville  
Craig Fox, California University of Pennsylvania  
Shannon Grace, Edmunds Community College  
James Granitto, Santiago Canyon College  
Catherine Green, Rockhurst University  
James Greene, Northern Michigan University  
Harold Greenstein, SUNY Brockport  
Shahrokh Haghighi, California State University  
Alexander W. Hall, Clayton State University  
Dean Hamden, Montclair State University  
Larry Hauser, Alma College  
Deborah Heikes, University of Alabama in Huntsville  
Dale Lynn Holt, Mississippi State University  
John B. Howell, III, Southwestern Baptist Theological Seminary  
Peter Hutcheson, Texas State University  
Sandra Johanson, Green River Community College  
Glenn C. Joy, Texas State University, San Marcos  
Grant Julin, St. Francis University  
Phillip McReynolds, Pennsylvania State University

---

Richard Miller, East Carolina University  
Len Olsen, Georgia Southern University  
Brendan O’Sullivan, Rhodes College  
Linda Peterson, University of San Diego  
Cassandra Pinnick, Western Kentucky University  
Bruce Reichenbach, Augsburg College  
Michael Rooney, Pasadena City College  
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David Stern, University of Iowa  
John Sullins, Sonoma State University  
Ramon Tello, Shasta College  
Phil Thompson, Eastern Illinois University  
Ted Ulrich, Purdue University  
Robert Urekew, University of Louisville  
Andrew J. Waskey, Dalton State University  
Chris Weigand, Our Lady of the Lake University  
Robert Wengert, University of Illinois, Urbana/Champaign  
Gerald Joseph Williams, Seton Hall University  
Stephen Wykstra, Calvin College  
Marie Zaccaria, Georgia Perimeter College  
Jeffrey Zents, University of Texas

Of course any errors or omissions that may remain are the result of my own oversight.

Those who have contributed reviews and suggestions leading to the nine previous editions, and to whom I express my continued thanks, are the following:

James T. Anderson, University of San Diego; Carol Anthony, Villanova University; Harriet E. Baber, University of San Diego; Kent Baldner, Western Michigan University; James Baley, Mary Washington College; Jerome Balmuth, Colgate University; Victor Balowitz, State University of New York, College at Buffalo; Gary Baran, Los Angeles City College; Gregory Bassham, Kings College; Thora Bayer, Xavier University of Louisiana; David Behan, Agnes Scott College; John Bender, Ohio University, Athens; James O. Bennett, University of Tennessee, Knoxville; Robert Berman, Xavier University of Louisiana; Joseph Bessie, Normandale Community College; John R. Bosworth, Oklahoma State University; Andrew Botterell, University of Toronto; Harold Brown, Northern Illinois University; Ken Buckman, University of Texas, Pan American; Robert Burch, Texas A&M University; Keith Burgess-Jackson, University of Texas, Arlington; James Campbell, University of Toledo; Joseph Keim Campbell, Washington State University; William Carroll, Coppin State University; Greg

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