

List of Figures

Contents

, e	1 0
List of Tables	xiii
Preface	xv
Part I	
ONE	
The Game of Logic – What Follows from What	3
1.1 Logic: An Overview	6
1.2 Falling for Fallacies	9
1.3 A Closer Look at How People Reason	II
1.4 Fast and Slow Decision-Making	13
1.5 When People Engage in More Sophisticated Reasoning	
Than Experimenters Ask For	15
1.6 How to Reason More Logically	17
TWO	
Moral Judgment – How We Tell Right from Wrong	19
2.1 Moral Rules	20
2.2 How We Make Moral Decisions	23
2.3 Paul Bloom: Against Empathy	28
2.4 Improving the Ability to Empathize	34
2.5 Why We Avoid Empathizing	35
2.6 Are There Universal Moral Rules?	36
2.7 Gender Differences in Moral Judgment	41
2.8 The Bottom Line	45
2.9 How to Improve Your Moral Judgments	46

page xii



viii	CONTENTS	
TH	IREE	
Ar	nalogical Reasoning – The Heart and Soul of Insight,	
	Discovery, and Genius	48
3.1	Analogy as We Usually Do It	52
3.2	Why Analogy Is the Core of Cognition	54
3.3	How to Improve Analogical Thinking	57
FO	UR	
Sc	ientific Reasoning – Proving What Causes What	62
4.1	The Core Concept Underlying All Scientific Investigations:	
	Causality	63
4.2	How People Decide What Causes What	65
4.3	Plausibility Bias Leads to Confirmation Bias	68
4.4	The Hypothetico-Deductive Method of Inquiry	71
4.5	Why People Have Confirmation Bias	73
4.6	The Importance of Considering Alternatives	74
4.7	A Disturbing Example of Bad Science	76
4.8	A Shining Example of Good Science	80
4.9	How to Improve Scientific Reasoning	86
FI		
De	ecision-Making – Choosing What Is Most Likely	
	to Give You What You Most Want	89
	The Controversy about Cancer Screening	89
	How the Experts Think about Rational Choice	91
	How People Think about Probabilities	92
	We Are Inconsistent in Ordering Our Preferences	98
	Why People Don't Always Behave Like Rational Agents	IOO
5.6	Emotions and Decision-Making: The Good, the Bad,	
	and the Downright Ugly	104
5.7	The Global Economic Meltdown of 2008 (or Why You're Still	
	Paying Off Student Loans)	106
	How NOT to Improve Decision-Making	109
5.9	How to Improve Decision-Making	IIO
SIX		
	ame Theory – When You're Not the Only One Choosing	115
6.1	The Basics of Game Theory and Economic Theory	116



CONTENTS	ix
6. Come Theory and Desiding Whathou on Not to Tourt	
6.2 Game Theory and Deciding Whether or Not to Trust	117
6.3 Experimental Economics: What People Actually Do	120
6.4 How Our Brain is Wired for Cooperation	129
6.5 Why Human Behavior in Economic Games Differs	122
from Game Theory Predictions 6.6 Ayn Rand and Objectivism	132
6.7 The Bottom Line	137
6.8 How to Use Game Theory to Improve Decision-Making	141
and Negotiating Skills	142
ana Ivegoraring Skus	142
SEVEN	
Creative Problem-Solving – Turning What You Don't	
Want into What You Do Want	144
7.1 The Basics: How We Define the Terms "Problem"	
and "Problem-Solving"	I44
7.2 How Experts Solve Problems	147
7.3 Artificial Intelligence: Machines Who Think	150
7.4 Insight and Genius 7.5 The France of Creative Insight	153
7.5 The Enemy of Creative Insight	157
7.6 How to Improve Your Creativity 7.7 Before You Leave This Chapter, Try Your Hand	16c
at These Insight Problems	162
ur Trese Trisigin Troviems	102
Part II	165
EIGHT	
Into the Weeds of Logic – How It's Done	167
8.1 Take-Home Points	167
8.2 Two Kinds of Reasoning	169
8.3 A Journey into Logic Land	170
8.4 How Aristotle Characterized Good Thinking	171
8.5 Propositional Logic: An Overview	175
8.6 Truth Functional Logic	178
8.7 First-Order Logic	184
8.8 Higher-Order Logics	187
8.9 When the World Changes: Defeasible Reasoning	190
8.10 The Bottom Line	191



X CONTENTS

NINE	
Into the Weeds of Moral Judgment – How It's Done	196
9.1 Take-Home Points	196
9.2 How We Should Make Moral Judgments According	
to Western Culture	196
9.3 Religion, Politics, and Morality	198
9.4 How We Should Make Moral Judgments According	
to Non-Western Cultures	210
9.5 The Bottom Line	215
TEN	
Into the Weeds of Analogical Reasoning – How It's Done	220
10.1 Take-Home Points	220
10.2 Philosophical Theories of Analogical Reasoning	221
10.3 Psychological Theories of Analogical Reasoning	223
10.4 The Bottom Line	227
ELEVEN	
Into the Weeds of Scientific Reasoning – How It's Done	230
II.I Take-Home Points	230
11.2 What Philosophy Has Taught Us about Causality	232
11.3 What Philosophy Has Taught Us about Hypothesis Testing	237
11.4 How Science Is Done	243
11.5 Evaluating Data and Plausibility to Decide What Causes What	256
11.6 The Bottom Line	258
TWELVE	
Into the Weeds of Rational Decision-Making – How It's D	one 262
12.1 Take-Home Points	262
12.2 How We Are Supposed to Update Our Beliefs	263
12.3 Bayesian Reasoning	264
12.4 An Alternative Means of Testing Hypotheses	274
12.5 The Bottom Line	275
THIRTEEN	
Into the Weeds of Game Theory – How It's Done	279
13.1 Take-Home Points	279
13.2 Real-World Game Theory Applications	281



CONTENTS	xi
13.3 The Nuts and Bolts of Game Theory	282
13.4 Trust Games	290
13.5 Dictator and Ultimatum Games	297
13.6 The Bottom Line	298
FOURTEEN	
Into the Weeds of Problem-Solving – How It's Done	303
14.1 Take-Home Points	303
14.2 When Problems Are Well Defined	304
14.3 When Problems Are Not So Well Defined	309
14.4 Uninformed Search	312
14.5 Informed Search Methods	314
14.6 Production Systems	317
14.7 Neural Networks	319
14.8 The Bottom Line	322
Appendix A: Answers to Insight Problems	325
Answer Key to Quizzes	327
Notes	328
Index	352