# CONTENTS

Path-Dependence commons ond Oursons sandition, Actions, and Oursons sanditions

## Preface xi

Delegation to Deline Beternalities

	Introduction	1
1	Rationality	6
	Rationality and Choice	6
	What Is Rationality?	7
	Rationality as Effectiveness	9
	Subjective Rationality	10
	Rationality and Sound Belief	12
	Rational Belief and Choice	12
	Rationality and Goals	16
	Actions and Goals	21
	From Rational Choice to Homo Economicus	25
	Optimizing—More Is Better than Less	25
	Decreasing Marginal Value	26
	The Law of Demand—Downward Sloping Demand Curves	29
	Self-Interest	30
	Constrained Maximization	33
	Conclusion	34
	Discussion Questions	34
2	Ordinal Utility Theory	36
	Building Blocks	36
	Preferences	37
	Preferences as Tastes or Desires	38
	Revealed Preferences: The Behavioral Interpretation	40

#### vi CONTENTS

	Deliberation, Actions, and Outcomes	42
	Actions and Outcomes	42
	Preferences Over Actions	43
	Ordinal Utility Theory	45
	Why Accept the Axioms?	48
	Conclusion	50
	Discussion Questions	51
3	Cardinal Utility	53
	Cardinal Utility	53
	Generating Cardinal Utilities	56
	Representation of Utility	58
	Interpersonal Comparisons	59
	Expected Utility	61
	Questioning the Axioms	62
	Continuity	63
	Better Prizes	63
	The Allais Paradox	64
	The Ellsberg Paradox	66
	Prospect Theory	68
	Psychology and Expected Utility Theory	68
	Errors in Probability Judgments	69
	Framing Effects	72
	Endowment Effects	73
	Do These Findings Undermine Expected Utility Theory?	73
	The Relation Between Utility Theory and Rationality	77
	Rationality and Maximizing Utility	79
	Conclusion	80
	Discussion Questions	80
4	Efficiency and Contract	82
	Rationality and Efficiency	82
	Exchange and the Edgeworth Box	85
	Problems with Pareto Efficiency	88
	Indeterminacy	89

### CONTENTS vii

Path-Dependence	89
Conflicts Between Efficiency and Rationality	9:
Efficiency and Welfare	9:
Markets and Efficiency	92
Externalities	94
Compensation and Kaldor-Hicks Efficiency	9:
Welfare, Rights, and the Liberal Paradox	9
Property Rights	99
Using Rights to Define Externalities	100
The Coase Theorem	10
Public Goods	10
Non-Excludability and the Free-Rider Problem	10
Non-Rival Consumption	100
Public Goods and State Action	10
Homo Economicus or Voluntary Cooperation?	109
Conclusion	110
Discussion Questions	11
Foundations of Game Theory	11:
Strategic Rationality	11:
Zero-Sum Games	110
Extensive Form Zero-Sum Games	11'
The Prisoner's Dilemma	119
Rationality and Efficiency	12
Public Goods and the Prisoner's Dilemma	12
Coordination Games	12
Chicken	12
Stag Hunt	13
Battle of the Sexes	134
Dominance and Rationalizability	130
Mixed Strategies	140
The Nash Existence Theorem	14
Mixed Strategies in a Coordination Game	14
Do People Play Nash?	14
	Conflicts Between Efficiency and Rationality  Efficiency and Welfare  Markets and Efficiency  Externalities  Compensation and Kaldor-Hicks Efficiency  Welfare, Rights, and the Liberal Paradox  Property Rights  Using Rights to Define Externalities  The Coase Theorem  Public Goods  Non-Excludability and the Free-Rider Problem  Non-Rival Consumption  Public Goods and State Action  Homo Economicus or Voluntary Cooperation?  Conclusion  Discussion Questions  Foundations of Game Theory  Strategic Rationality  Zero-Sum Games  Extensive Form Zero-Sum Games  The Prisoner's Dilemma  Rationality and Efficiency  Public Goods and the Prisoner's Dilemma  Coordination Games  Chicken  Stag Hunt  Battle of the Sexes  Dominance and Rationalizability  Mixed Strategies  The Nash Existence Theorem  Mixed Strategies in a Coordination Game

#### viii CONTENTS

	Subgame Perfection and Backwards Induction	150
	The Farmer's Game	150
	Two Kidnappers	152
	Backwards Induction	153
	Gauthier's Solution	154
	Nuclear Deterrence	156
	Commitment	157
	Conclusion	158
	Discussion Questions	159
-	Advanced Tenics in Come Theory	161
0	Advanced Topics in Game Theory	161
	Repeated Games	
	Tit-for-Tat and the Evolution of Cooperation	162
	The Folk Theorem	165
	The Evolution of Direct Reciprocity	165
	Evolutionary Games	166
	Hawk-Dove Game	168
	Evolutionary Stable Strategies	170
	Asymmetries and the Origin of Property Rights	171
	Polymorphic Equilibria	174
	ESS and Nash	175
	Evolutionary Game Theory and Rationality	176
	Signaling	177
	Bargaining Theory	181
	Conclusion	190
	Discussion Questions	191
7	Conventions, Norms, and Institutions	192
	Conventions	192
	Conventions and Coordination	193
	How Do Conventions Emerge?	194
	Common Knowledge	195
	Conventions and Arbitrariness	197
	Conventions and Contract	198
	Convention and Contract	190

### CONTENTS ix

	Social Norms	200
	What Norms Do	203
	Norms and Cooperation	205
	Norms and Nash	207
	Bad Norms	209
	Institutions	212
	Two Types of Institutions	215
	Institutions and Transaction Costs	216
	Conclusion	218
	Discussion Questions	218
8	Social Choice Theory	220
	The Problem of Social Choice	220
	Social Choice Theory	223
	Collective Rationality	225
	May's Theorem and Majority Rule	226
	May's Conditions	227
	May's Argument	229
	Arrow's Theorem	230
	Condorcet Voting and Its Paradox	230
	Arrow's Conditions	231
	The First Stage of the Theorem: From Local	
	Semi-Decisiveness to Global Decisiveness	233
	The Second Stage of the Theorem: Finding the Dictator	237
	Representation and Coherence	238
	The Importance of Arrow's Theorem	238
	Does Arrow's Theorem Challenge Democracy?	238
	Dimensionality	240
	Collective Choice Rules	241
	Problems of Collective Choice Rules	243
	Extending Social Choice Rules	244
	Condorcet Method	245
	A Weakly Positional Method: Plurality	245

#### X CONTENTS

	A Strongly Positional Method: Borda Count	247
	Cardinal Methods	249
	Elimination Methods	250
	What to Choose?	253
	Path Dependency and Agenda Manipulation	253
	Path Dependency in Legislation	254
	Agenda Control in the Flying Club	257
22	Strategic Voting	260
	Other Examples of Strategic Voting	261
	Logrolling: Vote Trading in Legislatures	262
	The Gibbard-Satterthwaite Theorem	264
	Conclusion	264
	Discussion Questions	265
9	Public Choice and Democracy	266
22	Basic Spatial Model of Democracy	267
	Uncertainty and Ideology	269
	The Simple Spatial Model	270
	Complicating the Basic Spatial Model	272
	The Plurality Rule and the Two-Party System	274
	Choosing the Rules	275
	Unanimity	276
	Bicameralism	280
	Logrolling and Making Everyone Worse Off	283
	Intertemporal Coalitions	286
	Homo Economicus and the Symmetry Assumption	287
	Voting and Rationality	292
	Non-Electoral Utility	294
	The Act and Expression of Voting	297
	Conclusion	298
	Discussion Ouestions	200

Bibliography 301

Index 313