

Contents

Preface	xiii
1 Introduction	1
1.1 What Is Game Theory Good For?	5
1.2 Three Examples	7
1.2.1 Example 1: Ultimatum Bargaining	8
1.2.2 Example 2: Path-Dependent Coordination in “Continental Divide” Games	12
1.2.3 Example 3: “Beauty Contests” and Iterated Dominance	16
1.3 Experimental Regularity and Behavioral Game Theory	20
1.4 Conclusion	24
Appendix	25
A1.1 Basic Game Theory	25
A1.2 Experimental Design	34
2 Dictator, Ultimatum, and Trust Games	43
2.1 Ultimatum and Dictator Games: Basic Results	48
2.2 Methodological Variables	59
2.2.1 Repetition	59
2.2.2 Methodology: Stakes	60
2.2.3 Anonymity and Experimenter “Blindness”	62
2.3 Demographic Variables	63
2.3.1 Gender	64
2.3.2 Race	65
2.3.3 Academic Major	65
2.3.4 Age	65
2.3.5 Brains, Biology, and Beauty	67
2.4 Culture	68

2.5	Descriptive Variables: Labeling and Context	74
2.6	Structural Variables	75
	2.6.1 Identity, Communication, and Entitlement	76
	2.6.2 Competitive Pressure and Outside Options	77
	2.6.3 Information about the Amount Being Divided	78
	2.6.4 Multiperson Games	80
	2.6.5 Intentions: Influence of Unchosen Alternatives	81
2.7	Trust Games	83
	2.7.1 Is Trustworthiness Just Altruism?	89
	2.7.2 Indirect Reciprocity, Karma, Culture	90
	2.7.3 A Complex Omnibus Game	93
	2.7.4 Multistage Trust Games	94
	2.7.5 Gift Exchange in Experimental Labor Markets	95
2.8	Theory	101
	2.8.1 Pure and Impure Altruism	102
	2.8.2 Inequality-Aversion Theories	102
	2.8.3 Fairness Equilibrium (Rabin)	105
	2.8.4 Extensive-Form Fairness Equilibrium	107
	2.8.5 Comparing Approaches	110
2.9	Conclusion	113
3	Mixed-Strategy Equilibrium	118
3.1	Early Studies	121
3.2	Modern Studies	125
3.3	Subjective Randomization and Mixed Strategies	134
3.4	Explicit Randomization	138
3.5	Patent Race and Location Games with Mixed Equilibria	142
3.6	Two Field Studies	145
3.7	Conclusion	147
4	Bargaining	151
4.1	Unstructured Bargaining	153
	4.1.1 Unstructured Bargaining over Ticket Allocations	153
	4.1.2 Self-Serving Interpretations of Evidence in Unstructured Bargaining	158
4.2	Structured Bargaining	161
	4.2.1 Finite Alternating-Offer Games	161
	4.2.2 Limited Computation	167
	4.2.3 Random Termination	174
	4.2.4 Games with Fixed Delay Costs and Outside Options	175
4.3	Bargaining under Incomplete Information	182
	4.3.1 One-Sided Buyer Information with Seller-Only Offers	183

4.3.2	One-Sided Private Information and Strikes	184
4.3.3	Sealed-Bid Mechanisms for Bilateral Bargaining	187
4.4	Conclusion	196
5	Dominance-Solvable Games	199
5.1	Simple Dominance-Solvable Games	203
5.1.1	Games Solvable by Two Steps of Iterated Dominance	203
5.1.2	Iterated Dominance and Tree-Matrix Differences	205
5.1.3	A Partially Dominance-Solvable Patent Race Game	208
5.2	Beauty Contest Games	209
5.3	Games in Which Iterated Reasoning Decreases Payoffs	218
5.3.1	Centipede Games	218
5.3.2	Prisoners' Dilemma and Quasi-Centipede Games	221
5.3.3	Price Competition	223
5.3.4	The Travelers' Dilemma	224
5.3.5	The "Email Game"	226
5.3.6	An Implementation Mechanism That Uses Iterated Dominance	232
5.4	When More Iteration Is Better: The "Dirty Faces" Game	236
5.5	The "Groucho Marx" Theorem in Zero-Sum Betting	239
5.6	Structural Models of Decision Rules and Levels of Reasoning	242
5.7	Theories	254
5.7.1	Multiple Types	254
5.7.2	Payoff-Sensitive Noisy Iteration	255
5.7.3	QRE Refinements: Differences and Asymmetry in λ	255
5.7.4	A Poisson Cognitive Hierarchy	257
5.8	Conclusion	258
	Appendix: Raw Choices in Email Game and Additional Data	259
6	Learning	265
6.1	Theories of Learning	266
6.2	Reinforcement Learning	273
6.2.1	Reinforcement in Weak-Link Games	274
6.2.2	Reinforcement with Payoff Variability	275
6.2.3	Reinforcement with "Mood Shocks"	279
6.2.4	Information Conditions	279
6.3	Belief Learning	283
6.3.1	Weighted Fictitious Play	283

6.3.2	General Belief Learning	285
6.3.3	Learning Direction Theory	288
6.3.4	Bayesian Learning	290
6.3.5	Measuring Beliefs Directly	292
6.3.6	Population-Level Replicator Dynamics	293
6.4	Imitation Learning	295
6.5	Comparative Studies	298
6.5.1	Comparing Belief Models	299
6.5.2	Comparing Belief and Reinforcement Models	299
6.6	Experience-Weighted Attraction (EWA) Learning	304
6.6.1	Example: Continental Divide	308
6.6.2	Example: p -Beauty Contest, and Sophistication	318
6.6.3	Functional EWA (fEWA)	322
6.7	Rule Learning	324
6.8	Econometric Studies of Estimation Properties	330
6.9	Conclusions	332
7	Coordination	336
7.1	Matching Games	341
7.1.1	Assignment Games and Visual Selection	345
7.1.2	Unpacking Focality	349
7.2	Asymmetric Players: Battle of the Sexes	353
7.2.1	Outside Options	355
7.2.2	Communication	356
7.2.3	Evolution of Meaning	357
7.2.4	External Assignment	362
7.2.5	Timing	365
7.3	Market Entry Games	367
7.3.1	Multiple Markets	371
7.3.2	Skill	372
7.4	Payoff-Asymmetric Order-Statistic Games	375
7.4.1	Experimental Evidence	378
7.4.2	Weak-Link Games	381
7.4.3	Mergers, Bonus Announcements, and "Leadership"	386
7.4.4	Median-Action Games	388
7.4.5	Preplay Auctions and Entry Fees	390
7.4.6	General Order-Statistic Games	393
7.5	Selecting Selection Principles	396
7.5.1	Simplicity	396
7.5.2	Empirical Comparison of Selection Principles	398

7.6	Applications: Path-Dependence, Market Adoption, and Corporate Culture	399
7.6.1	Path-Dependence: Creating a Laboratory “Continental Divide”	399
7.6.2	Market Adoption	400
7.6.3	Culture	402
7.7	Conclusion	403
	Appendix: Psycholinguistics	405
8	Signaling and Reputation	408
8.1	Simple Signaling Games and Adaptive Dynamics	411
8.2	Specialized Signaling Games	427
8.2.1	Lobbying	427
8.2.2	Corporate Finance	430
8.2.3	Games with Ratchet Effects	436
8.2.4	Belief Learning in Limit Pricing Signaling Games	439
8.3	Reputation Formation	445
8.3.1	Trust	446
8.3.2	Entry Deterrence	453
8.3.3	Learning in Repeated Games	458
8.4	Conclusion	462
9	Conclusion: What Do We Know, and Where Do We Go?	465
9.1	Summary of Results	466
9.1.1	Simple Bargaining Games	466
9.1.2	Mixed-Strategy Equilibria	468
9.1.3	Bargaining	469
9.1.4	Iterated Dominance	469
9.1.5	Learning	469
9.1.6	Coordination	470
9.1.7	Signaling	471
9.2	Top Ten Open Research Questions	473
	Appendix: Design Details	477
	References	497
	Index	535