

Contents

Preface		xiii
1	Evolutionary game theory	1
1.1	Generalized optimization problems	1
1.2	Social norms and game theory	6
1.3	One-dimensional models	10
1.4	Higher dimensions	17
1.5	Finding models: Predator-prey, gangs, policy, etc.	28
1.6	Concluding thoughts	35
2	All those puzzling voting mysteries!	41
2.1	And the Oscar goes to	42
2.2	Help from geometry	48
2.3	The chaotic state of election outcomes	54
2.4	How likely are those voting paradoxes?	63
3	Voting theory applied elsewhere	69
3.1	Adam Smith and his invisible hand	69
3.2	Other kinds of voting rules	72
3.3	Nonparametric statistics	78
3.4	Power indices	79
3.5	Generalizing Simpson's paradox	83
4	Voting: Symmetry and decompositions	87
4.1	More about voting	87
4.2	Voting symmetries	89
4.3	Other voting symmetries	100
5	Game theory: A decomposition	111
5.1	Some games	112
5.2	Finding the Nash, or strategic portion	113
5.3	Behavioral component	123
5.4	Exploring consequences	127
5.5	Summary	138
6	The reductionist approach	139
6.1	The sum of the parts is	139
6.2	Silos	149
6.3	Apportionment	152

6.4	Silos and dark matter?	158
6.5	Summary	160
	Bibliography	161
	Index	169