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EVOLUTIONARY GAME THEORY

J. McKenzie Alexander
The London School of Economics and Political Science

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Abstract: Evolutionary game theory originated in population biology from the realisation that frequency-dependent fitness introduced a strategic element into evolution. Since its development, evolutionary game theory has been adopted by many social scientists and philosophers to analyse interdependent decision problems faced by boundedly rational individuals. Its study has led to theoretical innovations of great interest for the biological and social sciences. For example, theorists have developed a number of dynamical models which can be used to study how populations of interacting individuals change their behaviours over time. This introductory Element covers the two main approaches to evolutionary game theory: the static analysis of evolutionary stability concepts; and the study of dynamical models, their convergence behaviour, and rest points. This Element also explores the many fascinating and complex connections between the two approaches.

Keywords: evolutionary game theory, bounded rationality, evolutionary dynamics, cooperation, local interactions

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More Information

Contents

1 Introduction 1

2 Evolutionarily Stable Strategies 10

3 Continuous Dynamical Models 30

4 Finite Population Models 61

5 Conclusion 87

References 90

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