HERBERT GINTIS

Game Theory Evolving

A Problem–Centered Introduction
to Modeling Strategic Interaction

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xvii + 390 pages.
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Everybody wishing to learn the theory of strategic games can start his study with some of numerous textbooks written in different style, and aimed to different sorts of readers. The scale of existing textbooks reaches from the traditional arrangements of topics, to more or less original selections of concepts and results ordered in surprising arrangements. The referred volume belongs to the mostly traditional presentations of the strategic game theory submitted by using a specific method how to introduce the reader in the world of the game-theoretical studies. That method consists in formulation, analysis and discussion of particular problems of strategical behavior. The presentation of fundamental concepts and results of the strategic game theory naturally follows from the need to handle the problems and their solution.

The text of the book is divided, besides the Preface and conclusive Answers to the formulated problems, into thirteen main chapters, where each of them is parted into many short sections (the total number of sections is 238). This atomisation of the chapters simplifies the reader's orientation in the concepts and methods, and enables him to focus his attention on particular, well determined, topics and sub-topics, due to the needs of the individual problems studies.

The thirteen chapters deal with the introductory parts of the probability theory, chosen with respect to the needs of game theoretical methods, probability based (namely, Bayesian) decision theory, and basic concepts of game theory motivated by attractive exemplar problems. The chapters dealing with the proper strategic game theory pay special attention to the concept of Nash equilibria (in pure and mixed strategies), to some problems of hierarchical and dynamic games (especially the principal-agent models, signaling games, repeated games), and special attention is paid to the evolutionary games – both, stable and dynamic. The last chapter is devoted to Markov economies and stochastic dynamical systems. The volume is completed by table of symbols, list of references and index. The list of references is sufficiently extensive (145 items), with special regard to classical topics of the game theory.

The specialized libraries and book shops are usually well supplied by the traditional mathematical textbooks of strategic game theory, occasionally completed by specialized volumes aiming to specific groups of readers (usually those being not very friendly with mathematics or interested in a narrow part of the theory). Or by books whose chapters are organized in a surprising (even rather shocking) way.

The referred textbook is very near to the first, majority, groups. It introduces the traditional non-cooperative theory of games, completed by significant chapters on evolutionary games. Nevertheless, it is not fully traditional in its method of the introduction of the theory via real (and practically formulated) problems. This method is consequently respected even by the degree of generalization of the used mathematical concepts. E. g., the author intentionally ignores infinite sets of players, unlimited divisibility of pay-offs and similar tools of abstract game theoretical models which otherwise simplify the formalism of the theory but their roots do not come from the everyday practice.

Nevertheless, the referred book is useful and well written. It offers a particular but effective approach to the learning the non-cooperative game theory, and strongly supports its motivation. The method of presentation is attractive not only for students but also (and, maybe, chiefly) for the teachers and for the lucidity of their game theoretical lectures.

To summarize the preceding paragraphs, the best application of the referred volume appears to in the lectures of the game theory in which the main stream of the presentation is based on some classical homogeneous textbooks, and supported by demonstration of illustrative problems drawn from the referred volume.

Milan Mareš