Book Reviews

Robert Leonard, Von Neumann, Morgenstern, and the Creation of Game Theory (Cambridge, Cambridge University Press, 2010), pp. vi, 469, $55.00. ISBN 978-0-521-56266-9.

Alessandro Innocenti
University of Siena

Robert Leonardôs long-expected volume promises to be the definitive book on the early history of game theory. Since 1995, when he won the Best Article Award of the History of Economics Society, Leonard has indeed collected an amazing amount of archival evidence and interviews on how game theory changed the course of economics. It must be acknowledged that, notwithstanding the high expectations, the book accomplishes its goal admirably. It is beautifully written, in a lively and erudite style which avoids packing the narrative with lots of mathematical details. It is also an original and very personal book, but it encompasses most of what has been written on the topic. However, even those familiar with Leonardôs remarkable series of papers will find new insights as well.

A first issue that is brought immediately to the readerôs attention is the prominence of the Austrian tradition in the creation of game theory. Unsurprisingly, the most intriguing stories narrated by Leonard are those concerning the debates between Maier and Spann and between Menger and von Mises, which point out the richness and the fertility of the pre-Nazi Wien, where Morgenstern started his scientific career. Greatly emphasized also is the role played in the 1930s by the Hungarian mathematicians and in particular by Lipot Fejer. Leonardôs account also relies on the 1986 paper by Earlene Craver on the emigration of the Austrian economists, which remains one of the most significant contributions to the history of recent economics.

Leonardôs volume is also a book full of heroes, willing to be key actors in this history. From this perspective, it is value added for the book that the central characters - and close friends - von Neumann and Morgenstern are depicted as less epic than would be expected. The fathers of game theory are put under critical scrutiny to assess their actual contribution to the creation of game theory.

Von Neumann is alleged to have neglected the importance of psychological factors in modeling strategic interaction. In this light, the close resemblance between Leonardôs interpretation of 1928 von Neumannôs paper on the min-max theorem and Nashôs discussion of the bargaining problem sounds revealing. On one hand, Leonard writes: ñWith existence proved, the game had been collapsed, reduced to its essential skeleton, and any psychological complications consigned to the periphery. The disinterest in psychology remained a characteristic of von Neumannôs, including later, when his attention shifted from the chessboard and poker to the realm of politics.ò (p. 67). On the other hand, Nash introduced his bargaining model in this way: ñIn order to give a theoretical treatment of bargaining situations we abstract from the situation to form a mathematical model in terms of which to develop the theory.ò (Nash 1950: 156) Basically, what von Neumann and Nash expunged from their models was exactly the core of the strategic interaction, namely, the psychological reasoning through which any social arrangement is eventually reached.

This is a quite controversial issue in the history of game theory. Actually, von Neumann and Nash shared the same approach to the use of formal language. In their view, the application of mathematics to economics should be structurally elegant and reduce the discourse to its main essence by basically disregarding the issue of empirical relevance. In retrospect, this argument seems even more decisive if, as Leonard claims, in the 1920s ñwe have been too ready to attribute a smooth unity to von Neumannôs efforts in economics, retrospectively seeing his forays into game theory and general equilibrium as somehow being of a piece, and thereby eliding the historical particularities of each. In 1926, von Neumann was interested in games and there is no evidence that he saw, at the time, any connection between them and models of economic growth.ò (p. 66)

Another novel point the book makes is that von Neumannôs contribution to the foundation of game theory was triggered by his ñexperience of the political tumult of the late 1930s, a truly dramatic period during which social questions drew much of his attentionò (p. 5) After the 1930s, ñhis concern was now with the rationality of the social actor or unit, yet with the same relatively simple conception of psychology as before. His concern became that of understanding social coalitions, and a key element of his theory ï the dependence of stable equilibria upon social norms - bears a striking resemblance to what was then taking place in Hungary and other countries, where seismic social shifts were being brought about by changing attitudes towards some groups, and the Jews in particular, codified in legislation. Building upon this central idea, von Neumann launched into the creation of a new social mathematics, game theory, providing analytical insight into the exercise of power and social discrimination.ò (p. 222-3)

Such a re-emergence of von Neumannôs interest in social issue led him to break with Germany and to come back again to game theory. A further consequence of this development was that the concept of stable set became the cornerstone of the whole project, notwithstanding it was an amorphous concept when applied to real societies.

Leonardôs assessment of Morgensternôs figure is even more critical. Morgenstern changed his mind on the methodological status of economics several times in his life. First, in 1925, when he broke with Mayer and Mises and then in the 1930s when he met Carl Menger. Before that, ñHis theoretical writings, themselves a curios *mélange* of vague suggestion and harsh critique, reveal several concerns, from the emphasis on expectations, beliefs, and other psychological factors as the most important manifestations of time in economics; to the need to examine the logic and consistency of the field in a manner similar to that in the branches of mathematics; to the need to rid the discipline of all element of political apologyò (p. 180-1) and his papers ñaccomplished little theoreticallyò (p. 161). This feature would also explain Morgensternôs later turnaround in the early 1940s when he started working with von Neumann, with whom he acted more as a facilitator than on a peer-to-peer relationship.

Although this assessment describes Morgensternôs personality very well, it does not make sense of the harsh and constant criticism he addressed to neoclassical economics from the first papers in the 1930s to the end of his long research career. What is missing in this representation is that Morgenstern was particularly gifted for providing arguments for the *pars destruens* more than for the *pars construens* and this was a key element for the foundation of game theory. An insight for understanding Morgensternôs figure is given by Leonard himself by describing his arrival to Princeton Department of Economics in 1938: ñOnce there, he found himself in a situation not dissimilar to the one he had left behind: amongst economists, of whom he was critical, looking elsewhere for stimulus.ò (p. 224) It was this intellectual curiosity rather than a special talent to motivate the important role he played in the whole story narrated by Leonard.

Behind, and often above, the two main actors, Leonard offers a rich variety of characters which are essential to understanding the plot of the book. A brilliant example is the chess player and mathematician Emanuel Lasker. He is the first hero to appear in the book and the way in which Leonard portrays his figure is remarkable. Lasker claimed to play chess as a psychologist and his approach contrasted with those of two other chess masters, Tarrasch and Steinitz, òboth of whom advocated a highly logical approach to chess and the idea that, for every position, there existed a theoretically optimal move, independent of the character of oneôs opponent.ò (p. 11) For this reason, Lasker is considered to be the precursor of the parallelism between social life and games proposed by von Neumann and Morgenstern. In a book written in 1941, Lasker anticipated the way in which Theory of Games modeled, three years later, the dynamics of coalition formation and stability (see pp. 244-5). Interestingly, Lasker was defeated in 1921 after a long supremacy by José Raúl Capablanca, whose chess playing style was exactly the opposite of Lasker, being in Laskerôs words ñtransparent and predictable as those of a mathematician.ò

Thereôs a whole cast of other characters in the book, from Zermelo to Hilbert, from Mayer to Wald, from Flood to Shapley. The final impression is that individuals more than communities are

the engine of Leonardôs history, because they represent the key force molding the communities around them. This is probably due to the fact that Leonardôs narrative relies so heavily on letters and diaries as to make easy to let history come out from real people. Although in some pages there is an excess of self-reported information, Leonard manages it in a careful and attentive way and this is what makes the book enjoyable and interesting at the same time. Sometime this approach leaves economic theory in the background. But Leonard is not one of that historians speaking directly to theorists. He is an incredibly captivating storyteller, who thinks that history is not made of abstract concepts and theoretical models. What probably is missing in the book is a more vivid awareness that the history of game theory did not follow the course that von Neumann and Morgenstern envisioned. But this is all the subject of a book to be written when enough time will be given to gain a more complete picture of such a recent and controversial history.