

Games that people play

Martin Shubik

Prisoner's Dilemma: John von Neumann, Game Theory and the Puzzle of the Bomb. By William Poundstone. Doubleday: 1992. Pp 290. \$22.50.

WILLIAM Poundstone is a generally skilful science writer who in this instance has tried to write three worthwhile books in one. They are another decent biography of John von Neumann; a good popular account of the theory of games that is both balanced and accurate; and an analysis of the development of nuclear war strategy. Unfortunately, Poundstone has produced a *mélange* that does not do justice to any one of these topics.

Prisoner's Dilemma contains a well-written but slight biography of von Neumann. Apart from supplying some of the usual anecdotes and giving a sketch of the chronology of von Neumann's life, the author does little to explain this man's brilliance as an applied mathematician. Whether or not he was nice is of some popular interest, but as with Gauss, Newton, Einstein or Bohr, such detail is trivial in comparison with his intellectual output.

Game theory is also badly treated. Poundstone deeply misinterprets and misunderstands von Neumann's commitment to cooperative game theory that he and Oskar Morgenstern clearly spelled out in the first chapter of their book *The Theory of Games and Economic Behaviour* (1944). Von Neumann perhaps could best be described as conservative and hawkish; but the 'prisoner's dilemma' type of noncooperative game theory adopted by political scientists and discussed by Poundstone was utterly foreign to him, and to the best of my knowledge he never used it. (In a personal communication, von Neumann once told me that he had little use for noncooperative game theory. I was trying to persuade him that for some problems in economics the use of this theory might be the right approach, as it had been followed fruitfully in 1838 by Cournot, the father of mathematical economics.)

The seminal paper on game theory was von Neumann's 1928 article on two-person zero-sum games (where the gain of one participant is the loss of the other). As early as 1928, Morgenstern had noted the strategic dilemma of these games in a discussion of conflict between Sherlock Holmes and Moriarty. At the time, von Neumann and Morgenstern did not know each other, but later in Princeton they worked together to help

construct a theory of cooperative games. Both justified their emphasis on cooperative games because they felt that the correct scientific approach was to devise a new static equilibrium theory for the social sciences. They stated quite clearly that they thought it was far too early to offer a satisfactory dynamic theory and that it was possible that the structure of such a theory would differ considerably from the static theory.

Poundstone states that "Von Neumann and Morgenstern got sidetracked in their treatment of games of more than two persons. Their approach, while not wrong, no longer seems the most useful or most illuminating one." Apart from ignoring the large and still growing literature on the applications of cooperative game theory to voting, the pricing system, cost accounting and communication networks, this statement shows that the author is unaware of the important developments of techniques for studying many-person games. This is further illustrated when he writes, "Unfortunately, the complexity of games, and of the necessary computations, increases exponentially with the number of players. If the economy of the world can be modelled as a 5-billion-player 'game', that fact may be of little practical use." On the contrary, the development of methods to analyse games involving a continuum of agents or, for that matter, a countable infinity of players, are beginning to provide precisely the methods needed to study economies and politics.

It is difficult to sort out Poundstone's third purpose — to discuss US nuclear cold-war strategy in relation to the game theory proposed by von Neumann and Morgenstern. Clearly Poundstone does not understand von Neumann's caution in using mathematical models. Von Neumann's thoughts on nuclear war were influenced very little by formal game theory, and Poundstone is wrong in suggesting that von Neumann might have been a model for Dr Strangelove. Those involved in the use of simple cold-war noncooperative game theory were Herman Kahn, Daniel Ellsberg, Tom Schelling and, to some extent, Albert Wohlstetter and Henry Kissinger.

The innuendo throughout the book is that the highly imprecise (but imaginative) use of analogies, experiments and simulations based on the two-by-two matrix was somehow connected with the ideas and concepts of von Neumann. The reality, though, is that he had little if any use for this sort of theorizing. Among the key deep insights of von Neumann and Morgenstern was that, even if one made highly simplifying assumptions about bloodless, passionless, rational men, the attempt to extend the concept of rational behaviour beyond one individual is filled with

many difficulties and paradoxes.

The very title of Poundstone's book bespeaks of popular science. The prisoner's dilemma is easy to comprehend and offers an excellent way to mislead lay persons about the main contributions of game theory. It is a shame that an author with the writing talent of Poundstone did not bother to understand enough about game theory or von Neumann's ideas.

The book on von Neumann, Morgenstern and the development of the theory of games remains to be written. □

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Out on a limb

Michael C. Corballis

The Left-Hander Syndrome: The Causes and Consequences of Left-Handedness. By Stanley Coren. John Murray: 1992. Pp. 308. £17.95.

THERE have been many books written about handedness, and to those of us in the trade there is a touch of *déjà vu* in this latest offering by Stanley Coren. We read again the list of famous left-handers, the quotations from the Bible, the litany of derogatory terms referring to or derived from left-handedness, the myths and prejudices, ancient and modern, associated with both handedness and the two sides of the brain. But there is also much that is new here, and if nothing else this book is a marvellously full compendium of facts about left-handedness. It is written in an engaging, conversational style that will appeal even to those with only a casual interest in the topic.

Coren's main contributions to the study of handedness have been empirical, typically in the form of large-scale surveys of handedness, footedness, eyedness and earedness and the relationships between them, on handedness in families, and on handedness as depicted in works of art going back 5,000 years. Coren uses the facts and figures he has accumulated to test various theories of handedness and sidedness, and indeed to counter some of the more fanciful ones. His chapter on "Psycho-Neuro-Astrology" is a valuable debunking of the 'left brain/right brain' dichotomy that permeates popular folklore, and should be read by all magazine editors.

But the book will provoke its own share of controversy. Coren's main theme becomes apparent in the chapter that asks, "Are Left-handers Pathological?". He reviews evidence that left-handers are indeed over-represented