

## Book Reviews

*Economics and Language. Five Essays.* By ARIEL RUBINSTEIN. Cambridge University Press, Cambridge. 2000. 128 pp. £26.95; paperback £9.95.

Natural language—its structure, its evolution and the way it affects human preferences and human interaction—is the topic of this book, which stems from the Churchill Lectures delivered by the author at Cambridge in 1996. The first five chapters elaborate on the topics covered by the lectures, while the remaining three chapters includes comments on the material presented by a logician, Johan van Benthem, and two economists, Tilman Borgers and Barton Lipman.

The lack of economic analysis of the natural language that characterizes human economic behaviour is certainly a large and visible hole. The most primary of economic activities, trade, cannot be carried out without language. This observation goes back to Adam Smith, as Rubinstein mentions. It is also implicit in the photograph of the author's father buying bread in a Jerusalem street that appears on the volume's cover. The book is an important first step in remedying this omission. As with every first step, it is the author's privilege not to provide a comprehensive analysis of the economic role of language but rather to analyse a number of questions that are of interest to the author and, of course, the reader.

The first three chapters bring economic criteria and game-theoretic tools to the analysis of the structure and evolution of natural language. The fourth chapter analyses the constraints on preferences imposed by the structure of the language used by an individual to verbalize his own decisions. The fifth and final chapter discusses the author's critical view of the language of game theory and the misperceptions that such language may have generated.

The linguistics literature that analyses the structure and origins of natural language is vast. The author's contribution in the first three chapters of the book—grouped under the rubric 'economics of language'—consists in weaving efficiency criteria and game-theoretic tools that economists are well accustomed to into the general endeavour to understand more and more aspects of the structure and origins of natural language.

The first chapter asks why linear orderings are so common in natural language. The answer suggested is that linear orderings perform best according to three inherently economic criteria. Linear orderings are the most efficient tool to indicate unambiguously every element of a general set. This criterion is labelled by the author *indication friendliness*. Linear orderings are also the tools that allow a speaker to describe a (binary) relation among the elements of a general set in the most accurate way. This second criterion is labelled *informativeness*. Finally, linear orderings are the binary relations that can be described by means of the least number of examples. This third and final criterion is labelled *describability*. In other words, taking these criteria as the benchmark for efficiency, if an imaginary planner were asked to design the most efficient natural language, she would choose linear orderings as its key ingredients.

The second chapter asks how a statement in the natural language comes to have a given meaning. The explanation put forth is evolutionary. However, the mere pressure of evolution to select a language that is stable, in the sense that it cannot be altered by a possibly small mutation in the interpretation of a given word, is not enough to render a given statement meaningful. For this to be the case, the standard forces of evolution need to be paired with an additional evolutionary force—one that favours simplicity. In particular, it is key that evolution has a, possibly lexicographic, tendency to select strategies for the sender and the receiver of a given message that do not specify complex reactions to signals that are never sent in equilibrium. The chapter concludes by arguing that, while the evolutionary approach provides an answer to the original question, it fails to explain why evolutionary forces operate on human language but not on the communication that takes place among animals.

This question was first raised, not in terms of the evolution of language, but in terms of the very existence of a language, by Adam Smith. The answer that he proposed is that language is hardwired in humans but not in animals. Rubinstein concludes by asking whether considering the evolution of language rather than its existence simply begs the most important question: the difference between humans and animals. The idea that language is hardwired in humans is, of course, pervasive in linguistics.<sup>1</sup> Of course, the hardwired hypothesis could present some challenges for arguments that explain certain features of natural language in evolutionary terms. The point is that the evidence points to the fact that the key rules governing the syntax of natural language are hardwired in humans. They tend to be strikingly similar in situations where learning from other humans can be excluded as the means by which the common structure has evolved. So, the efficient language structure would have to be selected by evolutionary forces at the hardwiring stage, not while the language is used to, say, facilitate trade among humans.

The last aspect of natural language that is discussed in the book is the structure of debates. In particular, the author starts from the observation that in a debate the interpretation of a statement used as an argument differs considerably from the interpretation of the same statement used as a counter-argument. Once again, the explanation can be found in the attempt to elicit efficiently the information communicated to outsiders by the debate. A planner that is constrained by the number of arguments that can be made will, first of all, impose a sequential structure on the game form representing the optimal debate. The planner will also select a 'persuasion rule' of outside observers that treats asymmetrically an argument and a counter-argument. In other words, once again, efficiency considerations provide a rationale for why the strength of the same statement differs when this statement is used as an argument as opposed to a counter-argument in a debate.

The last two chapters of the book are grouped under the rubric 'the language of economics'. The first of these, Chapter four, raises an interesting puzzle. When modelling the preferences of individual agents, economists tend to favour certain utility functions. Rubinstein's working hypothesis is that the constraint on preferences might arise from the language that the decision-maker uses to verbalize the decision taken. The author goes on to formalize this working hypothesis and derive a set of preferences that are 'definable' by means of binary relations. The surprising feature of Rubinstein's analysis is that the most natural (definable) preferences that can be derived using this construct are lexicographic preferences. These are also the least popular among the preferences that economists use in describing the behaviour of individuals.

The fifth and final chapter has a rather different tone and emphasis from the preceding ones. The author presents his critical view of the language of game theory. In particular, he argues that the popular success of game theory and its ability to permeate the jargon of businessmen and politicians can be explained, at least in part, by the language used. He argues that, however, this language is misleading: it tends to depict game theory as an applied topic that provides users with ready-to-use predictions, quantitative answers and uncontroversial solutions, whereas nothing could be farther from the truth. As with 'classical' economic theory, game theory is a 'search for *connections* between concepts, assumptions and assertions which we use in understanding human interaction'. The applicability of the subject is not its strength, and according to the author it is not a virtue either. Game theory, and more generally economics, is a *language* that helps us understand better certain spheres of human interaction.

We find it extremely hard to disagree with Ariel Rubinstein on this view. It is impossible not to admire his intellectual honesty. By now, the term 'methodology of economics' suggests to most a rather outdated debate, one that has not received new blood for a very long time. Perhaps a fresh look would suggest the study of economics as a *language*, one that goes beyond the mere observation that it is in fact a language concerning human interactions. Ariel Rubinstein does not tell readers explicitly what his views are on this point. If one had to level a criticism of the volume, it is probably the lack of a sixth chapter, discussing the structure of modern economics as a language of the social sciences.

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1. An accessible and extensive text that portrays the status of the hardwired language hypothesis, including the accumulated evidence that supports it, is Steven Pinker's *The Language Instinct* (New York: Harper Collins, 1994).