

Cornillie; Loureiro-Porto), and applying meticulous data analysis and rigorous methodology to identify systematic patterns of variation (Krug, Schützler and Werner; Hundt; Ziegeler and Lenoble).

Overall, it can be concluded that this volume, through its scope and contributions, offers an excellent tribute to Teresa Fanego (to whom the volume is dedicated), whose pioneering work as a founder of the research unit Variation, Language Change and Grammaticalization at the University of Santiago de Compostela has influenced and connected a broad range of linguistic domains.

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Ira Noveck, *Experimental Pragmatics: The making of a cognitive science*. Cambridge: Cambridge University Press, 2018. Pp. 274. ISBN 9781107084902.

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Every scientific theory has to be testable. Popper (1935) would say the statement that does not allow testability cannot be scientific or have empirical value; a testable and verifiable statement may have empirical value and not be scientific, only a testable and falsifiable statement may be scientific. The experimentation refers to all the activities that test scientific theories and data. We should then say that there is no theory that does not have its corresponding experimental task. This is in principle the case in most scientific

areas: in Morphology and Syntax nothing is said without examples or proofs that challenge or support the theoretical statement.

Talking about Experimental Pragmatics should be then redundant. When we feel that the adjective *experimental* is not superfluous, talking about either Pragmatics or Physics, it is usually because these circumstances are given: (i) the testability of the theory requires knowledge, resources and skills different and additional to the ones needed for the formulation of the theory. The empirical evidence of Morphology does not require skills with instruments unrelated to the elaboration of Morphology or knowledge in subjects different from the ones required for Morphology. However, an eminent theorist on Pragmatics may not know how to test the Evoked Response Potentials in the brain activity when a certain construction is interpreted and they may not even know what the Evoked Response Potentials are. (ii) The experimentation presents specific methodological problems whose resolution concerns the evaluation of alternative theories. Checking brain areas involved in the interpretation of a sequence, or the delay time in certain brain activity is not enough. To give a couple of examples, the methods should also involve exposing a subject to a certain task so there are no spurious variables that affect a result, and making samplings with the conditions necessary to make the results statistically reliable.

In this respect, Experimental Pragmatics is a field of research added to Pragmatics. It is a new field. Testability of the theory and data has always been used as in any scientific activity, but that was through introspection, that is, through the intuitive experience that the researchers have as speakers, which they think they can share with the other speakers. For example, Levinson (2000) understands that Grice's (1976) generalized conversational implicatures cannot be a deduction achieved after processing the coded meaning, with contextual assumptions chosen from a potentially large group of possibilities. Levinson thinks there has to be a very small number of heuristics that restrict these possibilities by default. According to that view, *some* should be interpreted as 'not all' by default and not as the effect of an inferential activity that would add that idea after having processed the literal meaning of 'some and maybe all'. In Pragmatics, as in any other activity, one theorizes like that, with the hypotheses which match to some extent certain constructs. The empirical testability, however, was introspective. The linguist, like any other speaker, knows that *some attendees left* is understood as not everybody left and that is interpreted so naturally that it sounds plausible that that is the first interpretative option that comes to mind and not a conclusion we can reach after having considered the possibility that every attendee has left. Others may oppose Levinson with other perspectives according to which the coded meaning always takes part in the interpretation and so 'not everybody' should be the effect of an extra activity of the semantic decoding. Introspection will be unreliable in giving weight to Levinson's point of view or to the opposite theory.

This is the issue on which Noveck wants to insist and to which he devotes his book. Experimental techniques are an objective way to decide, echoing Popper, what assumptions may be true and which ones are definitely false. Noveck knows this is new in Pragmatics, and so his book is almost foundational. He has to show what those

experimental techniques are, at least some of them, and what they prove. He also has to test critical aspects of the theory through experimental analyses according to the given techniques. If the discipline of Experimental Pragmatics were not new, this type of exposition would not be necessary.

The book has fourteen chapters, which can be divided into three parts, excluding chapter 14, which forms the conclusion. In chapters 1 and 2, Ira Noveck provides a very useful and operative synthesis of the Pragmatics field, concentrating first on Grice's theory and then on later models. Chapters 3 and 4 explain the experimental method and constitute a justification of the book. Chapter 3 explains the need for experimentation in the construction of theories, while chapter 4 outlines the most important techniques of experimentation for Pragmatics, namely eye-tracking, Functional Magnetic Resonance Imagery and Evoked Response Potentials, among many others, and includes examples of their application. Chapters 5 to 13 consist of a discussion about the most important theoretical issues of Pragmatics in the light of what the experiments show. These chapters form the core of the book.

In the course of the book, Noveck shows the two benefits Experimental Pragmatics provides to Pragmatics. The first and surely the most important is that it provides objective proof as to why some theories are to be preferred over others. The second is that experimentation itself not only evaluates theoretical activity, but also prompts it. Chapter 14 is, in fact, an example of this. The theoretical questions addressed by Noveck in these chapters initially raise two comments. Firstly, the theoretical depth is unequal: in some cases it is very deep, but in others it is provisional and needs to be developed. Secondly, even if the issues studied are of great interest, they are just a part of the picture; Noveck clearly offers provisional work in progress. However, the value of the book lies in the way it tests all these topics with experimental methodology, and how it demonstrates the power of Experimental Pragmatics regarding the most important issues of Pragmatics. No matter what theoretical disagreements one may have or the gaps one may detect, Noveck's theoretical depth is undeniable, and he formally presents Experimental Pragmatics as a mature discipline, at a stage of full development, producing reliable results.

After a review of the first steps of experimentation in Pragmatics, based on introspection, the topics dealt with in the following chapters are scalar implicatures (chapters 6 and 7), the conditionals and inferences from the truth of the consequent (chapter 8), referentials (chapter 9), figurative use regarding metaphor and irony (chapter 10 and 11), the pragmatic traits of autism (chapter 12) and some other topics under development (chapter 13).

Two basic aspects underlie Noveck's research. On the one hand, Theory of Mind is crucial, in that research is always about how the subjects represent, in their own mind, the mind and purposes of other subjects in the communication exchange, not about how language associates with reality. On the other hand, as expected, the focus is on the non-logical inferences speakers make about other speakers' words, in contrast with the semantics of the statements and the logical inferences they support. The first part

has to do with the speaker's intention and the second with the meaning of the words, that is, the contrast between the intended meaning and the encoded meaning.

It is of great interest that Noveck includes speaker development in the experimentation of most of these issues. Also highly remarkable is the demonstration that children are more semantic and logical than adults in the case of scalar implicatures (they tend to understand, for example, *some* as 'some and maybe all'), that they leave logic in the case of the inferences based on the truth of the consequent (because these constructions demand a more complex memory management, according to the author), and that the management of irony takes children more cognitive effort than the management of metaphor. There are very interesting experiments that show that metaphor has to do with the enrichment of meaning, while irony has more to do with the speaker's intention and attitude, that is, with the Mind Theory, which is less mature in children than in adults.

The two chapters dedicated to scalar implicatures stand out, not only for their high theoretical level, but also for the excellence of the experimental results achieved. The Evoked Respond Potentials show that the pragmatic enrichment from *some* to 'some and not all' is done with extra cognitive activity. The issue paradigmatically shows the power of Experimental Pragmatics to evaluate, contrast and decide among theories. The most pertinent issue dealt with in these chapters is the role of the encoded meaning in the whole process of interpretation. The detailed and convincing experiments which Noveck presents seem to point out that the encoded meaning always takes part in the interpretation: the meaning, or at least an outline or trace of it, is present in the addressee's cognitive activity. Although there is much pragmatics even in the vocabulary, Noveck insists on the fact that there is always semantics.

A related issue is found in the chapters on metaphor and irony. The literal meaning of ironic or metaphoric sentences is an obvious falsity which cannot be either all or part of the communicative intention of the speaker. The relevant question is again if literal meaning takes part in the interpretation, or if it is never represented in the addressee's mind. The discussion and experimentation, which go beyond what this book shows, are of great interest for the general theory of language and its pragmatic activity. These questions are followed by another important theoretical issue discussed in chapter 7 (the second one dedicated to scalar implicatures), that of the embedded implicatures. These implicatures represent a problem for Grice's model, in which implicatures are deduced globally from the whole statement. Embedded implicatures seem to be local, not global, deductions which take part in the establishment of the proposition because they affect the veritative value of the statement, as discussed in Simons (2014). In contrast with Levinson, Noveck argues that the pragmatic inferential enrichment is global and not local, and that the global violations of the conversational maxims trigger a local enrichment, so the embedded implicatures can fit Grice's model. In this sense, the issue of embedded implicatures has continuity with the issue triggered in metaphors and ironies about the cognitive representation of the literal meaning, or the lack thereof, in the interpretation.

The chapters on referring and autism show again how much we can expect from the experimental method for the development of the theory. In comparison, they are provisional chapters, with many undeveloped issues related to referring (anaphors and certain ways of co-reference, for example) and, in the case of autism, with the need for a wider interdisciplinary approach. In any case, they are in keeping with the general purpose of the book: to introduce experimentation in theoretical discussions and show the power of experimental techniques to test and improve theories.

Chapter 14 is part summary, part conclusion. In the most remarkable part of the book, Noveck develops the difference between voluntary and imposed pragmatic inferences, typically represented by scalar implicatures and metaphors respectively.

The book seems, as noted above, a fixed picture of something which is moving. The experimental point of view will surely have to be widened to create reliable methods for field studies of spontaneous conversations and evaluate the reach of cultural variations. New studies will follow, and everything seems to point to fact that the discipline officially introduced in this book will undergo many theoretical developments and face unexpected challenges.

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