Book Review

An Essay on Grammar-Parser Relations

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This book is the author's thesis dissertation. His own summary of the contents of the book cannot be bettered:

> The text that follows is an investigation into the relationship between grammars and parsers. It is conducted at two levels. The first part (chapter 1) is a rather philosophical study of possible grammar-parser relations. The second part (chapters 2 and 3) is an inquiry into the relationship between current versions of transformational grammar and a deterministic model of the human sentence processor, specifically an LRRL(k) parser.
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> The work as a whole is intended as a contribution to the research paradigm that developed from the work of Marcus (1980). This book marked the beginning of renewed interest in parsing on the part of linguistics working in the field of transformational grammar, following a long period of relative inactivity brought about by the failures of a long series of experiments conducted in the sixties and early seventies.

These are the first two paragraphs of the Preface, where the author presents also a summary of the topics each chapter deals with, giving the reader a preliminary coverage of all of them, and also his own point of view.

The book is sectioned in four rather badly balanced chapters. The first three are quite lenghty while the last one, the epilogue, is very short: eight pages. I think that the book could have been better structured, even by dividing it into shorter units that would have made the reader feel more comfortable. But in spite of all that I have to recognize that he has made a very good job of providing the reader always with precise guiding summaries as the first section of each chapter. This serves as a declaration

of chapter organization as well as a clear statement of the position of the author on each topic. In addition to that, summaries are also generously included at the end of the chapter, with the relevant conclusions both at the beginning and the end, as well as in some of the longest sections.

The first chapter, as the author has stated, is a philosophical study of possible grammar-parser relations. The first part of the chapter tries to state the legitimacy of the competence-performance distinction in the study of natural language. To make his arguments stronger, the author cites the work of Marr (1982) on competence theories for the study of visual perception, which gave rise to a theoretical framework known as the Natural Computation Framework, also analyzed. This first part, although very well documented and annotated is rather hard to read, and perhaps a different organization could have made it easier.

The most interesting part of the chapter then follows. It is about the analysis and discussion of grammar-parser correspondences, from the point of view of the competence-performance distinction. The possible relations between a function generated by a competence grammar and that computed by a parser (what the author calls a 'runtime grammar') and an interpreter for that runtime grammar (a 'parser engine') are analyzed, stating the input/output correspondence and degenerate input/output correspondence. Possible equivalences between competence grammars and parsers are also analyzed, resulting in three types of equivalences.

A historical survey follows, analyzing some developments in the field of natural language parsing, from the particular view of the performance-competence distinction. Among them, Lexical Functional Grammar, Generalized Phrase Structure Grammar and Marcus's Parsifal.

The second chapter, after stating its main goals, starts with an excellent description of the work of Marcus (1980) relative to deterministic parsing: The deterministic hypothesis is revisited, and a brief and qualitative description of the deterministic parser is included, with a description of the data structures, organization, primitive actions, types and format of rules, and finishing with an example. Although quite short, it is really worth reading.

Discussion of some formal properties of Parsifal follows, after consideration of some modifications suggested for the initial Marcus parser by Berwick and Weinberg (1984). The author criticizes their claims on the explanation of subjacency by a Marcus-type model of parsing as well as some ideas proposed in an earlier paper (van de Koot 1987). The discussion is quite long as well as theoretical, and constitutes the main goal of this second chapter. It will be of interest for those who like theoretical linguistics.

The third chapter is a discussion of a case study of a particular grammar-parser relation. The author fixes a number of properties of the parser and deduces from this constrained parser certain properties of natural

languages. The fixed properties are: grammars cannot count; the parser does not use any features that are unmotivated from the point of view of the grammar that it embeds; and the parser is deterministic – a restricted LRRL(k) parser. It is rather long and dull stuff, although the author does his best to illustrate with examples.

The book finishes with a short epilogue (chapter 4) where the author brings together the conclusions of each of the previous chapters. Its interest is mainly, as mentioned, that it neatly summarizes the contents of the rest of the book.

Just a little comment to end this review: the table of contents is that of the original thesis, including an entry for the *curriculum vitae* of the author. This is obviously not included in the book, leading to a mismatch between the stated and actual contents. Such little mistakes happen, but should not, when converting a thesis into a book!

REFERENCES

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