

Book Reviews

Centering Theory in Discourse

Marilyn Walker, Aravind K. Joshi, and Ellen F. Prince (editors)
(AT&T Laboratories and University of Pennsylvania)

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Reviewed by
Ruslan Mitkov
University of Wolverhampton

Work on centering (Grosz, Joshi, and Weinstein 1995) has had a very strong impact both on research in discourse and on the development of systems for computational discourse processing. Early papers such as those of Grosz, Joshi, and Weinstein (1983) and Brennan, Friedman, and Pollard (1987) have inspired a number of studies that explore or use centering as an important tool in discourse processing. A number of psycholinguistic and cross-language projects have reported promising results. On the other hand, one of the main ideas of centering theory, that certain entities mentioned in an utterance are more central than others and that this imposes certain constraints on the use of referring expressions and in particular on the use of pronouns, has been extensively used in anaphora resolution. This volume (resulting from a Workshop on Centering Theory held at the University of Pennsylvania) represents an important follow-up to the work on centering carried out in the late eighties and early nineties, and in this context it is a timely collection of a number of interesting contributions. The authors are well known for their contributions to the theory of centering and to other areas of computational linguistics.

The book features a clear and well-organized introduction to centering (Walker, Joshi, Prince) and groups the subsequent chapters thematically into six parts.

Part 1 discusses issues such as the complexity of inference in discourse (Joshi and Weinstein), summarizes the main goals of the original research on global focusing and centering, and outlines unsolved problems (Grosz and Sidner).

Part 2 covers utterance-level issues, in particular the ranking of forward-looking centers (Cote; Hudson-D'Zmura) and proposes an extension of the original intersentential centering model in order to be able to process complex sentences consisting of multiple clauses (Kameyama).

Part 3 focuses on the cross-linguistic phenomenon of centering and looks at centering in Italian (Di Eugenio), the ranking of forward-looking centers in Turkish (Turan), and discourse coherence and center shifting in Japanese (Iida).

Part 4 investigates the role of centering in processing models of discourse. It reports on an attempt to integrate centering theory and the givenness hierarchy (Gundel). It also discusses the role of the center in assigning antecedents to ambiguous pronouns (Hudson-D'Zmura and Tanenhaus) and presents a psycholinguistic perspective on centering as a resource by which speakers and addressees can coordinate their attention moment by moment as they refer to things (Brennan).

Part 5 is dedicated to information structure and centering. It covers issues such as word order and centering in Turkish (Hoffman), centering transitions as a measure of discourse coherence (Hurewitz), the relationship between centering, global focus, and right-dislocation (Grosz and Ziv), and recency effects in English inversion (Birner).

Part 6 covers discourse structure and centering, commenting on open questions such as how local utterance processing relates to the global discourse context and how centering interacts with the global context in constraining the surface form of referring expressions other than pronouns (Passonneau). Part 6 also looks at the place of centering in a general theory of anaphora resolution and proposes a new hybrid theory that integrates Grosz and Sidner's discourse structure theory with a dynamic theory of semantic interpretation (Roberts). Finally in the last chapter of Part 6, it is argued that the restriction of centering to operate within a discourse segment should be abandoned in favor of a new model integrating centering and the global discourse structure and to this end it is proposed that a model of attentional state, the cache model, be integrated with the centering algorithm (Walker).

Centering has proved to be a powerful tool for accounting for discourse coherence and has been used successfully in anaphora resolution; however, as with every theory in linguistics, it has its limitations. Some chapters suggest extensions of or amendments to the centering theory with a view to achieving a more comprehensive and successful model (e.g., the chapters by Kameyama, Roberts, and Walker). Ideally, in addition to papers such as Kameyama's and Walker's, this collection could perhaps also have featured extended versions of papers, such as those of Kehler (1997) and Hahn and Strube (1997), that highlight certain weaknesses of the original centering model or suggest extensions or alternative solutions (Strube 1998). It must be acknowledged here that the production schedule of this volume may have been a factor in not including some of this recent work, and also that space limits might not have allowed all possible areas of centering to be covered. These are, however, minor points; the volume is a very well edited collection of excellent papers, and I recommend it unreservedly as a valuable source to anyone interested in centering, discourse, or computational linguistics in general.

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Ruslan Mitkov is Professor of Computational Linguistics and Language Engineering at the School of Languages and European Studies, University of Wolverhampton. He received his Ph.D. in 1987 from Dresden University, Germany, and since then has been actively researching in Computational Linguistics with more than 90 publications to his credit. His current research focuses

on anaphora resolution and automatic abstracting. Mitkov's address is: School of Languages and European Studies, University of Wolverhampton, Stafford St, Wolverhampton, WV1 1SB, U.K.; e-mail: r.mitkov@wlv.ac.uk