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★ **Computational morphology. (English. English summary)**

Practical mechanisms for the English lexicon.

ACL-MIT Press Series in Natural Language Processing.

A Bradford Book.

MIT Press, Cambridge, MA, 1992. x+291 pp. \$32.50.

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This monograph addresses the problem of analyzing a natural language (English) at the level of words and parts of words (morphemes) in order to construct a computational lexicon. As an example, consider the word “programmability”: it may be viewed as the result of the derivation “program \Rightarrow programmable \Rightarrow programmability”. The central theme is to store only the simple word “program” in the dictionary, and to provide rules for deriving more complicated words such as “programmable” and “programmability”. This approach leads to smaller dictionaries that are easy to fill and can be consulted efficiently. It also allows the treatment of neologisms such as “reprogrammability”.

The first part of this volume deals with the theoretical components and formalisms that the authors propose for the lexicon. In Chapter 2 word segmentation and spelling changes are considered in relation to the set of morphemes in the languages (the lexicon). Chapter 3 studies rules for combining morphemes in order to obtain new morphemes and words. In Chapter 4 regularities in the basic word structure are generalized to so-called “feature passing conventions”. Lexical redundancy rules form the topic of Chapter 5; they can be used to expand a basic lexicon into a richer collection of lexical entries. Thus, incorporating these rules into the system permits the stored lexicon to be more compact. Formalisms used in this first part are finite-state transducers and an extension of the two-level model of morphology due to K. Koskenniemi.

The second part is concerned with more practical issues. A considerable fragment of English morphology is described in Chapter 6 based on the formalisms developed in Chapters 2 to 5. Then in Chapter 7 an outline of an implementation of these formalisms into a working system is presented. Finally, in Chapter 8 the authors discuss some limitations of their proposals and a number of ways in which they can be circumvented using results from more recent research.

The appendices are (A) Definition of the linguistic notation, (B)

Syntactic and morphological features, (C) Some sample lexical entries, (D) A description of English morphology, (E) Sample results of lexical look-up, (F) Formal definitions, and (G) Complexity of two-level morphology.

This volume will be of special interest to computational linguists and computer scientists who are involved in the building of natural language front-ends. There is a more extensive review by E. L. Antworth [Comput. Linguistics **18** (1993), 365–367; per revr.].

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