Part VII
Related Unregulated Automata

This part modifies classical automata, such as finite and pushdown automata. Since the automata resulting from this modification are closely related to regulated automata, they are included in this book, too. Part VII consists of Chaps. 17 and 18.

Chapter 17 introduces and studies *jumping finite automata* that work just like classical finite automata except that they do not read their input strings in a symbol-by-symbol left-to-right way. Instead, after reading a symbol, they can jump in either direction within their input tapes and continue making moves from there. The chapter demonstrates their fundamental properties, including results concerning closure properties and decidability. In addition, it establishes an infinite hierarchy of language families resulting from them.

Chapter 18 deals with *deep pushdown automata* that can make expansions deeper in the pushdown; otherwise, they work just like ordinary pushdown automata. It establishes an infinite hierarchy of language families resulting from these automata and points out its coincidence with a hierarchy resulting from state grammars.