This dissertation investigates Extended Lexical Units (ELUs), elements that are bigger than just one word and which are stored in the lexicon. ELUs are an interesting problem on at least two different levels: from a grammatical (or grammar-theoretical) as well as from a computational perspective. How do ELUs fit into a grammar model, and how can they be implemented in a computational system? The answers to these questions are illustrated with three case studies of rather well-investigated Dutch constructions, namely the NPN (as in dog after dog) and a related Dutch phenomenon, the NCoN construction (as in kind noch kraai, ‘child nor crow’), the Dutch way-construction, and the dative alternation (as in Jan geeft Piet een bal (‘Jan gives Piet a ball’) vs. Jan geeft een bal aan Piet (‘Jan gives a ball to Piet’)). For all three constructions, a formal Construction Grammar analysis, based on Sign-Based Construction Grammar, is presented, and additionally, it is shown how these ELUs are tackled in the semantic parser/generator Delilah.