Meaning and Discourse - A Computer Model of Psychoanalytic Speech and Cognition

John Henry Clippinger, Jr.

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Clippinger's book on discourse is aimed at linguists, psychologists, psychiatrists, and researchers in artificial intelligence, and in 100,000 words, almost totally devoid of humor, he takes on Freud, Piaget, Bateson, Colby, and Schank; he offers homage to HACKER and kudos to CONNIVER; he ignores both linguistics and AI work in natural-language generation; he invents a grammar of English; he performs validation tests on a hand-simulated program; and he closes by warning us about ignoring the social impact of computers in the future. All of this is background to a program that models one, halting paragraph of speech by a depressed patient whose request to change the form in which she pays her therapist is, we are told in great detail, a desire for intercourse.

With regard to the process of producing language, much of what Clippinger says is quite true, even encouraging. Real generation is not a simple mapping of meaning representations into surface strings. Rather, there is an enormous influence by other contextual elements such as the speaker's intentions and the speaker's model of the hearer's possible reactions, as well as the problems of lexical choice and ordering, compounded by the incessant demand to say *something* despite a storm of conflicting, unorganized interests. Here, Clippinger's high-level descriptions are useful in reminding -- or informing -- us about the complications in actual speech, which are all the more obvious in a psychiatric patient. He specifies a 4-point "theory of thinking and speaking": (1) knowledge structures are organized by goals; (2) beliefs can be inconsistent; (3) meaning depends on the context of interpretation; (4) composing and producing a discourse occurs in 5 steps: identification of an acceptable goal, planning the actual discourse, considering the reaction by the listener, choosing the exact words, and reviewing the final product. This, of course, works for writing, too, or for that matter, for general problem-solving, where carrying out physical acts substitutes for choosing words. As an illustration of the complexity of cognition, this text serves well.

The weaknesses of the book are in the lower-level detail, and it is disappointing not to see the theory better illustrated, especially since these details form the bulk of the book.

The representation of meaning is hardly different from the surface form. "George painted the house" is represented as something on the order of (GEORGE PAINT HOUSE). This can be modified with any of a large number of "indicators" including the customary ones like time and place, but also some problematic ones like "condition," which is defined as "those concepts that must be valid in order for the indicated concept to be valid," a can of worms if ever there was one. What would one do with the sentence "I must leave at noon"? Is "at noon" a time or a condition? The concepts are manipulated by pieces of the program, whimsically labeled Leibnitz, Freud, Calvin, Machiavelli, and Cicero. Calvin censors potential output, Machiavelli plans, Cicero orates, and so forth.

Chapter 5 describes the "grammar for discourse" as a series of rewriting rules. Clippinger's protests notwithstanding, the grammar describes little more than surface syntax. With examples like "It seems like only yesterday, I left my mind behind" anyone would be on dangerous semantic grounds.

The program that "generated" a text resembling the actual speech by the psychiatric patient is barely sketched out in Chapter 6. The program implements only a small part of the theory, which is no surprise, but Clippinger's apology is disingenuous:

> The purpose in designing and writing the ERMA program was to test out a theory of the discourse formation and realization processes. In writing the program, the entire discourse episode was analyzed and hand-simulated. However, only part of the entire discourse episode was computer-simulated. The reason for this is simply that since all the major representational and theoretical problems had been worked out, the additional programming needed to make the program complete would not have contributed substantively to either the theory or the methods developed. It is my belief that, as a research strategy, little is gained, and often much is lost, by developing massive operational programs when the research is still in an exploratory stage. [page 145]

In the last chapters, Clippinger expresses the view that computer models of thinking may help psychiatry by contributing a vocabulary, a new, more precise way of thinking, and testable theoretical models, which may indeed be the case some day, a phenomenon not unknown to computer science. But he gets quite carried away with an analogy between aspects of our mental processes and the context mechanism in CONNIVER, described in terms that would make McDermott and Sussman blush. Arguments along the line of "My program fumbles and so do people so my program is a model of thinking" are hopelessly reductionist.

In all, this is a very ambitious work, and Clippinger has much to say on a great many topics, so it is perhaps less surprising that there is much to disagree with. But all readers should benefit from the elaborate reminder of the complexities of human speech.

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