Chapter 1

SOME PRAGMATIC DECISION CRITERIA IN GENERATION

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ABSTRACT

When you compare the language produced by people to the text produced by existing language generation programs, one thing becomes immediately clear: people can say the same thing in various ways to achieve various effects, and generators cannot. People vary the content and form of their text when they want to convey more information than is contained in the literal meanings of their words. This information expresses the speaker's perception of the pragmatic aspects of the conversation, and, in particular, of his interpersonal goals toward the hearer. Making a program do this requires identifying the choice points in the grammar at which this information can be incorporated and defining criteria by which to make the choices. However, since the pragmatic concerns are too general to be used by a generator, these criteria cannot reflect them directly. Speakers require strategies that are specifically tailored to the concerns of producing language. A number of such intermediate strategies, here called rhetorical goals, are described in this paper. These rhetorical goals activate appropriate strategies that give rise to the stylistic differences in the text that enable the speaker to communicate additional information. To illustrate these ideas, the generator PAULINE produces stylistically appropriate text from a single representation under various 'pragmatic' circumstances.

1. THE PROBLEM

It is straightforward to write a language generation program that produces impressive text by associating a sentence template (or some equivalent general grammatical form) with each representational item and then using a grammar to realize the template into surface form. Such a program, however, is not sensitive to anything but the input items, and therefore produces the same output to all hearers in all circumstances.

When we produce language, we tailor our text to the hearer and to the situation. This enables us to include more information than is contained in the literal meanings of our words; indeed, the additional information often has a stronger effect on the hearer than the literal content has. This information is carried in both the content and the form of the text. The various ways of expressing a single underlying representation are governed by rules that all language users, speakers and hearers, use to make reasonably accurate predictions about the speaker, his goals, the hearer, and the conversational circumstances. Thus, for example, in Wodehouse (1979, p. 37), when the butler Jeeves says to his master Wooster...
The scheme I would suggest cannot fail of success, but it has what may seem to you a drawback, sir, in that it requires a certain financial outlay.'

and Wooster paraphrases this to a friend as

'He means... that he has got a pippin of an idea, but it's going to cost a bit.'

we understand that the former is urbane, formal, and perhaps a little smug, while the latter is young and trendy. By making Jeeves's text highfalutin and Wooster's slangy, the author has communicated far more than simply fifty-odd words.

In order for generators to produce pragmatically appropriate text, they must have some means of representing relevant characteristics of the hearer, the conversation setting, and their interpersonal goals. These are the pragmatic concerns. In addition, they must contain choice points in the grammar that enable the topic to be said in various ways. These are the syntactic concerns. Finally, they require criteria by which to make the decisions so that the choices accurately reflect the pragmatic aspects and convey appropriate additional information. These are called here the rhetorical concerns.

Some work has been done on the computer generation of pragmatically appropriate language. The effect of the hearer's knowledge on the selection of speech act was studied by Cohen (1978); on text planning by Appelt (1981); the explanation generator of Swartout (1981) had a switch distinguishing between programming and medical expert users; a theory of how speakers bias their text in evaluative situations such as job interviews was developed by Jameson (in this volume). In addition, much related work on the structure of discourse uses some pragmatic information, for example, Grosz & Sidner (1985).

This paper describes how the program PAULINE (Planning And Uttering Language In Natural Environments) produces stylistically appropriate text from a single representation under various settings that model pragmatic circumstances. It first describes the program's pragmatic settings and syntactic choices; this is followed by a description of the way these can be linked using a set of intermediate-level goals. Finally, the generation of an example under five settings is described.

2. PRAGMATICS AND RHETORICAL GOALS

Though there has been much discussion about what pragmatics as a field of inquiry is all about (see, for example, Carnap, 1938; Morris, 1938; Grice, 1957; Katz, 1977; Gazdar, 1979; Searle, 1979; and Levinson, 1983), no generally accepted scheme has emerged yet. Gazdar (1980) lists pragmatic constraints on sentences; Bühler (1934) names some pragmatic aspects of conversation; Jakobson (1960) extends this list. In the tradition of systemic grammar (e.g. Halliday, 1976), interesting recent work on pragmatics can be found in Fawcett (1980) and Gregory (1982). Therefore, as its pragmatic characterization of the conversation, PAULINE was simply given a list of features that are similar to many of the aspects commonly discussed. The justification of these features is that they are the kinds of features necessary to make a generator of this type work. The following is PAULINE's characterization of the conversation setting:

Conversational Atmosphere (setting):
- time — much, some, little
- tone — formal, informal, festive
- conditions — good, noisy

Speaker:
- knowledge of the topic — expert, student, novice
- interest in the topic — high, low
- opinions of the topic — good, neutral, bad
- emotional state — happy, angry, calm