

PRESENTATION AND DISCUSSION OF PAPER 24

PRESENTATION BY MR. MITCHELL

MR. MITCHELL began by explaining that the approach of the mathematician was very different from that of the linguist. The representation of linguistic properties given in Section 2 of the paper was only one of many possible representations. He then described an extension to the study. The formal properties of the very simplest system of the categorial type had been examined in more detail. This is the system described starting at the lower half of p.216. Although this grammar *is* not elaborate enough to help directly with linguistic problems, some of its properties would carry over into grammars which more adequately explain some of our linguistic problems. Mr. Mitchell then introduced the notion of J-associativeness and showed its relevance to substitution frames.

DISCUSSION

DR. HIRSCHBERG pointed out that decidability is an asymptotic concept, applicable to machines with unlimited storage capacity and operating time. In practice, with real limitations, it may prove that some undecidable domains will be easier to manage than decidable domains. Secondly, decidability means that we have a constructive procedure to decide whether a sentence is grammatical or ungrammatical. He suggested that decidability was only needed when we wanted an exhaustive analysis of all the ambiguities in sentence structure analysis. If we don't want an exhaustive analysis, a proof procedure will serve. We don't need recursivity, recursive enumerability is sufficient.

MR. MITCHELL, in reply to the first point, said that his interest was in the formal properties of these grammars. Practical limitations were not the concern of this paper.

DR. EDMUNDSON mentioned the difficulty of the mathematician in speaking to the linguist. Mathematicians often are called upon to prepare models for natural phenomena, of which natural languages are examples. There is sometimes a wide gap between the models and the phenomena, and we must try to close this gap.

MR. MITCHELL agreed, but said that the formal explication is of interest. Whether the formal system agrees with the facts is not a mathematical question. Categorial grammars are of interest because the a priori element - the assignment function which takes vocabulary items into the categorial system - is so open. He planned to consider a finite vocabulary mapped into grammars with different numbers of categories, 3, 7, 15, and so forth.

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