the following discussion is as we have said that in each case we have obtained that set of parameters which maximizes the probability of observing a certain long (15,000 letters) sequence of English text.

A cursory examination of the first of the models (2-state) suggests the naturalness (for English) of Markov's choice of a dichotomy of his study. It is clear from this model that the division of English into vowels and consonants is natural in a statistical sense. Although y is more comfortable in this model as a vowel, later models have led us to reject y as a vowel, and from now on let us agree to call only a, e, i, o, u vowels. On the other hand, such a simple division is no longer possible in the bigger models, and an understanding of the meaning of various states requires some more careful examination.

We notice in the 7 state model (and others) that a particular state (state 7 in the 7 state model) is a "vowel" state and we see from the transition matrix that state 3 is a kind of "pre-vowel" state; on the other hand, state 4 is usually followed by state 2 which is dominated by #. Thus state 4 might be thought of as a "final-letter" state.

This kind of analysis could be continued but let us say a bit more precisely what it is we need to do in order to understand our models. We would like to

"associate" somehow the underlying states with definable properties of English text letters. A little thought on this makes one realize that such an association might be made in one of two ways. On the one hand we can say that when a certain property p is satisfied by some letter, then we must be in a particular state s at that time, $(p \Longrightarrow s)$. On the other hand we can say that when we are in some state, then whatever letter is produced must have a particular property $(s \Longrightarrow p)$. Now the fact of the matter is that both of these possibilities (which we call Implicative Associations) occur in our models, as well as their conjunction. But, we hasten to add, one must broaden the idea of association so that a set of states rather than a single state may be associated with some observable property. Now of course the negation of a property is again a property, as well as the conjunction, and disjunction of properties. These logical operations among properties are mirrored by the appropriate operations among the subsets of states which correspond to them, e.g., suppose σ and τ are subsets of the set of states which are associated with vowels and initial letters, respectively, then $\sigma \cap \tau$ will be associated with initial letters which are vowels. The association between $\sigma \cap \tau$ and initial vowels might not be of the implicative type if