Control Organization in Speech: Preliminary Report

Katherine Morton

Reproduced from *Occasional Papers* 3, Language Centre, University of Essex, pp. 41-43.

The Language Centre is establishing a research project to investigate neuro-physiological aspects of speech. The first studies will be centred around EMG techniques, since the development of EMG techniques for the specific purpose of investigating these aspects of speech promises to be useful.

We are interested particularly in the following areas:

- ***Voluntary and Involuntary Actions*** Articulatory movements result from a combination of voluntary and involuntary muscular actions. A model of speech production must differentiate these two and show the influence of one on the other.
- ***Basic Speech Posture and Modulation*** There is a notion current in phonetics that speech consists of modulation of a basic speech posture. This supposes that articulatory movements represent departures from a neutral vocal tract configuration. We would like to be able to show in a model how the voluntary and involuntary control signals could interact with commands that establish the basic speech posture as a carrier for articulation, thus producing speech.
- ***Timing of Motor Commands*** We will investigate the temporal organ F motor commands and their correlation with abstract phonological units such as 'syllable' and 'phoneme'.

These three subdivisions are directed toward an improvement of the present model of speech production. This model is summarized briefly in Fig. 1.

In other words, what we are concerned with is the temporal relationship between events and with their control. An understanding of the relationships of the systems in the model will enable us to make assertions regarding unit organization in speech.

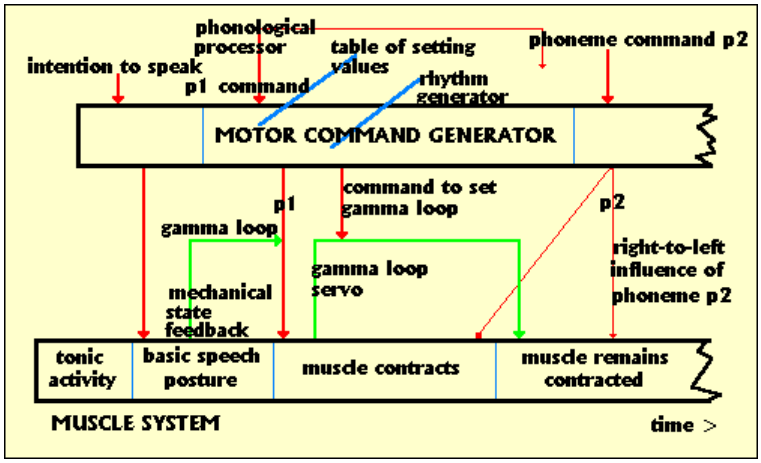

Fig. 1 The Model

Our preliminary studies are concerned with confirming or refuting the hypothesis that motor commands closely correlating with the phonological phonemic segments interrelate in a rhythm-governed CV(C) repetition pattern.