FOR AN UP-TO-DATE VISUAL REPRESENTATION OF SPEECH

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What parts are best described?

Though speech statements are unpredictable, their parts are limited in diversity, and thus susceptible of scientific description. The most obvious elementary parts in speech chains are the syllables, but these have less meaning for what we generally call our language problems. Since the diversity of sounds is too large and also the length of a syllable is too small, we must search for a scheme which will be able to accommodate all sounds in a more generalized way. For this purpose, we have adopted the following scheme: We will define a syllable as a unit of speech which fulfills the following conditions: it is a constant unit of time, it is a structural unit of pitch, and it is a phonetic unit of intonation.

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The scheme is designed to be as simple as possible, while at the same time it should be able to accommodate all sounds in a more general way. For this purpose, we have adopted the following scheme: We will define a syllable as a unit of speech which fulfills the following conditions: it is a constant unit of time, it is a structural unit of pitch, and it is a phonetic unit of intonation.

Further notes on the proposed representation of syllables.

We have seen that speech sounds are not always separated in the time sequence as we formerly thought and is recorded in our spellings. On the contrary, syllables follow strictly the sequential character of speech. At bottom, this may be but another aspect of the first two reasons we mentioned, but it is a most practical answer when considering visual representation.

How could such descriptions be accomplished?

Our question requires two different answers. As we are today led to do, we must give a precise view of what we would find in such new descriptions, and by so doing we may reach the most compelling argument when considering visual representation.

A FEASIBLE SYLLabic VISUAL REPRESENTATION

We cannot be done in this black and white paper, we would take advantage of the widening use of color and information processing. We would have the opportunity of drawings for production transmission, and decoding of syllables. In these drawings, the phonetic parameter of duration will be shown on the horizontal or "x" axes of our two-dimensional models. We have the opportunity of representing all the sounds in the language by specifying the lengths of the horizontal "x" axes. Then, the "y" axis can be changed in any way that can represent our acoustic research to be ascribed to this fundamental cause.

The decisive reason for choosing the syllables.

We are dealing here with the problem of what elementary parts of pronunciation should be selected for a practical, realistic, and up-to-date visual description of speech?

Three Reasons for Choosing Syllables.

1. Tentatively in these drawings, we have chosen syllables as basic units, and for a long time past, the three following reasons could have been given for this choice. First, they are the only divisions that are immediately perceptible to all language users. Second, we may therefore say that syllables are the basic units used by our minds to process speech. For the sake of brevity, we forgave us for using such simple terms. Thirdly, the finer divisions vary according to the syllables in which they are found, and, for a scientific description, these variations nullify the fundamental advantage of such smaller elements, i.e. that of being less numerous than syllables. But, more fundamentally, we need for a better description of languages is as general as possible.

Why Finer Divisions Are Unfavorable?

If vowels and consonants, and all the morophemes, factors, etc., very according to the other components with which they are to be found, two attitudes may be adopted. First, if we want to give a realistic visual representation of speech with vowels and consonants, we must distinguish between the sounds that each of these may represent. This recently led to the International Phonetic Alphabet, but we know that such distinctions cannot be satisfied because for many diacritic signs make themselves meaningful, even though the more important variations are not needed.

A second attitude is to forgo writing as an unvocalic system of symbols; this is what we generally do end, particularly for the study of our western languages. It is one of the basic obstacles that we have to overcome. But, more fundamentally, we need for a better description of languages is as general as possible.

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In this, and in the third pictures, we should imagine that the sounds of real speech. So long as the same conventions that we have used in the past, but this time it is important to note that, for the third drawing, the syllable "ya" may be more accurately identified as a part of a word like "material" than if it is pronounced separately, as in contrast with "pa" or "ja", "fa", etc.

Since neither the voice, nor the language, nor the syllable are specified, this drawing is most arbitrary, and the sounds of speech it partly represents, may cause more surprise than in the first figure. In the fundamental frequency, we purposefully marked a variation which is unusual in our European languages, in order to stress the fact that most of the five thousand, or so, languages have not yet been scientifically studied, not even briefly. Therefore, what we consider basic and general rules of the production, transmission, and decoding of speech, could be less universal and necessary than we hold.

Fig. 3 DECIDING THE NATURE OF THE TOTAL SOUND

Picture on top of next column. For a long time, we think that the third view should remain the least complete of the three. Recognition of pitch is not achieved without due caution. To be sure, not everybody could agree that, meaning being essential to speech, an analysis that unguardedly excludes the meaningful aspect of language, runs a risk of being pointless or wrong. Perhaps all it takes many years before this opinion is examined by influential persons, and yet we have noted it in this third figure.