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NOTES AND DISCUSSION

How not to measure length of lexical representations and other matters*

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The discussion of phonological theory which was begun by F. Householder in the first issue of this journal (*JL* 1 (1965). 13–34) has recently elicited a contribution from P. H. Matthews (*JL* 4 (1968). 275–283). Matthews is evidently unconvinced by the long and detailed paper in the second issue of the journal in which Chomsky and I sought to answer Householder (*JL* 1 (1965). 97–138), and feels that some issues raised in the debate can usefully be discussed further. Unfortunately, Matthews's choice of topics for review was not particularly felicitous: as I shall try to show below, one of the problems he chose to discuss is based on a misconception that is readily corrected, whereas his discussion of the remaining problems suffers from a fatal lack of empirical supporting data.

In his intervention Matthews states (1968: 276) that 'the central aim of Householder's paper was to cast doubt on the assertion that distinctive features "must" be accepted as the prime or fundamental unit at the phonological level. His leading argument is, of course, very straightforward. A Prime, from his point of view, is essentially a unit of "transcription" or "representation" at some level of description. If the basic forms of lexical elements are transcribed or represented by distinctive feature matrices, then the dictionary (i.e., the list of lexical elements) will be unusually long and cumbersome. If they are transcribed or represented by strings of phonemes – or morphophonemes, then it will be relatively short. But theory *a* should be preferred to theory *b* (other things being equal) if the descriptions or grammars yielded by *a* are shorter than those yielded by *b*. Hence a theory which takes the phoneme as the unit of phonological representation should be preferred (other things being equal) to a theory which is based on distinctive features.'

I shall now attempt to show that this argument is specious and that when it is examined in detail, it vanishes into thin air.

I take it that however brevity or elegance of a theory or of a set of statements is to be measured, it has nothing to do with the number of square inches of paper that are required by a printed version of the theory, for otherwise theories

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printed in 5 point type would be always better than those printed in 18 point type. Analogously, I assume that the choice of type font cannot be at issue. Hence, whether we use letters of the Roman alphabet to represent the phonemes in the dictionary, or, like our Russian colleagues, prefer to use letters from the Cyrillic alphabet for this purpose, could not possibly have any bearing on the central point. Now, if a linguist is free to choose among existing alphabets, he is equally free to use for this purpose an alphabet invented by himself. All alphabets being intertranslatable, nothing of essence can be lost by this choice.

Assume that for purposes of linguistic description I choose an alphabet styled on the Old Irish oghams, but not identical with them. In my alphabet each letter is represented by a vertical line on which there are five places, each of which may be occupied by a dot or a dash, as shown in (1). It is obvious that

(1)
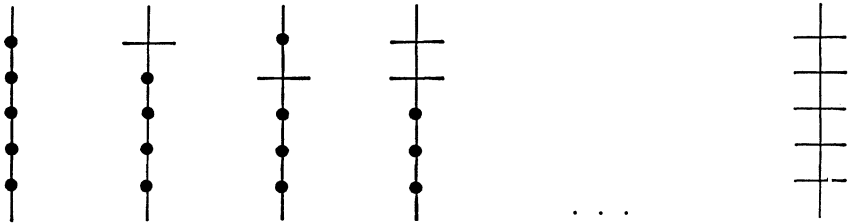
the alphabet illustrated in (1) will have 32 distinct characters; if more characters are required, the number of places on the vertical can be increased.

While the aesthetic shape of these letters may leave something to be desired, they are readily distinguished one from another, and there is no problem in establishing a one-to-one correspondence between the letters of this new alphabet and any other alphabet that might be proposed. Consequently – I underline this again – no question of simplicity, elegance, or other theoretical import can arise if I insist on representing Householder's phonemes with the help of my alphabet. Nor can such questions arise with regard to the way in which different symbols in Householder's system are assigned correspondents in the new system. I can assign the left-most symbol in (1) as the correspondent of the phoneme /a/ or as that of /b/ or of /g/, etc., without in the least affecting anything under discussion.

The alphabetic symbols in a phonological representation stand for phonemes, which have specific phonological properties, such as sonorance, nasality, voiced-ness, plosiveness, coronality, etc. Thus, the phoneme /t/ possesses the phono-logical properties of plosiveness and coronality, but lacks sonorance, voicedness and nasality; the phoneme /n/, on the other hand, has the properties of sonor-ance, plosiveness, coronality, voicedness, and nasality, etc. I now propose – and this is the heart of the distinctive feature hypothesis – that in representing different sounds, the symbols of the letters of the alphabet be assigned to

phonemes, not arbitrarily as they would be in a system like that of Householder, where phonemes are further unanalysable entities, but rather that the symbols of the new alphabet be assigned so that a particular place on the vertical line represents always one and the same phonological feature. Thus if the first place is to be assigned to the property of sonorance, the second to nasality, the third to voicedness, the fourth to plosiveness, and the fifth to coronality, then /t/ and /n/ would have to be represented as in (2). It is obvious that this sort of corre-

(2)

/t/   /n/

spondence has certain traits which are lacking in a totally arbitrary correspon-dence. In particular, it expresses directly the fact that phonological elements are typically cross-classified, and it can be extended in a very obvious way to express the TECHNICAL notion of simplicity that plays such an important rôle in gener-ative phonology, etc. In other words, if this proposal to assign alphabetic symbols in a motivated way is adopted, then a great many other insights into language can be readily captured. All these would seem to me strong arguments for preferring the motivated correspondence assignments over purely arbitrary ones. I know of no argument that has ever been proposed for arbitrary as opposed to motivated correspondences. In any case, a dictionary using arbitrary correspondences between phonemes and their alphabetic representatives (as is implicit in Householder's proposal) will not differ in length from one in which the correspondences are motivated (as implied by the distinctive feature theory). Hence, the assertion quoted above that a dictionary representing phonemes directly will be shorter than one which represents them by distinctive features is simply false, and Matthews's argument of sections 2, 3 and 4 collapses.

Little weight can be given to the comments in sections 5 and 6 because they are purely hypothetical. Matthews doubts (279) that the length criterion is an appropriate evaluation measure. Obviously such doubt is always possible, but unless it is supported by citation of concrete examples where the proposal fails, there is not much point in discussing it. The putative counterexamples offered by Householder have been disposed of by Chomsky and me in our reply; Matthews offers no new examples, but reiterates the doubt. We sympathize with his predicament, but are unable to help him until he provides a more specific description of the reasons for his doubt.

Similarly, there is nothing wrong in principle with Matthews's proposal (280) that 'the primes considered as "unit of evaluation" may indeed be features, but the primes considered as "unit of representation" . . . remain phonemic in character'. Those of us who have been working on generative phonology have made an effort to show how an evaluation procedure works in a system in which there is only one type of primes. Conceivably, it might work better if Matthews's proposal were to be adopted, but this requires study of empirical data, and I am not aware of any concrete explorations or results along these lines.

Much the same must be said about Matthews's remark that 'there is no reason for supposing that a description must consist of a single generative grammar' (281). Those of us who believe that there is reason for supposing that a description must consist of a single (in Matthews's terminology 'monolithic') grammar have supported this belief with a certain amount of factual material. Until the disbelievers support their doubts with empirical facts, it hardly seems rational to be greatly concerned over such doubts.

Matthews feels that 'the monolithic principle may well be inconvenient at other points in the description', but offers in support only vague remarks about the problem of 'idioms'. As far as I know, idioms present difficulties in syntax and semantics, but these surely are not relevant to the issue of features vs. unanalysable phonemes as primes of the phonological component.

Matthews offers some remarks about the status of the syllable as putative grounds for rejecting the distinctive feature approach. This is especially curious, since at least in the most common version of both the distinctive feature and the phoneme theory, the syllable is not a primitive unit. It therefore would appear that the syllable presents identical difficulties to both approaches, and it is not obvious why Matthews chose to mention the syllable here.

Finally, Matthews believes that the fact that 'there are said to be cases where one cannot tell which feature should be treated as "redundant" ' (282) poses a serious difficulty for the distinctive features approach. Again he cites no evidence that might lend credence to his doubt. I am well familiar with the feelings of uneasiness underlying such doubts. I am happy to be able to report, however, that both the doubts and the theoretical uneasiness usually vanish as soon as empirical work is undertaken to support or reject well-formulated hypotheses.