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Brno studies in English. 1969, vol. 8, iss. 1, pp. [43]-48

NOTES ON SOUND-CHANGE AND PHONEME-THEORY

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The difficulties and controversies of historical phonology to some degree result from a failure to apply to it the concepts of modern phoneme-theory. The older philologists who posed the questions were of course unaware of it; their successors tend to carry on the discussion in the familiar terms. Often there is no clear definition whether the discussion is about allophones or distinct phonemes, and little realization of the limitations of historical evidence when the matter concerns allophones. 'Combinative' changes are particularly involved, for by definition they depend on the phonetic context and must originate as allophonic variations; and the main questions for historical phonology must always be by what process and at what date the allophonic variants became distinct phonemes.

Some years ago I attempted, in an article, to define the circumstances in which what had hitherto been an allophone could emerge as a distinct phoneme.[1] These may be summarized as: (1) destruction, by some independent sound-change, of the context in which the allophone arose, so that it ceases to be tied to an existing phonetic context; (2) development of the allophone in such a way that it becomes identical with a pre-existing separate phoneme; (3) identification of an allophone of one phoneme with an allophone of another, so that the new sound is not referable to a single source; and as in the normal way these allophones of distinct phonemes will have developed in different contexts, the new sound will not be identifiable as occurring in limited and recognizable contexts. These categories cover most cases, though we should perhaps add (4) coalescence of two sounds to produce a third different from either and new to the system.[2]

Several examples from early Modern English phonology may be given to illustrate the application of these principles. The ME phoneme *ŭ* splits in ModE into two, /u/ in *pull*, &c. (i.e. in labial contexts) and /ʌ/ in *cut*, &c. (the 'free' development), and it is plain from the evidence, as well as from theory, that what causes the differentiation to become phonemic is the development of another /u/, in non-labial contexts, by the 'second shortening' of /u:/ < ME *ō̆* in such words as *foot*, *cook*, *good*, &c. Native sources which distinguish the vowels of *pull* and *cut* also show the second shortening, the earliest being Hodges in 1643; and three sources (Daines 1640, Willis 1651, and Price 1665) who appear not to recognize the distinction of *pull* from *cut* significantly give no evidence of the second shortening. As the phonemic differentiation of *pull* from *cut* depends on the second shortening, the conventional dating of the 'unrounding of ME *ŭ*' is really a dating of the shortening and therefore of the emergence of /ʌ/ as a distinct phoneme. As an allophone it may, as far as this evidence goes, have long existed.

The phonemic differentiation does not depend at all on the extent of the physical

or acoustic divergence of the allophones, but on an extrinsic factor; and it follows that the unrounding, lowering, and centralization of the 'free' variant may have proceeded very far while it was still only an allophone. But this means that the assumption of earlier philologists, e.g. Luick, that the various stages of the phonetic process must be reflected in surviving evidence, and that the varying terms used in seventeenth-century descriptions of the unrounded sound *after* it had become a distinct phoneme must correlate in some way with the assumed stages of the development, is by no means necessarily true; it would be possible for the whole phonetic process to have been gone through at the allophonic stage and therefore to have escaped observation. It is one thing to work out, from general phonetic theory, what the path of development is likely to have been, and even to illustrate it from modern dialectal variants; it is another to assume that these stages will be reflected in historical evidence. To me it seems dangerous to treat the various seventeenth-century descriptions as if they were the precise analyses of modern phoneticians, and that they are best interpreted as varying ways of attempting to define a difficult centralized vowel not essentially different from that of Present English, i.e. that at the moment when it achieved phonemic differentiation (by virtue of the 'second shortening') ME *ŭ* in *cut* was already far advanced towards its modern value.

Evidence of allophonic variants is not ordinarily to be found in native sources, except in the sophisticated phonetics of modern times; a variant of a single speech-sound, still linked to context, is automatic and not a matter of choice and is therefore unnoticed. What is interesting, in this case of ME *ŭ*, is that until the variation had become phonemic native sources invariably describe the rounded allophone, though it reoccurred in far fewer words. The reason is obviously tradition, but probably not merely a tradition of description; the original sound is taken as the norm, which would doubtless be used in isolation or in consciously correct utterance, and the divergent sound, though more common, is referred to the norm. It must follow that analogical processes, as when a variant developed in one inflexional form is transferred to another, must always take place after a distinction has become phonemic;[3] the possibility of transference depends on observation and choice, and the lack of an automatic link with the context. Thus in primitive OE there must already have been a phonemic distinction between *æ̆* and *ă* before **færiþ* could be re-modelled as **fariþ* (to become, by *i*-mutation, *færþ*); it is the business of the phonologist to ask by what means it had become phonemic, for it certainly does not depend on the mere physical difference between the sounds, which is slight. In the case of ME *ŭ*, dialectal admixture must be assumed to account for the inconsistencies in the Present English distribution of /u/ and /ʌ/ and for the variation between the two sounds, in individual words, shown by later seventeenth-century evidence; and such dialectal admixture can only occur after the distinction has become phonemic, for again it depends on the possibility of observation and choice. It is probably not necessary that the distinction should be phonemic in the dialect exerting the influence, but it is essential that it should be in the dialect influenced, for its speakers must be aware of the difference and capable of using either sound in the same context.

Foreign observers are usually even less reliable than native sources, because of the well-known tendency of even fluent linguists to hear foreign sounds in terms of the phoneme-system of their own language. Even a phonemic distinction in the language observed may not be noticed; thus speakers of modern English dialects which do not make a phonemic distinction between ME *ŭ* in *pull* and in *cut* have great difficulty in observing and learning the standard English distinction. Allophonic variations will

ordinarily go entirely unnoticed. But in theory they may be observed and reported if it so happens that the language of the observer has two phonemes, each of which is identifiable with an allophone of the language observed. Thus the unrounded, lowered, and centralized allophone of early ModE *cut* was identifiable with Welsh 'unclear' *y* or with French *o* (itself somewhat centralized), the rounded allophone of *pull* with Welsh *w* or French *ou*. Welsh and French sources give sporadic evidence of the unrounding of ME *ŭ* from 1580 onwards, i.e. sixty years before native sources. What they do not give is evidence of a distinction between the vowels of *pull* and *cut;* they appear to be generalizing from the commoner case, and do not make the distinction which in theory they ought to be able to make. Nor is this really surprising; any foreigner who knew English so well that he was in a position to observe an allophonic variation would also necessarily know that native speakers were unaware of any distinction and denied its existence, and he would need to be a man of very independent—indeed obstinate—mind to insist that English pronunciation made a distinction which Englishmen denied. He might follow his own ear in identifying with a sound of his own language the commoner English variant, but he would accept native testimony that there was but one sound to be identified.

We can sometimes get indirect evidence of the development of allophonic variations if one of the variants is subject to some further development which affects the phonemic structure of the language. Thus the unrounded and lowered variant of ME *ŭ* was subject, before the consonant *r* (other than intervocalic *r*), to further centralization towards [ə]; and simultaneously ME *ĭ* and *ĕ* before *r* were also independently centralized until each was identified with *ŭr*, probably as [ər]. Evidence of this identification is therefore indirect evidence that ME *ŭ* in non-labial contexts has developed to or towards [ʌ]. In the grammarians such evidence hardly comes before recognition of the phonemic distinction between the vowels of *pull* and *cut*. But Daines in 1640, though he does not appear to recognize the phonemic distinction, does identify both *ĭr* and *ĕr* with *ŭr*; and evidence of other sorts (spellings and rhymes), though in many ways unsatisfactory, seems to show this identification from about 1550 for educated speech, i.e. much earlier than the phonemic distinction.

The second case which I wish to discuss is the ModE development of ME *ă*, which, though less protean in its diversity, in some ways resembles the OE development of WGmc *ă*. The single late ME phoneme, which there is good reason to suppose was low-front /a/, has split in present Standard English into four distinct sounds, namely (i) /æ/ in *man, hat,* &c. (the 'free' development), (ii) /a:/ in *car, cart, cast, father,* &c. (lengthening before *r* and spirants), (iii) /ɔ/ in *wan, want, quality,* &c. (rounding after *w*), and (iv) /ɔ:/ in *war, ward, water,* &c. (rounding and lengthening, chiefly between *w* and *r*). These are admittedly combinative developments and must have originated in allophonic variants. But historical phonology must deal essentially in phonemes and the change of phonemes, of which alone we normally get evidence; about allophonic variants (with the qualifications made above) we can only guess, though intelligently, by arguing back from later developments; and we have no means of telling when such variants first arose, or how far their development had proceeded at any given time. In this case of ME *ă* the important questions are, once again, how and when did its allophones achieve distinct phonemic status?

The simplest development is that of /ɔ/ in *want,* &c., which became phonemically distinct by the process of identification with a pre-existing phoneme, ME *ŏ*. It is therefore to be expected that evidence of the rounded and retracted variant of *ă* will occur as soon as the process has gone far enough to permit identification with *ŏ;*

no time-lag is conceivable. In positions of reduced stress *ă* after *w* already occurs as *o* in OE in the name *Oswald*, in ME in *quod* 'said,' in the fifteenth century in *was* and *what*; but in fully-stressed words such as *want* it is not recorded for educated speech until the seventeenth century, and then only sparsely. In view of the simple nature of the process, it is reasonable to conclude that the allophone was not fully rounded, though it may well have been retracted, until the date when the evidence appears, and that even into the eighteenth century many speakers knew no phonemic distinction between the *a* of *can* and that of *want*.

The allophone in *war*, *ward*, *water*, &c., achieved phonemic separation by being identified with the monophthong developed from ME *au* in *law*, *lawn*, *hall*, &c.; this monophthong is recorded as the normal pronunciation of educated speech by Robinson about 1617 and by the normally conservative Gill in 1619. But though Robinson and more doubtfully Gill show /ɔ:/ in *water*, they do not in *ward*, &c.; here it is first shown by Daines in 1640. If both the lengthening and rounding had been complete by the late sixteenth century, the variant must have achieved phonemic status simultaneously with the development of ME *au* to a monophthong; in fact, except in the special case of *water*, it does so only somewhat later.

The third case, the present /a:/ in *arm*, *cast*, &c., is similar to the second but a little more complex; it achieved phonemic status only by being identified with the /a:/ developed by a distinct process from ME *au* in *dance*, *half*, &c. (identification of allohones from distinct sources and in different contexts); in forms of speech in which ME *au* before nasals and labials (i.e. in *dance*, *half*, &c.) did not have this special development to /a:/, the lengthened variant of ME *ă* in *arm*, *cast*, &c., would have remained a mere allophone of /a/ so long as there was no destruction of one of its phonetic contexts (i.e. so long as the *r* was pronounced).[4] The precursor of our /a:/ in *half* is evidenced by Coles (1674) and in *dance*, &c., by Lodwick (c. 1685) and Cooper (1685); evidence of the lengthened phoneme in *arm*, &c., and *father* is given by Coles (1677) and in *arm*, &c., and *cast*, &c., by Cooper (1685). The near coincidence of the dates and sources is sufficient to prove that it was indeed in this way that the allophone of *arm*, *father*, and *cast* achieved phonemic distinction. Still earlier Daines (1640) appears to be trying to describe some form of /a:/ in *snarl*, &c., but his terms are unclear;[5] it is significant that they are similar to the terms he uses for ME *au* (so much so that Luick assumed that Daines meant the precursor of /ɔ:/ for *snarl*, &c.). It is possible that though Daines does not describe anything but /ɔ:/ in *dance*, &c., he nevertheless knew as a (less correct?) variant the precursor of /a:/, and therefore was able to recognize the phonemic separateness of the vowel of *snarl*, &c.; but because he had not troubled to distinguish clearly and explicitly the /ɔ:/ and /a:/ variants of *dance*, &c., and to work out distinct terms to describe the two sounds (probably because he regarded only /ɔ:/ as 'correct' in such words), he was in consequence impeded in his attempt to describe /a:/ (or more probably, at this date, some sort of low-front /a:/) in *snarl*, &c. At all events he demonstrates, by the similarity of his terms, that there is a connection between the development of ME *au* and the emergence of the lengthened variants of ME *ă* in *ward*, &c., and in *snarl*, &c., into phonemic separateness. In this case the chronology suggests that the allophone in *arm*, &c. (less certainly that in *cast*, &c., or in *father*) was already sufficiently lengthened[6] to be ready to become phonemically distinct as soon as the /a:/ (or rather, at the time, /a:/) variant of *dance*, &c., began to be used in Standard English. But until this variant came into use there was no means by which the allophone(s) of *arm*, *cast*, and *father* could become a separate phoneme.

This argument means that the sixteenth- and early seventeenth-century sources (as late even as Wallis in 1653) which do not recognize any variation in the pronunciation of ME *ă* were phonemically justified; any variants were still linked to context, mere allophones, and as such unnoticed or if noticed not regarded as significant or capable of description. And this must affect our transcriptions of late sixteenth- and early seventeenth-century speech. If we are going to give 'narrow' transcriptions taking account of allophones, then (guessing a bit, or more than a bit, beyond our evidence) we can use such symbols as [ɹ] for *can*, [a·] or even [a:] for *arm*, possibly [a·] for *cast* and *father* (in which evidence of phonemic lengthening is a little later), [*a*] for *want*, [*a*·] or even [*a:*] for *ward* and perhaps for *wrath*, [*a:*] for *water* (or even [ɔ:], in view of Robinson's evidence). But if we are giving phonemic transcriptions we must use a single symbol for all the variants of ME *ă*, since the evidence is that in educated speech it was still a single phoneme (unless in special words like *water*); and in that case, though the commonest allophone may already have well been [æ] (since this is the 'free' development), the symbol for the phoneme should surely be /a/, since this was not only the original sound, as far as we can judge, but also the mid-point, or starting-point, for the various divergent allophones. By the time of Coles and Cooper the four distinct phonemes have all emerged (though their use of them did not fully coincide with ours); between about 1630 and 1670 the position is more confused. In less conservative forms of speech than educated Standard English the dating was obviously different; but the evidence of the grammarians and phoneticians of the period is really remarkably self-consistent.

Very similar considerations apply to the differentiation of ME *ŏ* into a short variant in the 'free' development (in *on, lot,* &c.) and a lengthened variant before *r* (in *short,* &c.), before voiceless spirants (in *lost, cloth,* &c.), and in certain other cases (e.g. *gone* pronounced /gɔ:n/). The lengthened allophone achieved phonemic distinction by being identified with the normal monophthong developed from ME *au*; but lengthening before *r* is not shown until Newton (*c.* 1660), Coles (1674), and Cooper (1685), and that before voiceless spirants not until Cooper, i.e. there is a clear chronological gap between evidence of the monophthongization of ME *au* (Robinson and Gill, before 1620) and that of the lengthening. This must mean that until after 1650 the lengthened allophone of ME *ŏ* was still distinguishable, either in length or in quality, from the monophthong /ɔ:/ < ME *au*, and in consequence could not be phonemically distinguished from the short allophone (since the lengthened sound, whatever it was, was still tied to particular and surviving phonetic contexts). Until this date a phonemic transcription must employ a single symbol for ME *ŏ* in all words, presumably /ɔ/; only in an allophonic transcription could we guess at a distinction between (say) a more open [ɔ] in *on,* &c., a closer and longer [ɔ·] in *short* and perhaps also in *lost.*

Philologists, if they try to work out the consequences of phoneme-theory for their historical studies, will have to accept that there are things of which they formerly hoped to get evidence which must in fact go unrecorded; that developing allophones are normally unobserved, and that as the emergence of new phonemes does not depend on the degree of divergence of the allophones, extremely divergent sounds may still be allophones and not be distinguished or described; that when new phonemes do emerge, they may already be so different from the 'parent' sound that the development seems to have proceeded by a great jump; and that evidence tending to show this is not suspect, nor to be so interpreted as to introduce neat stages into the development. One favourite concept of traditional philology, the 'intermediate

sound' which can be spelt (or rhymed) now in one way, now in another, seems impossibly at variance with phoneme-theory. Many such points in the text-books require re-thinking or at least redefinition. In particular it is the object of this note to illustrate what is doubtless a truism, but not always remembered—that we cannot assume, because sounds are now phonemically distinct, that their precursors at an earlier period were necessarily so. Before we can make a 'phonemic transcription' we must think out what were the phonemic distinctions; and the answer is not always obvious.

NOTES

[1] *Transactions of the Philological Society* 1962. 140 ff. (London, 1963).

[2] An example is early ModE /ʒ/ developed from /zj/ in such words as *derision, vision, measure.* But this may, at least in theory and perhaps in fact, be a special case of 'destruction of context', for the stages may be (i) /z/ develops an allophone [ʒ] before /j/, (ii) /j/ is lost after this allophone, so that the sound /ʒ/ now stands before /ə/ and there is a contrast between /ʒ/ in *derision* and /z/ in *risen.*

[3] Explanations which assume the analogical substitution of one allophone for another are contrary to principle. An apparent example is the conventional explanation of ME *broiden* as due to the analogical transference to the OE p. p. *brogden* of the front palatal spirant *g* developed in the infinitive *bregdan*; before such an explanation can be admitted it must be shown that the front and back variants of OE *g* were freely interchangeable. A better explanation is that the *g* in the group *ŏgd* could in some dialects be palatalized because of the influence of the *d.*

[4] I am not dealing here with those forms of speech in which the lengthened variant in *barn,* &c., was identified with ME *ā* (cf. E. J. Dobson, *English Pronunciation 1500—1700* ii. §§ 42—3 (Oxford, 1957) or with /ɔ:/ (§ 44); cf. occasional /ɔ:/ in *paths* and *father* (§ 53.3). It seems possible that these abnormal results of lengthening (from the point of view of present Standard English) were appropriate to dialects in which there was no /a:/ developed from ME *au* in *dance, half,* &c., so that the lengthened allophone of ME *ă* could achieve phonemic distinction only by being either fronted until it was identical with ME *ā* or retracted and rounded until it was identical with normal /ɔ:/ < ME *au.* The date of the lengthening, or the phonetic context, must have determined whether either of these things could occur.

[5] Dobson, *op. cit.* i. 330—3.

[6] And I should suppose already somewhat differentiated in quality from the vowel of *can.* It is a very mechanical view of the process which assumes that the *ă* of *arm, cast,* &c., was fronted to [æ], with that of *can,* &c., before the lengthening occurred, and then retracted from [æ:] to [a:] after the lengthening had taken place. Simultaneous allophonic divergence in both quality and quantity seems to me much more likely, or divergence first in quality and then in quantity; already, before phonemic separateness was achieved, the vowel of *can* must have been both more fronted and shorter, that of *arm, cast,* &c., less fronted and longer, i.e. [æ] against [a·].

RESUMÉ

Poznámky k teorii hláskových změn a k fonémové teorii

Článek probírá některé důsledky fonémové teorie pro historickou fonologii, se zvláštním zaměřením na tři raně novoanglické případy kombinatorických změn. Hlavním problémem pro filologii je ukázat, jak a proč alofony přecházejí v samostatné fonémy. Přímé historické důkazy alofonů jsou zřídkakdy po ruce a varianty mohou být výrazně odlišeny, i když jsou stále ještě alofony. Přepis musí být založen na rozboru fonologické struktury jazyka v dané době.