

consistent application of the aforesaid principle of lowering the tongue position of short close vowels, and raising that of long open ones. Both *i and *u underwent lowering till they became æ and ɒ respectively; *ɔ was raised till it became u. Thus two short vowel-phonemes, *a and *u, were confounded in one, ɒ; and two long phonemes, *ɔ and *u, fell together in one, u.

According to this sound-law, then, the hypothetical *a and *u of Pre-Egyptian (corresponding to Parent Semitic *a and *u) fell together in Egyptian and Coptic ɒ, and the hypothetical *ɔ and *u of Pre-Egyptian (corresponding to Parent Semitic *a and *u) fell together in Egyptian and Coptic u.

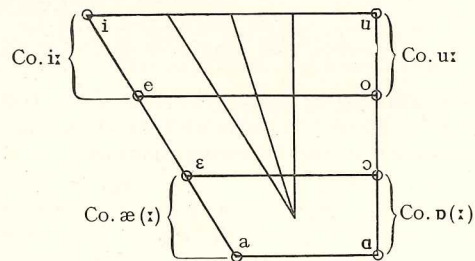
The discovery that Pre-Egyptian ɒ (=Parent Semitic u) was identified with Pre-Egyptian a (=parent Semitic a) in one phoneme affords the clue to one of the mysteries of Coptic grammar, viz. the uniform vocalization of the qualitative, both where it corresponds to the Semitic *perfectum passivi* (type 'qutila, and where it is analogous to the Semitic intransitive perfect (type 'qatila). Thus the Coptic passive S. 'pɔtəs = F. 'pɔtəs "to be split" shows the same vocalization as the intransitive S. 'ʃɔbə || B. 'ʃɔbr = F. 'ʃabr "to be different". The evolution of the former was *'pɔtɪsaw > *pɔtsəw > *pɔts > pɔtəs (cf. 'qutilawa > 'qutila > 'qutila). The latter underwent the following evolution: *'ʃabrjaw > *ʃɔbjəw > *ʃɔbbəw > ʃɔbə (cf. 'qatilawa > 'qatila > 'qatila).

In Coptic, therefore, the scheme of stressed vowel-diphthones is quadrangular:

i:	u:
æ(z)	ɒ(z)

The open vowels are sometimes long owing to compensatory lengthening; this length is indicated in the spelling by doubling the vowel-letter, e.g. S. *joor* || F. *jaar* "river".

None of the Coptic vowels is uniformly represented by one and the same letter, not even in the same dialect. This spelling variety renders it probable that each of the four diaphonemes ranged over the area of two neighbouring cardinal vowels, as is shown in the following diagram:



For the close vowel-phonemes we find *i* or *η*, and *ou* or *ω*, written fairly indifferently in all the dialects. Dialectal differences appear in the spellings of the open diaphonemes. Coptic æ is usually

written *ε* in A. F., and *α* in S. B., but the reverse is not infrequently the case; *ɒ* is normally represented by *α* in F., and by *o* in S. B. The A. dialect distinguishes two members of the *ɒ*-phoneme, one rounded at the word-end (written *o*), the other unrounded in all other positions (written *α*). Examples:

Eg. *nfrt* "bona" = **nɔfrət* > S. *nofre*, A. *nafre*, F. *nabre*, B. *nofri*.

Eg. *pr-ʃp* "Pharaoh" (literally "Great House") = **pʰər'ʃɔp* > S. *ər'ɔ* (ə'ɔ), A. *ər'ɔ* (ə'ɔ), F. *ər'ra*, B. *ɔ'ɔ* (with loss of initial *p*-due to non-phonetic causes).

32. Mr A. C. LAWRENSON (Prague): *Some observations on the phonology of the English vowels.*

The English vowel-system contains twenty vowels and diphthongs. They have usually been divided into groups as follows:

Five so-called long vowels: *i:* *u:* *ɑ:* *ɔ:* *ɜ:*

Seven so-called short vowels: *ɪ* *ʊ* *ɛ* *ɒ* *æ* *ʌ* *ə*.

Five *r*- and *ɔ*-diphthongs: *eɪ* *oʊ* *aɪ* *aʊ* *ɔɪ*.

Three centring diphthongs: *ɪə* *ɛə* *ʊə*.

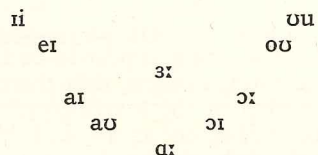
It must be added that the vowels *i:* and *u:* are realized by the majority of the younger generation as the narrow diphthongs *ɪi* and *ʊu*; this diphthongization is particularly common when the sounds stand in final position.

If we wish to work out the phonological system or pattern of these vowels and diphthongs, the first question which we must put to ourselves is this: Are the diphthongs phonological units, or groups of two vowels? I do not propose to spend much time on this point. Dr JOSEF VACHEK has dealt admirably with this problem in his essay *Über die phonologische Interpretation der Diphthonge, mit besonderer Berücksichtigung des Englischen*. Having set up the categories of monophonemic *Bewegungsdiphthonge* and biphonemic *Stellungsdiphthonge*, he proves, to my mind conclusively, that *eɪ*, *oʊ*, *aɪ*, *aʊ* belong to the former category, and *ɪə*, *ɛə*, *ʊə* to the latter. Unfortunately, Dr VACHEK has left the diphthong *ɔɪ* outside the system. His grounds for so doing appear to be that *ɔɪ* occurs almost exclusively in words of foreign origin, that there is much less variation in the tongue-position of the starting-point of this diphthong than there is in the cases of *eɪ*, *oʊ*, *aɪ*, *aʊ*, and that it alternates with no other vowel in the English system. I do not think, however, that the first two of these objections are valid. Words like *ʃɔɪs*, *ʒɔɪn*, *pɔɪnt*, *tɔɪ* are not felt by the ordinary speaker of English to differ in any way from words of native origin. Secondly, there is a certain amount of variation in the starting-point of this diphthong; it is sometimes realized as *ɔɪ*, and sometimes as *oɪ*. Also, in the normal Southern English pronunciation, it is impossible to identify the starting-point of the diphthong either with *ɔ:* or with *ɒ*. The third objection must be admitted; but I do not think that it alone is sufficient to justify the omission of *ɔɪ* from the English vowel-system. Finally, Dr VACHEK mentions in support of his theory that *aɪ* and *aʊ* are monophonemic, the fact that when they are followed by *ə*, forming

the so-called triphthongs $aɪə$ and $aʊə$, no j - or w -glide arises. The same is true of $ɔɪ$. Compare the pronunciation of a word like $m'plɔɪə$ with that of a word like $lɔːjə$, where a definite j -glide can be heard. In my opinion, therefore, $ɔɪ$ is a monophonemic diphthong, and together with $eɪ$, $oʊ$, $aɪ$, $aʊ$ belongs to the English vowel-system, while $ɪə$, $ɛə$, $ʊə$ must be considered to be biphonemic diphthongs.

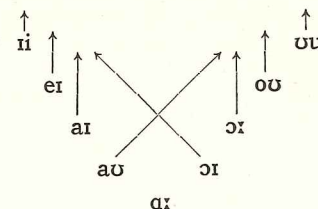
We must now determine whether these monophonemic diphthongs must be placed in a category by themselves, or may be arranged together with the "long" vowels in one system. There does not seem to be any distinction in the English speech-unconsciousness between a pure vowel and a monophonemic diphthong. It has already been mentioned that in the speech of some people $ɪ$ and $ʊ$ are realized as pure vowels in closed syllables, but as the narrow diphthongs $ɪi$ and $ʊu$ in final position. An Englishman who has not an exceptionally good faculty of mimicry, or who has not been phonetically trained, will pronounce the German words $zɛɪ$ and $zɔɪn$ as $zɛɪ$ and $zɔɪn$ —and yet will think that he is saying $zɛɪ$ and $zɔɪn$. What is more, when he hears a German say these words, he will think that he hears $zɛɪ$ and $zɔɪn$, accompanied only by that nebulous thing which he calls "a foreign accent". Moreover, he will speak of the vowel in the word $fɪaɪ$ and of the vowel in the word $sɔɪ$ —not because he is ignorant of the term "diphthong", but because he feels that $aɪ$ and $ɔɪ$ belong to the same class of sounds. It appears, then, that in the English sound-pattern no definite distinction is to be drawn between a "long" vowel and a monophonemic diphthong. We need not hesitate, therefore, to put both in the same system or class.

We must now try to arrive at the phonological system of the vowels. If, in considering the monophonemic diphthongs, we place them according to their starting-points, we shall find that a triangular system is built up, since $ɔɪ$, the vowel with the maximum degree of sonority, does not take part in the correlation of timbre. The system appears thus:

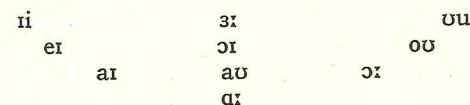


Two irregularities immediately strike the eye, however. We find that $ɪi$, $eɪ$, $aɪ$ all possess clear timbre, and take part in the correlation of timbre with $ʊu$, $oʊ$, $ɔɪ$, which all have dark timbre. Furthermore, the series with clear timbre is unrounded, whilst the series with dark timbre is rounded. The two diphthongs $aʊ$ and $ɔɪ$, however, do not agree with the other members of their respective rows as far as this is concerned. The diphthongs $ɪi$, $ʊu$, $eɪ$, $oʊ$, $aɪ$ are all characterized by variation of sonority, but not of timbre. But in addition to the movement from a greater to a lesser degree of sonority, the diphthong $aʊ$ contains a movement from clear timbre to dark; and the diphthong $ɔɪ$ a movement from dark timbre to clear. Further, $aʊ$

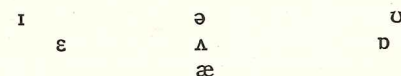
starts unrounded, and ends rounded; $ɔɪ$ starts rounded, and ends unrounded. These two diphthongs cut right across the system, thus:



On account of this fact, therefore, we are forced to the conclusion that these two diphthongs belong, together with the mixed vowel $ɔɪ$, to the middle row. In the strictly phonetic sense, they are not central vowels or diphthongs at all; from the point of view of the correlation of timbre, however, they must be allotted to the mixed row, thus:



The so-called short vowels will also be found to form a triangular system with three degrees of timbre, but with only three degrees of sonority, thus:



Objections may be raised to the placing of the schwa-vowel $ə$ with the other vowels, on the score that it only occurs unstressed. Prof. TRNKA¹ and Dr VACHEK² have both stated that in the phonological system of the English language only two vowels may occur unstressed—namely $ə$ and $ɪ$. Cases in which other vowels (or diphthongs) are fully articulated in unstressed syllables are dismissed on the grounds either that the words in question are of foreign origin, or that these pronunciations have been influenced by the spelling. I do not think, however, that these factors affect the problem. Leaving aside the question of words of foreign origin, consider the pronunciation of the word $ˈwɪndəʊ$. The pronunciation of this word in educated Southern English contains a full diphthong in an unstressed syllable; that this is a spelling pronunciation does not affect the present-day state of affairs; the fact that is of importance for us is that in a large number of words in Southern English many of the vowels and diphthongs occur in unstressed positions, in addition to the schwa-vowel and unstressed $ɪ$. I can quote an example where the distinction is of phonological value: $ˈfɛɪfɛɪ$ *felly* "outer circle of

¹ B. TRNKA, *A Phonological Analysis of Present-Day Standard English* (Prague, 1935), pp. 16, 17.

² J. VACHEK, *op. cit.* pp. 112, 113.

wheel", *fɛlə feller* "one who fells (trees, etc.)", *'fɛləʊ fellow*¹ "comrade, etc."

There remains the question of whether a correlation exists between any of the so-called short and long vowels. As Dr VACHEK² has pointed out, it is impossible to talk of a correlation of quantity, since it has been proved by E. A. MEYER in his *Englische Lautdauer* that the so-called short vowels are sometimes longer than the so-called long ones. Since it is difficult to judge tension in the more open vowels, a correlation of tension seems to be out of the question. But I think we may say that we have here a correlation of checked and unchecked vowels—what is called in German *Silbenschnittkorrelation*. The pairs of vowels which take part in this correlation are *i-i*, *u-u*, *ɔ-ɔ*, *ɑ-æ*, and probably *e-ɛ*. I am not sure whether the checked vowel corresponding to *ɜ:* is *ɹ* or *ə*. It will be noticed that one of the most salient features differentiating the members of these pairs is the fact that consonants which follow the checked vowels in final syllables are stronger than consonants following the unchecked vowels. This strengthening of the consonants is realized in the case of the liquids by lengthening; in the case of the other consonants both by increased quantity and by greater force of articulation. The fact that there appears to be no essential difference in the English sound-pattern between an unchecked pure vowel and a monophonemic diphthong allows us to set up a pair like *e-ɛ*, where the unchecked member of the pair is diphthongized. With the exception of unstressed *ɪ* and the schwa-vowel, only unchecked vowels can stand in final open syllables; these unchecked vowels form, therefore, the unmarked members of the correlation.

One word about the phonological transcription of these diphthongs. As far as is possible, phonological unities should be represented by single symbols, or at least by ligature forms, whilst biphonemic diphthongs should be represented by groups of symbols. I suggest, therefore, that the monophonemic diphthongs should be transcribed by means of the ligature symbols used by Dr H. E. PALMER in his *Principles of Romanization and Everyday Sentences in Spoken English*: *ɪ, u, e, ɔ, ɑ, ɔ, ɹ*. Taking the Czech *ai*-diphthong as an example, biphonemic diphthongs may be transcribed either with a binder, thus: *aj*, or else by placing the short mark over the unsyllabic element, thus: *aĭ*.

¹ The word *fellow* may sometimes be pronounced *'fɛlə*, but not always; one may say that somebody is *ə 'gʊd 'fɛlə*, or address him as *'jʌŋ 'fɛlə*; but one cannot talk about a *'fɛlə(r) əv ə 'kɒlɪdʒ*, or say that somebody has been *'sɛpərərtɪd frəm hɪz 'fɛləz*.

² J. VACHEK, *op. cit.* pp. 117, 118.

WEDNESDAY, 24 JULY. MORNING

SESSION FOR SPEECH PSYCHOLOGY

Chairman: Prof. K. BÜHLER.

33. Dr M. VON KUENBURG (Munich): *Die sprechmelodische Eigenart bei provoziertem Erwerb der Sprache. Zur Pathologie der Sprachentwicklung*.¹

Aus der Fülle der Probleme, die sich aus der Erforschung der Sprachentwicklungsstörungen ergeben, lassen sich einzelne besonders deutlich herausheben; sie sind geeignet ein neues Licht auf die Gesamtheit der Erscheinungen zu werfen und u. U. eine Revision der theoretischen Anschauungen herbeizuführen.

Der Abbau und die Veränderungen der musischen Qualitäten der Sprache bei zentral schwer Sprachgestörten beschäftigten seit jeher die verschiedenen Forscher. Über das Verhältnis der Akzente (Tonhöhe, Dauer, Stärke), des Sprechtempos und der Klangfarbe zu den eigenartigen Störungen der Laut- und Spracherfassung, des Sprachverständnisses und der Sprachproduktion ist viel beachtenswertes gesagt worden. Es ist erwiesen, dass bei den verschiedenen Formen der zentralen Störungen der Sprache die Störungen der sprachmelodischen Qualitäten in verschiedener Weise gestört sein können.

Im Gegensatz zu diesem "Abbau" der sprach- und sprechmelodischen Erscheinungen bei aphasischen Kranken, lässt sich von einem "Aufbau" derselben bei der Erwerbung der Sprache im Kindesalter sprechen; es leuchtet ohne weiteres ein, dass auch dieser verändert vor sich gehen oder gestört sein kann, wenn es sich um zentrale Hemmungen der Sprachentwicklung handelt und wir Störungen vor uns haben, die denjenigen der erworbenen zentralen Störungen Erwachsener durchaus ähnlich sind.

Über das anfängliche Geräusch-, Klang- und Lauterfassen, wie über die ersten melodischen und lautlichen Produktionen sprachkranker Kinder fehlen uns genaue Beobachtungen; um so wertvoller erscheint es, wenn sich die Gelegenheit bietet, Kinder mit *totalem* Sprachausfall bei gutem Gehör, erstmalig zu untersuchen, durch systematische Behandlung zum Sprechen zu bringen und die Wandlungen der melodischen und lautlichen Qualitäten zu beobachten, die durch den provozierten Erwerb der Sprache vor sich gehen.

An zwei spezifischen Fällen von Sprachentwicklungsstörungen, die untereinander fundamentale Unterschiede aufweisen, konnten interessante Beobachtungen gemacht werden; es sind deutlich umschriebene Störungen, die—einerseits durch den totalen Ausfall des Sprachverständnisses und des differenzierten Sprachlauterfassens, dem sogen. sensorischen—andererseits durch den vollkommenen Ausfall der artikulierten und sprachmotorischen Prozesse bei ausreichendem Sprachverständnis, dem sogen. motorisch-aphasischen Krankheitsbild

¹ Aus der Heckscher Nervenheil- und Forschungsanstalt München, mit Unterstützung durch die Rockefeller Foundation.