

THE HISTORY AND MEANING OF THE TERM "PHONEME"

by

DANIEL JONES, M.A. (Cambridge), Dr.Phil.h.c. (Zürich)
Professor Emeritus of Phonetics in the University of London,
Corresponding Member of the German Academy of Sciences
(Berlin), Honorary Member of the Royal Irish Academy

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1. At the request of our editor I am writing this article primarily to give some account of the origin and use of the term "phoneme" as it has been employed in the Department of Phonetics at University College, London, during the last 40 years or so—the principle of which was passed on to me by pupils of BAUDOUIN DE COURTENAY and collated with the work of HENRY SWEET and PAUL PASSY, and made more specific in the Department itself as the result of applying the basic idea to a number of languages which had not previously been examined from this point of view. A few remarks on cognate matters are also included, and a suggestion is made for introducing a new term, which, if adopted, will go a long way towards bringing about uniformity of phonemic terminology in various countries.

2. First it must be said that the idea of the phoneme, as distinct from the formulation of the theory, is very ancient. In fact by its nature it must date back to the times when people first bethought themselves of writing down languages by an alphabet instead of using a pictorial system. For people possess what the eminent American linguist EDWARD SAPIR (1884–1939) called "phonemic intuitions", which come into action as soon as they begin attempting to write their own languages alphabetically. They work with phonemic intuition as long as they are phonetically untrained, and as long as they remain uninfluenced by alphabetic traditions (which always grow up sooner or later). They know by a sort of instinct which differences between speech-sounds are capable of distinguishing words¹ in their own languages, and as a rule they do not notice other phonetic differences which may exist but which are not capable of distinguishing words. In other terms, it is natural that in their early attempts at representing their languages by means of an alphabet men should write them phonemically.

3. The fact is well demonstrated by the system by which the Korean language is written. It is alphabetic, and was devised by the

¹ SAPIR pointed out, after long experience of reducing American Indian languages to writing, that untrained native speakers generally have no difficulty in deciding what portions of connected speech constitute "words". See particularly his book *Language*, p. 35, footnote 6.

Korean king SE-JONG about the year 1450 A.D. This monarch quite evidently possessed a feeling for the phonemes of the Korean language. To give but one instance, he represented the sounds **p'** (slightly aspirated **p**) and **b** by a single letter (ㅃ). He is believed to have been quite a good phonetician, and doubtless realized that the two sounds were different; but as the sounds only occur in Korean in complementary distribution (**b** occurring to the exclusion of **p'** between voiced sounds, and **p'** being used to the exclusion of **b** in other situations), they have a kind of "sameness" to Koreans. That "sameness" is phonemic: the two sounds belong to a single phoneme, and that is why it is proper to represent them in writing by a single letter.²

4. The existence of "phonemic intuitions" was insisted upon repeatedly by SAPIR. It came to his notice in the course of teaching American Indians to write their languages. He observed how they continually and naturally noted differences of sound which "mattered" (to them) and took no account of differences that did not "matter" (to them): to put the case in modern terminology, they recorded differences of sound which were phonemic but ignored those which were not. Hence SAPIR's frequent use of such expressions as "psychological values" of sounds, the "inner" or "ideal" system of a language (as contrasted with its objective system of sounds),³ "phonemic intuitions" and "the psychological difference between a sound and a phoneme".⁴

5. People's natural sense for phonemes is also observable when teaching children to spell. For instance, it does not occur to a child who speaks my kind of English that the l-sound in *leaf* ought to be written with a different letter from the l-sound in *field*. It can be shown to him (if the teacher thinks there is any point in doing so) that the sounds are not the same—one being a "clear l" and the other a

² The Korean language also possesses a completely unaspirated (sometimes glottalized) **p** and a strongly aspirated **ph**. These sounds belong to separate phonemes and are therefore properly written in the Korean alphabet with separate letters (ㅍ and ㅑ).

³ See SAPIR, *Language* (1921), pp. 56-58.

⁴ See SAPIR, *La Réalité Psychologique des Phonèmes* (in the *Journal de Psychologie*, XXX, Nos. 1-4, Jan.-April, 1933, pp. 247-265). An English translation of this article is contained in the *Selected Papers of Edward Sapir*, edited by E. S. MENDELBAUM (University of California Press, 1949).

“dark l”, but we speakers of Southern English feel them to be in some way “the same”. This feeling of “sameness” arises from the fact that the two sounds are in complementary distribution: “clear l” is used (to the exclusion of “dark l”) before i: and other vowels, whereas “dark l” is used (to the exclusion of “clear l”) before consonants and finally. The two sounds belong to a single phoneme, which means that the distinction just “doesn’t matter” as far as the child learning to read is concerned.

6. Turning now to the question of formulating the theory of phonemes, it must be stated to begin with that the first linguist to enter this field of enquiry and to point out the distinction between the “phone” (speech-sound, Russian *zvuk*) and the “phoneme” (Russian *fonema*) was almost certainly JAN BAUDOIN DE COURTENAY (1845–1929).⁵ He was a philologist of Polish origin who established himself in Russia, first as a privat docent at St. Petersburg, then as Professor for eight years (1875–83) at Kazan, where he created his famous school of linguistics. Later he held professorships at Dorpat (1883–93), Cracow (1893–1900) and eventually St. Petersburg (1901–1918) where he continued to develop his school. He spent the last years of his life in Poland. He appears to have worked out the fundamental principle of the phoneme during the 1870’s. He did not, however, write much on this theme, and in fact no clear exposition of it appeared in print until 1894 when he published his *Próba Teorji alternacyj fonetycznych* (Cracow). A German version of this, *Versuch einer Theorie phonetischer Alternationen*, was published at Strassburg in 1895. His teachings, however, eventually permeated into Western Europe, and especially to England, mainly orally through his pupils.⁶

⁵ BAUDOIN DE COURTENAY stated more than once that the word *fonema* was the invention of a student of his named KRUSZEWSKI. The formulation of the theory was, however, the work of BAUDOIN DE COURTENAY.

⁶ I am indebted to DENNIS WARD, Head of the Department of Russian in the University of Edinburgh, for many of the above particulars. They are for the most part taken from the article on BAUDOIN DE COURTENAY in the *Bol’shaya Sovetskaya Entsiklopediya* (Large Soviet Encyclopedia), 2nd edition (1951), Vol. 5, p. 366. WARD has translated this article into English and has kindly given me a copy with permission to quote from it.

The following is his translation of the paragraph in the article which deals with BAUDOIN DE COURTENAY’S work on the phoneme:

“His chief merit in world science is the construction of the theory of phonemes and phonetic alternations. He had been working out this theory from 1868, thus forestalling Western European linguistics by nearly 40 years. He starts from the

7. The idea of the phoneme was recognized independently, also in the 1870's, by the English pioneer HENRY SWEET (1845-1912), though he did not employ the term "phoneme". His realization of the principle was shown by the distinction he drew between "broad" and "narrow" types of phonetic transcription—a distinction that corresponded in one fundamental aspect to what we now call "phonemic" and "allophonic" transcriptions.⁷ As C. L. WRENN has said: "SWEET may virtually be regarded as a co-equal with BAUDOIN DE COURTENAY in discovering the phoneme. One cannot be sure whether SWEET or DE COURTENAY was the first to realize this new and most important conception, since they worked—the one in London and the other in Kazan in South Russia—in entire ignorance of each other's studies."⁸

8. PAUL PASSY (1859-1940) too, though he did not employ the term "phoneme",⁹ was aware at an early period of his career of the

position that the role of sounds 'in the mechanism of a language, for the feeling of the people' does not coincide with their physical nature, and that this non-coincidence obliges one to distinguish 'phonemes' from 'speech-sounds'; in his theory he subordinates the phonetic side of speech to the social function of language as a means of communication and a form of thinking. He states not only the mutual relationships of phonemes, but also the ways in which they are formed historically. A radical failing of this theory, as laid down by BAUDOIN DE COURTENAY in his basic works, is the psychological concept of the phoneme; nevertheless in one of his works (*O nekotorykh Otdelakh sravnitel'noi Grammatiki slovyanskikh Yazykov* [Some Branches of the Comparative Grammar of the Slavonic Language], 1881) he showed the possibility of working out a theory of phonemes and phonetic alternations without recourse to any subjective idealistic premise.¹⁰

Some further particulars concerning the early work of BAUDOIN DE COURTENAY are to be found in Z. AREND, *Baudouin de Courtenay and the Phoneme Idea* in *Le Maître Phonétique*, January, 1934, p. 2; J. R. FIRTH, *The Word Phoneme* in *Le Maître Phonétique*, April, 1934, p. 44. and C. L. WRENN's article on *Henry Sweet* in the *Transactions of the Philological Society*, 1946, p. 189 (footnote). To tell the full story (if it can be discovered at all) would require close reading of the works in Russian, Polish and German mentioned above, together with the Polish memoir of BAUDOIN DE COURTENAY by ULASZYN (Poznań, 1934), and searching for other relevant material.

⁷ See SWEET's *Handbook of Phonetics* (Oxford, 1877), especially pp. 103, 104. See also the article on *Types of Phonetic Transcription* which forms Appendix A to the 8th edition of my *Outline of English Phonetics* (Heffer, Cambridge, 1956), especially pp. 331, 332.

⁸ *Trans. Phil. Soc.*, 1946, p. 189.

⁹ Except on one occasion, in *Le Maître Phonétique*, January, 1931, p. 3, when he repeated "the golden rule of the practical phonetician" in these terms: "n'indiquer dans les textes que les différences distinctives, ou si l'on aime mieux ne représenter par des lettres différentes que les phonèmes différents."

basic principle underlying the phoneme theory. I think he came to it independently, but he probably clarified his ideas on the subject in the 1880's by studying the works of SWEET, for whom he had great respect. He is known to have had considerable correspondence with BAUDOIN DE COURTENAY from 1900 onwards, but no records of this have been preserved, as far as I know. An early reference to the phonemic principle is to be found in the first formal statement of the aims of the *International Phonetic Association* (I.P.A.)¹⁰ which was drafted by PASSY and was agreed to by the Council in 1888. The relevant paragraph ran as follows: "There should be a separate letter for each distinctive sound; that is, for each sound which, being used instead of another, can change the meaning of a word."¹¹ He repeated the principle subsequently on many occasions. The following is a characteristic quotation: "On a déjà inventé trop de signes pour des variétés de sons n'ayant pas de valeur distinctive; c'est une manie funeste, qui risque de nous entraîner de plus en plus loin — il n'y a pas de raison pour s'arrêter — et qui finirait par rendre les textes phonétiques illisibles. **Ne noter dans les textes que les différences significatives**: c'est une règle d'or, dont on ne devrait jamais se départir."¹²

9. The phoneme idea was thus known in England, and to a very limited extent in France,¹³ at the time when I was first appointed to lecture on phonetics at University College, London (January, 1907). But it was some time before we in England realized the full import of the concept, and in spite of PASSY's exhortations still more time elapsed before the theory came to be regarded as a basic feature in the teaching of phonetics here.

10. The word "phoneme" in the sense attributed to it by BAUDOIN DE COURTENAY was first brought to my notice by L. ŠČERBA (one of his pupils) in 1911, who referred to the concept in his pamphlet *Court Exposé de la Prononciation Russe* published by the I.P.A. in that year.¹⁴ About two years later the theory was explained

¹⁰ Then called *The Phonetic Teachers' Association*.

¹¹ *The Phonetic Teacher*, Aug., 1888.

¹² *Le Maître Phonétique*, Oct., 1925, p. 29.

¹³ French philologists had for a long time previously been using the term "phonème", but always in the sense of "speech-sound" (synonymous with "son" or "son du langage"). The technical sense assigned to it by BAUDOIN DE COURTENAY was almost unknown in France (except to PASSY), and remained so until ANDRÉ

to me more fully by another of BAUDOIN DE COURTENAY's followers, TYTUS BENNI of Warsaw. The immense importance of the theory then became very clear to me, especially in its relation to the construction of phonetic transcriptions, to the devising of alphabets for languages hitherto unwritten or unsuitably written, and in general to the practical teaching of foreign spoken languages. Consequently by about 1915 the theory began to find a regular place in the teaching given in the Department of Phonetics at University College.

11. The term "phoneme", though known to phoneticians in England round about 1916, did not become current in books for some little while. The theory was still in the process of being clarified, and the terminology was incomplete. I used to manage at that time without employing the term. For instance, I wrote on p. xiv of the *Sechuana Reader* by myself and S. T. PLAATJE (University of London Press, 1916): "The consonant sounds **c, ɟ, ɥ**, and the vowel sound **ə** are probably¹⁵ 'non-distinctive' in respect to the sounds **t, l, w** and **u**. By this we mean that the substitution of the sounds **t, l, w, u**, respectively, for the sounds **c, ɟ, ɥ, ə** would probably¹⁶ never change the meaning of any word." A year or two later I would have said that the sounds **c, ɟ, ɥ, ə** "belong to" or "are members of" the **t, l, w, u** phonemes.

MARTINET came on the scene. The word "phonème" is believed to have been invented (independently) with the meaning of "speech-sound" by LOUIS HAVET, who used it in 1876, if not before. "Speech-sound" was the only meaning given to the term in MAROUZEAU'S *Lexique de la Terminologie Linguistique* (1933). The 2nd and 3rd editions of this work (1943 and 1951) were improved by the addition of a paragraph referring to what was described as an English use of "phonem" [sic].

F. DE SAUSSURE, the Swiss pioneer in linguistics, likewise used the term "phonème" regularly to mean "speech-sound". It would seem, however, from a passage on p. 164 of his *Cours de Linguistique Générale* (first published in 1916) that he was beginning to get an inkling of the concept of the phoneme as we know it and also of the diaphone. But his explanation was obscure and of a negative character, and he never reached the point of recognizing the existence of allophones.

¹⁴ His reference to the phoneme in that pamphlet was not made sufficiently explicit, and some confusion arose owing to two very unfortunate misprints in his sound chart. The symbols **ɯ** and **ɑ** were printed in black type (the type used to designate the phonemes) when they should have been in ordinary roman (to show that the sounds belonged to the same phonemes as **i** and **a**—facts which must have been known to ŠČERBA as they were to BAUDOIN DE COURTENAY; see R. JAKOBSON'S note on p. 102 of *Trav. Cercle Ling. de Prague*, II, 1929).

¹⁵ Further research showed that the word "probably" should have been deleted.

¹⁶ The words "would probably" should have been deleted.

12. At this point I must make mention of a decision that had to be taken about that time. The term "phoneme" as used by BAUDOIN DE COURTENAY was a phonetic one,¹⁷ and I have never seen any reason to consider it otherwise.¹⁸ A comparison between his work and that of SWEET and PASSY showed that this phonetic concept can be viewed in two ways, the "psychological" and the "physical". Viewed "psychologically" a phoneme is a speech-sound¹⁹ pictured in one's mind and "aimed at" in the process of talking. The actual concrete sound (phone) employed in any particular speech-utterance may be the pictured sound or it may be another sound having some affinity to it, its use being conditioned by some feature or features of the phonetic context. This was the view taken by BAUDOIN DE COURTENAY and his immediate followers. BENNI told me (about 1913) that they consequently recognized two kinds of phonetics: one was called by them "psychophonetics" and related to the pictured sounds; the other was called "physiophonetics" and related to the concrete sounds actually uttered. Corresponding to these were two types of phonetic transcription: the "psychophonic" (representing only phonemes)²⁰ and the "physiophonic" (representing sounds actually uttered).²¹

13. Viewed from the "physical" angle a phoneme is a family of uttered sounds (segmental elements of speech) in a particular language²² which count for practical purposes as if they were one and the same; the use of each member of the family (allophone) is conditioned by the phonetic environment, i.e. no one member ever occurs in the situation appropriate to another.²³ To use a modern

¹⁷ It was stated by him to be so in his *Próba Teorji alternacyj fonetycznych* and in his *Versuch einer Theorie phonetischer Alternationen*.

¹⁸ The phonetic character of the phoneme was also recognized much later by the American linguist MORRIS SWADESH, who wrote in 1934 "The description of the phoneme in terms of norm and deviation belongs to the science of phonetics" (*Language*, X, No. 2, p. 117).

¹⁹ A "linear" or "segmental" element of speech.

²⁰ Now called "phonemic" or "linguistically broad" transcription.

²¹ Now called "allophonic" or "linguistically narrow" transcription.

²² "Language" here meaning one particular and consistent variety of a spoken language—presumably what is meant by an "idiolect" in modern American terminology.

²³ E.g. in English the **k**-sound of *call* never occurs before an **i**; nor does the **k**-sound of *king* ever occur before **ɔ**.

technical term (invented, I believe, by M. SWADESH), the members of the family are in "complementary distribution".²⁴ We can see from the writings of SWEET and PASSY that they would have subscribed to this view. Z. AREND, one of the followers of BAUDOIN DE COURTENAY, was also not averse to it.

14. Both these ways of regarding the phoneme were thus in existence at the time to which I am referring (round about 1916). They are not incompatible; in fact they lead to the same practical results. Together they formed the foundation upon which a complete theory of the phoneme had to be built. Since little had been done at that time towards applying the theory to any language except Russian, it fell mainly to the members of the staff of the Department of Phonetics at University College, London (because no one else in Western Europe or America seemed to be interested at that time) to start the further development of the theory with the aid of materials obtained by examining the phonetic features of a number of other languages.

15. Here I must interpolate a short explanation concerning the use of technical terms. I am of opinion, especially in view of what was said in §§ 2-5 above, that it is perfectly justifiable to take into account "mind", "feeling", "impressions", "notions", "picturing" and other undefinable psychological terms in investigating the nature of the phoneme. I consider it justifiable too to postulate axioms (unproved assumptions).²⁵ Besides which, I hold that though observations capable of "exact" measurement²⁶ may have their uses, it

²⁴ Not "free variation". I find it necessary to postulate that a sound not belonging to a specified form of a language (idiolect) must be held to belong to another "language" (idiolect). Free variants must, in my opinion, be treated in separate categories; they belong to what I have called "diaphones". See *Proceedings of the First International Congress of Phonetic Sciences* (Amsterdam, 1932), p. 23; also the Explanations in the 1956 and subsequent editions of my *English Pronouncing Dictionary*, p. xxxv, and the *Glossary of Phonetic Terms* in the same work, p. 536; also Chap. XXVII of *The Phoneme* (published by Heffer, Cambridge; 2nd edition, 1958).

It should be noted that the *diaphone* is a much less definite concept than the *phoneme*, owing to the fact that a particular speech-sound often belongs to two or more diaphones. For instance the sound **au** belongs to the **ou** diaphone in types of London English, but to the **au** diaphone in Scottish English.

²⁵ H. J. ULDAL'S "primitive ideas". See his *Outline of Glossematics* (Copenhagen, 1957), p. 36.

²⁶ In reality there appears to be no such thing as an exact measurement. All measurements are approximate.

would be erroneous to place reliance on them as sole admissible criteria in the determination of phonemes.

16. When speaking or writing, all of us (including those who strive after "exactness") make constant use of inexact, ambiguous and undefinable terms and axioms. This does not prevent our words from being very useful, and indeed indispensable, since people are endowed not only with reason but also with common sense (direct perception, intuition), and they rely to a large extent on these powers when listening or reading. We are accordingly generally able to make ourselves understood in spite of inexact wording and the use of undefinable terms. As L. R. PALMER puts it in his *Introduction to Modern Linguistics*,²⁷ p. 82: "speech is nothing more than a series of rough hints, which the hearer must interpret in order to arrive at the meaning which the speaker wishes to convey".

17. For the above reasons I regard the psychological view of the phoneme as a tenable one. This is not, however, to say that the physical view is to be rejected. That view is equally tenable. In fact, when it became necessary for me to come to a decision between the two, I found it in the end impossible to escape the conclusion that the physical view of the phoneme is on the whole better suited to the needs of ordinary teaching of spoken languages and (in spite of SAPIR's experiences) for those who are called upon to reduce to writing languages hitherto unwritten or to improve upon existing unsatisfactory orthographies. I find the physical view more easily comprehensible to the ordinary student of languages than any other. At the same time I do not hesitate at times to resort to psychological criteria.

18. Reverting now to the use of the word "phoneme", I should like to put on record the fact that the first occasion on which I employed the term outside the class-room or in private conversation with my colleagues was in a lecture on *The Sechuana Language* given to the Philological Society on 4th May, 1917. Unfortunately the part of that lecture dealing with the general conception of the phoneme was omitted from the *Proceedings*. It may therefore be of some historical interest, as exemplifying the state of our knowledge of the phoneme at that date, if I reproduce here the words I used on that occasion.

²⁷ Published by Macmillan.

They are copied from the lecture notes which I happen to have kept. They include words and forms of expression which were shortly afterwards found to be inadequate; these are printed here in italics, and the wordings which would have been used later are put in footnotes:

“It is rather difficult to say precisely what the number of speech-sounds is in Sechuana. It depends how you define a speech-sound. We know that in every language *certain so-called speech-sounds vary in value to some extent according to their surroundings.*²⁸ (Examples: English **k** in *key, call*, **n** in *bun, month*, **e** in *get, well*.) But in counting up the English sounds, we do not generally count these varieties as separate sounds; we ignore such *incidental variations because they are not*²⁹ what is called “significant”; the meaning of words does not in any way depend upon them.

“In order to make matters clear, it will be found convenient in dealing with any language to make a distinction between ‘speech-sounds’ proper and what may be termed ‘phonemes’ or the significant *phonetic*³⁰ elements of speech. Speech-sounds should be considered as definite sounds incapable of variation; a phoneme might be defined as a normal sound of the language together with all its incidental variants. These two **k**’s in English [in *key* and *call*] are different sounds *but the same phoneme.*³¹

“In such languages as English and French, phonemes *do not as a rule differ greatly from speech-sounds.*³² Incidental variations are on the whole slight. But in other languages cases may be found where very different speech-sounds *count as being*³³ the same phoneme. Russian is of course the most notable instance of this kind of language; there each vowel phoneme, for instance, has a whole set of easily distinguishable *values*³⁴ depending on its situation in the word or sentence.” [Here followed two examples from Tswana (Sechuana): the **l**-phoneme, which has a member **l** (a phone sounding between **l** and **d**) used to the exclusion of ordinary **l** before **i** and **u**, and the **u**-phoneme which has as a member a very advanced variety “approaching French **y**” used exclusively when a following syllable contains **i**.]

²⁸ *certain different though related sounds of a given language count as if they were one and the same, the use of one or another being prescribed by the phonetic context. In more modern terminology they are said to be in “complementary distribution” and are called “members of the phoneme” or “allophones”.*

²⁹ *incidental use of variant sounds, because the differences between them are not . . .*

³⁰ *segmental or linear.*

³¹ *but they belong to the same phoneme.*

³² *do not as a rule comprise many members (allophones) and in only a few cases do they comprise members differing widely from the “norm” (principal member).*

³³ *belong to.*

³⁴ *members (allophones).*

19. By 1918 the terminology was straightened out, as will be seen from the short but very nearly adequate explanation of the phoneme given in §§ 4-9 of the Introduction to the *Colloquial Sinhalese Reader* written in that year by the Sinhalese phonetician, psychologist and educationist H. S. PERERA and myself and published early in 1919.³⁵ As that book is now difficult to come by, I reproduce here the section relating to the phoneme; it is headed "Sounds and Phonemes":³⁶

"4. A *speech-sound* is a sound of definite acoustic quality produced by the organs of speech. A given speech-sound is incapable of variation.

"5. Most languages contain a very large number of distinguishable speech-sounds. But fortunately it is not necessary in phonetic writing to have separate symbols for each sound, owing to the fact that many of the sounds fall into groups called phonemes.

"6. A *phoneme* is defined as a group of related sounds of a given language which are so used in connected speech that no one of them ever occurs in positions which any other can occupy.

"7. Thus the **k**'s in the English words *keep*, *call* are distinct speech-sounds but belong to the same phoneme (the English **k**-phoneme). This is because the first variety of **k** only occurs before the sound **i**; and the second does not occur in that position in English. The two kinds of **k** can without ambiguity be written with the same letter (**k**) in phonetic writing. Likewise the **n**'s in the Sinhalese words **kan:de** ("hill"), **kan:diə** ("mound"), are different sounds but they belong to the same phoneme, viz. the Sinhalese **n**-phoneme. The first kind of **n** only occurs in Sinhalese before **t** and **d**; the second only occurs before **ɾ** and **ɽ**.

"8. Speech-sounds which belong to the same phoneme cannot distinguish one word from another; failure to distinguish them on the part of a foreign learner may cause him to speak with a foreign accent, but it will not as a rule make his words unintelligible. On the other hand, if the foreign learner confuses one phoneme with another, he will confuse different words of the language.

"9. It is generally only necessary in phonetic writing to have symbols for the phonemes. The use of the different sounds belonging to any given phoneme is, in most languages, determined by simple rules which can be stated once for all, and which can be taken for granted when reading phonetic texts."

³⁵ Manchester University Press.

³⁶ The symbols **ɾ** and **ɽ** (first proposed by the Rev. J. KNOWLES) were employed to denote retroflex **t** and **d**, the I.P.A. having at that time not come to a definite decision as to the mode of representing these sounds. The traditional though unsatisfactory **ṭ** and **ḍ** had been used previously. The present I.P.A. symbols (**t** and **d**) were decided upon in 1927.

20. The above explanations with a few verbal amendments to the definition (see below) hold good to-day, and the theory as it then stood has formed the basis of the phonetic work at University College ever since.

21. Further developments in phonetic theory followed very shortly. One of the most noteworthy was initiated by the American phonetician D. M. BEACH, who came to work in the Department in 1919. He continued to study and do research work there for nearly four years, gaining a Ph.D. for a remarkable thesis on the *Phonetics of Pekingese*.³⁷

22. BEACH was, I believe, the first to show that groupings analogous to those of phones into phonemes are to be found in connexion with one of the "sound attributes".³⁸ One day—it was, as far as I remember, about February, 1921—he gave a lecture in the Department of Phonetics at University College, London, on the Phonetics of Pekingese, in the course of which he demonstrated that each of the four so-called "tones" of that language had "variants" conditioned by the tones of syllables adjoining them in connected speech, and sometimes by other factors. The word "toneme" was coined on that occasion at my suggestion: it was readily accepted by BEACH and the members of the staff of the Department at the time.³⁹ The purpose of the introduction of the term was to be able to express

³⁷ This thesis has never been published. It may be consulted in the Library of the University of London.

BEACH took his first degree at Harvard in 1915, majoring in chemistry. He then went to China, where he obtained an appointment as a teacher of chemistry, English and other subjects near Peking. He soon discovered through teaching English and learning Chinese, that he had talent for linguistic studies, and that in fact these studies had greater interest for him than chemistry. It was after four years in China, during which time he had attained an excellent knowledge of Pekingese, that he came to London to specialize in phonetics. In 1923 he was appointed Senior Lecturer in Phonetics in the University of Cape Town, and a few years later a professorship was conferred on him there.

³⁸ Now often called "suprasegmental" or "prosodic" features of pronunciation.

³⁹ The term "toneme" was subsequently employed again by BEACH in his important article *The Science of Tonetics and its application to Bantu Languages in Bantu Studies*, Dec., 1924, pp. 75–106, and later in his book *The Phonetics of the Hottentot Language* (Heffer, Cambridge, 1938). LILLIAS E. ARMSTRONG used it in the *Burmese Phonetic Reader* which she wrote in collaboration with PE MAUNG TIN (University of London Press, 1925), and C. M. DOKE used it in his book *The Phonetics of Zulu* (University of the Witwatersrand Press, 1926).

the fact that the actual "tones" employed in the tone languages are groupable into families called "tonemes" in the same sort of way that "phones" are groupable into "phonemes".⁴⁰

23. While BEACH was still in London, he invented the terms "tonetic" (pertaining to the tones of tone languages), "tonetics" (the study of tones) and "tonetician" (a person specializing in this study). He employed these terms, as well as "toneme", in his thesis on *The Phonetics of Pekingese* (1923), and in the article mentioned in footnote 39. In this article he also introduced the term "tonology" to denote "the comparative and historical study of tones".

24. It is noteworthy that K. L. PIKE re-invented the term "toneme" independently in the early 1940's, giving to it the same meaning as BEACH had done.⁴¹

25. It may be added here that BEACH appears to have been one of the first (if not the first) to employ the term "prosodies" to denote what had previously been called "sound attributes", the chief of which are length, stress and voice-pitch. See the section headed "Classification of Prosodical Elements" in his thesis on *The Phonetics of Pekingese*, pp. 76-91.⁴² Others who subsequently employed the same term in the same sense were TRUBETZKOY, R. JAKOBSON and K. L. PIKE⁴³; later also J. R. FIRTH, who, however, used the word with extensions of meaning.⁴⁴

26. The theory of the phoneme and the toneme had thus become established on a firm foundation in England in the early 1920's. A fairly adequate positive definition of the phoneme had been worked out on physical lines and appeared in print first in 1919, as stated above.

⁴⁰ As BEACH put it in his above mentioned article: "The key to all tonetic transcription is the principle of the *toneme*, just as the key to all phonetic transcription is the principle of the *phoneme*"; and again on a later occasion (*The Phonetics of the Hottentot Language*, published by Heffer, Cambridge in 1938, p. 127): "Just as phonetic transcription depends on the phoneme-principle, so tonetic transcription must depend on the toneme-principle."

⁴¹ See his *Tone Languages* (University of Michigan Publications, Linguistics, 4, 1948). At the time when PIKE re-invented the term "toneme" he had apparently not seen that M. SWADESH had already used the word in his important article *The Phonemic Principle in Language*, X, No. 2 (1934), p. 117.

⁴² It is possible that BEACH got the term "prosodic" from SAPIR who used it (in the sense of "rhythmic") in his *Language* (p. 187).

⁴³ The latter in his *Phonemic Work Sheet* (Summer Institute of Linguistics, Glendale, California, 1938).

⁴⁴ See FIRTH, *Sounds and Prosodies* in *Trans. Phil. Soc.*, 1948, pp. 127-152.

It was repeated (with different examples) in 1923.⁴⁵ Minor improvements in the wording of the same definition, to make it more precise, were made in my paper *On Phonemes in Travaux du Cercle Linguistique de Prague*, IV (1931), p. 74, and in my paper *The Theory of Phonemes and its importance in Practical Linguistics* published in the *Proceedings of the First International Congress of Phonetic Sciences*, Amsterdam, 1932, p. 23,⁴⁶ and again in my book *The Phoneme, its Nature and Use*.⁴⁷ In the latter publication the definition of the phoneme, which is I think as precise as words can make it, runs as follows: “**a family of sounds in a given language which are related in character and are used in such a way that no member ever occurs in a word in the same phonetic context as any other member**”. (For the words “in such a way . . . other member” we may substitute “in complementary distribution”, a convenient expression believed to have been invented by MORRIS SWADESH and first used by him in print in 1934,⁴⁸ and now widely employed by those interested in the phoneme.) The precise meanings attached to “a language”, “phonetic context” and “related in character” need not be repeated here; they are to be found in *The Phoneme*, §§ 28–33.

27. In more popular expositions of the phoneme idea I prefer to use the simpler description enunciated in § 13 (which means the same thing as the precise definition just given).⁴⁹ In any case, whether the phoneme is defined psychologically or physically, I adhere to BAUDOUIN DE COURTENAY's statement that the term “phoneme”

⁴⁵ In the *Pronunciation of Russian* by M. V. TROFIMOV and myself (Cambridge University Press, 1923). This book was prepared during 1916–17, and the manuscript was sent to the printer on 31st December, 1917. Circumstances prevailing at the time delayed its appearance until 1923.

⁴⁶ I was pleased to see that the gradual improvement in the wording of the physical definition of the phoneme between 1923 and 1932 was noticed by W. FREEMAN TWADDELL in his monograph *On defining the Phoneme* (Linguistic Society of America, 1935). (He did not accept the definition, but propounded another, taking the view that the phoneme should be regarded as an “abstractional fictitious unit”.)

⁴⁷ Published by Hefter, Cambridge, 1950; 2nd edition, 1958. I started writing this book in 1937. The greater part of the manuscript was ready about 1941, but the conditions prevailing at the time prevented me from completing it until the end of 1945. It was in the printer's hands in Jan., 1946. The necessary type-cutting, printing and proof correcting took four years.

⁴⁸ In his article *The Phonemic Principle in Language*, X, No. 2 (1934), p. 123.

⁴⁹ See for instance the *Glossary of Phonetic Terms* in my *English Pronouncing Dictionary*, 11th edition (1956), p. 537.

is a phonetic one. In fact, since I came to the phoneme entirely through phonetics, I cannot do otherwise than regard phonemics as an essential part of phonetics. We must not overlook the facts that phonetics can neither be studied nor applied without the use of phonetic transcriptions, and adequate systems of transcription cannot be constructed without the theory of phonemes.⁵⁰

28. Some of those who interest themselves in linguistics may feel some surprise that the above definitions contain no reference to the function of phonemes in connexion with meanings. It is my considered opinion that any reference to meaning is out of place in a physical definition of the phoneme. It is incumbent on us to distinguish between what phonemes *are* and what they *do*. **Phonemes are what is stated in the definition. What they do is to distinguish words from one another.** Different sounds belonging to the same phoneme cannot do this. (See *The Phoneme*, Chap. IV, §§ 48-53.) It follows also from the physical definition that **phonemes are of necessity units of linguistic structure.**

29. Somewhere about 1940 our American colleagues improved the terminology relating to the phoneme by inventing the term "allophone" to denote a member of a phoneme.⁵¹ Not that there is anything the matter with the term "member", but "allophone" has the advantage of providing us with a corresponding adjective "allophonic". So we can now speak of "allophonic transcription"

⁵⁰ I am unable to subscribe to TRUBETZKOY'S proposal to treat phonemics as a science on its own, quite separate from phonetics (*Grundzüge der Phonologie*, pp. 12-17, and Cantineau's translation, pp. 6-15), so that the phonetician is prohibited from concerning himself with meanings of words, while apparently the phonemicist need not trouble himself overmuch with the ways in which words are pronounced. Such a separation is, for me, impossible. The two subjects are, to my mind, part and parcel of a single science, which, ever since serious studies of them began, has been called "phonetics". There is, however, no reason why specialized books should not be written on phonemics, as there are on intonation or other branches of phonetics. K. L. PIKE has written an excellent one (*Phonemics*, University of Michigan Press, 1947). Incidentally I am not sure that PIKE did not go a little too far when he made the pronouncement that "phonetics gives us our raw material; phonemics cooks it" (*Phonemics*, p. 57).

⁵¹ I have not been able to discover who invented this term. The first use of it in print was, as far as I know, in the article by TRAGER and BLOCH entitled *The Syllabic Phonemes of English in Language*, XVII, No. 3 (1941), pp. 243-246. But BLOCH tells me he does not know who invented the word.

(phonetic transcription in which special symbols are employed to denote allophones⁵²), “the allophonic use of ɪ in French”, etc.

30. The above terminology being established in connexion with the phoneme, we can now in a similar manner improve upon BEACH's original terminology relating to tones by adding “tonemic” (pertaining to tonemes, as in “tonemic marking of tones”), “tonemics” (the study of the grouping of tones into tonemes), “allotones” (tones belonging to a particular toneme) and “allotonic” (as in “allotonic” or “narrow” representation of tones).⁵³

31. It eventually became evident that similar terminology is applicable to another of the sound attributes, namely length, and is of value in connexion with languages possessing significant degrees of length. If a particular degree of length is called a “chrone”, then we find that several chronemes may be groupable into a single “chroneme” (a family consisting of two or more chronemes in complementary distribution, and therefore counting as if they were the same, the differences of length being conditioned by the phonetic environment). For instance in my sort of English, where the close i (as in *bead*) may be considered to be the “long” of the open i (as in *bid*) there are two chronemes, long and short, applicable to certain vowels. Each chroneme comprises several easily distinguishable chronemes; thus the three degrees of vowel length heard in **bi:d** (*bead*), **bi:n** (*been*), **bi:t** (*beat*) all belong to the long chroneme, while those in **bid** (*bid*), **bin** (*bin*), **bit** (*bit*) belong to the short chroneme.

32. The degrees of length belonging to a particular chroneme may be called “allochronemes”.⁵⁴ And in transcriptions we can have “chronemic” (broad) marking of length, which has to be distinguished from “allochronic” (narrow) marking of length. Allochronic representations of length show differences of length which are not significant.

33. Similar terminology is rarely applicable to¹ stress, though there are often “significant” degrees of stress. The reasons for this are set out in detail in my article *Chronemes and Tonemes* in *Acta*

⁵² First suggested, I believe, by D. ABERCROMBIE. See his article *Phonetic Transcriptions* in *Le Maître Phonétique*, July, 1953).

⁵³ The tone-marking in the *Sechuana Reader* by myself and PLAATJE is allotonic. That in the Tswana (Sechuana) text on p. 49 of the *Principles of the I.P.A.*, 1949, is tonemic.

⁵⁴ I have had occasion to employ this term in my article *The Hyphen as a Phonetic Sign* in the *Zeitschrift für Phonetik*, IX, No. 2, 1956.