

what he calls the "macro-phoneme" and the Prague phoneme is imaginary and artificial only, is rendered more obvious by another interesting fact, viz. that deductions from both definitions reveal not only a general concordance, as might be expected, but even a concordance in some characteristic details. Thus, in forms like *spill*, Prof. TWADDELL establishes a special macro-phoneme as corresponding to the sound *p*, on the ground that an opposition *p* : *b* cannot occur after *s*, so that the sound *p* cannot be regarded as belonging to the usual macro-phoneme *p*, in such forms as *pill*, *nap*, *tapper*, *pear*, etc. (p. 49). Prof. TWADDELL evidently considers the establishing of such phonemes as a feature distinguishing his own conception of the phoneme from all the preceding ones. Those of the linguists, however, who took part in the First International Phonetic Congress in Amsterdam (1932) will remember Prof. TRUBETZKOY'S highly instructive paper entitled "Charakter und Methode der systematischen phonologischen Darstellung einer gegebenen Sprache" (published in the *Proceedings* of the said Congress), in which the establishing of special phonemes in cases of such "phonological neutralizations" was declared to be necessary.

Many other interesting points of Prof. TWADDELL'S theory might be discussed. But, owing to limits of time, we must confine ourselves to those so far mentioned. We have repeatedly seen some agreements between Prof. TWADDELL and the Prague scholars in points of fundamental importance, and we have tried to show that even his own methods, if thoroughly considered, may lead to the same conception as those of the Prague scholars. That Prof. TWADDELL arrived at a different conclusion is due chiefly to the fact that the method by which his theory is developed is applied to artificial structures of isolated classes of forms, not to the natural structure of intercrossing series of forms. We have perceived that otherwise even Prof. TWADDELL'S conclusion leads to corollaries which are quite analogous to those deduced from the Prague theses. Unfortunately, however numerous the coincidences of both conceptions are, the point in which Prof. TWADDELL differs from the Prague theory is of fundamental importance; by keeping to it Prof. TWADDELL is prevented from taking further steps in the phonological examination of languages, both synchronic and historical.

In conclusion, we cannot but state that Prof. TWADDELL'S contribution, even if its main thesis cannot be approved of, has abundantly helped to the elucidation of many problems connected with the theory of the phoneme.

8. Prof. V. BRØNDAL (Copenhagen): *Sound and Phoneme*.

I must confess that I find myself in a rather difficult situation. The very short time at my disposal has obliged me to concentrate on one single point—and of course I have tried to choose a point which is as fundamental and evident as possible. Now the distinction between Sound and Phoneme may perhaps seem neither fundamental nor evident to a majority of my listeners. In fact, I more than fear

that my theory will be rather unfamiliar to many and even a little unsympathetic to some. On the other hand I shall be able neither to draw all the conclusions from my theory, nor to attempt a verification from concrete fact, nor even to quote and discuss more than a few representative views on my subject.

What I can propose to your consideration will be no more than a provisional sketch—the mere outline of one single line of thought—and I hope you will judge it accordingly.

The problem of Units—units, e.g., of space and time, of weight and value—is of the utmost importance in any science, as it is in ordinary life; and the question seems of particular interest at the present moment in the phonetic sciences where it concerns the distinction between Sound and Phoneme—a distinction which may be said to constitute the very philosophy of Phonetics and Phonology. No problem could then be more appropriate for discussion in a Congress of Phonetic Studies.

In what may be called Classical Phonetics—the science of speech-sounds as represented in text-books—you generally find no such distinction. Sounds are either considered as purely physical, i.e. acoustic and physiological, phenomena—that was the view of the *Junggrammatiker*, or Leipzig school of linguistics; or they are taken as simultaneously physical and mental, as psycho-physical facts—I think that will be the view of most phoneticians to-day.

This view, generally held by workers and students without being examined as to its theoretical presuppositions, may be characterized (1) by the tendency to *isolated* observation of facts (facts which may, or may not, be co-ordinated by further research), (2) by the emphasis laid on the study of *actual* speech (which may, or may not, be used as a base for later generalization). It may be, and it has been, objected that co-ordination and generalization, i.e. unification, of facts should not be a secondary consideration. And that is why some linguists have endeavoured to define phonic units of a higher order and consequently to establish a distinction between the sound as a fact of actual speech and the phoneme as—something different.

The Polish philologist BAUDOIN DE COURTENAY—a pioneer of Phonology—proposed to distinguish between Sound as purely physical and Phoneme as mental; his Russian pupils followed him in defining the phoneme as a "Lautvorstellung" or mental equivalent of a sound. This conception has been criticized, I think rightly, by Monsieur DOROSZEWSKI: in fact a sound is articulated or actualized mentally as well as physically, as is generally admitted by phoneticians; and the phoneme (if such a notion is justified) must be of another kind, not describable in terms of mental elements. This has been acknowledged, I think, by Prince TRUBETZKOY, who now speaks of "Lautbesitz"—a rather non-committal term—instead of "Lautvorstellung".

F. DE SAUSSURE, the famous linguist of Geneva, has defined the phoneme as "la somme des impressions acoustiques et des mouvements articulatoires, de l'unité entendue et de l'unité parlée, l'une

conditionnant l'autre"; and Prof. DANIEL JONES, our President, has conceived the phoneme from a similar point of view as "a family of sounds". DE SAUSSURE, the logician among linguists, and Prof. JONES, the organizer of phonetic work, thus seem to hold rather analogous views, both admitting a higher and more fundamental phonic unit than the special sound. But here it does not seem quite clear what the difference is between element and *sum* (SAUSSURE), between single sound and *family* (JONES). In other terms: Is the phoneme simply a more technical or distinguished term for phonetic units—as it would seem to be in the usage of certain linguists—or is it a necessary notion of an entirely different kind, constituting the new science, or branch of science, called Phonology?

It must be admitted, I think, that in any science you may have units of three different kinds:

(1) Units may be of an immediate and in the last resort of an individual character, and consequently the object of direct observation and experimental research—physical, physiological and psychological. The *Sound* would be such a unit.

(2) Units may be purely ideal, i.e. of a normative or conventional, of an over-personal or over-individual nature, and consequently not the object of either physical or, directly at least, of psychological research. The *Phoneme* would be such a unit.

(3) Units may be ultimate, structural, permanent, and in this case to be found neither in individual experience nor in social convention, but presupposed by these and discovered by analysis. Phonic elements of this kind, which might be called *Phones*, have not yet been studied. What modern phonologists call *archi-phonemes* would seem to be an approximation; and what Old Indian grammarians called *vāk*, or voice-substance, being elements of a subtle and imperishable nature and incomprehensible to ordinary sense-organs, may be considered as an anticipation of this concept.

But I must confine myself to Sound and Phoneme and attempt to define their difference.

(1) A sound is *real* or a fact, i.e. an immediately observable phenomenon. A phoneme is *ideal* or a standard, i.e. an abstraction resulting from analysis, a necessary means of scientific research.

Two important consequences seem to follow from this formula:

(a) A sound, being a piece of reality, and as such bound to all kinds of particular circumstances (in the syllable, in the sentence, in the situation), must to a certain extent be irregular, irrational and imprevisible. A phoneme, being an ideal entity, must on the contrary, within certain limits, be regular, rational and previsible. It is always an element of a system (SAUSSURE), of a "pattern" (SAPIR).

(b) A sound, regarded as a fact, is just what is or happens, and it will be our task to describe it. A phoneme, conversely, is what may or ought to be: given certain other elements, a particular phoneme will be possible or even necessary. In certain cases a "Lautbesitz" and its definition may be deduced.

(2) A sound is a *time-continuum*, i.e. it consists of an unbroken suc-

cession of physical waves, organic movements, and mental changes. A phoneme is *timeless and discontinuous*.

From this we may conclude:

(a) A sound can be viewed as built up of any desired number of successive parts, whereas a phoneme is indivisible from the standpoint of a given language (example: affricates in English, Spanish, Russian).

(b) A sound is always dependent on a context and consequently in varying degrees liable to assimilation and dissimilation. A phoneme is exclusively determined by its position in the system.

(3) A sound is *infinitely varied*, a phoneme is *absolutely fixed*. It is a well-known fact that different persons speak differently, so that you can recognize people (and even their actual state of mind) by their voices; on the other hand you find in any given language stable phonic types, the common property of the whole community.

From this thesis I infer:

(a) A sound can be analysed *ad infinitum* according to its position in the syllable, its stress and pitch and *timbre*, and a notation of these shades can never be too refined. A phoneme can only be correctly analysed in a small number of ultimate phonic elements, and quite a simple system of symbols should be sufficient for the purpose.

(b) Sounds are innumerable in a given language, or rather in the speech of a given person or group of persons—so that you can never have signs enough if you want to study individual pronunciation. Phonemes, on the contrary, are always a definite number in a given language: a small number generally well known or distinguished, recognized and remembered by speakers and more or less adequately represented in the national alphabet.

I should call the study of sounds (as now defined) *Phonetics*, and the study of phonemes (entirely different from, but inherent in, sounds) *Phonology*. And I shall try to indicate the mutual relation, and to delimit the respective domains, of these divergent lines of investigation.

(1) Phonetics, if defined as the study of sounds as they occur in actual speech, or of the combination in time of phonic elements, has an obvious affinity to syntax: in other terms, the theory of the syllable—a very important and somewhat neglected subject—should be studied in close connexion with the theory of the sentence, as already suggested by the well-known term *syntactical phonetics*.

(2) Phonology, if understood as the study of purely ideal elements of a phonic convention, is on the other hand intimately connected with morphology: the theory of phonological elements should not be separated from the theory of the word and its form—as clearly presupposed by the term *morphology*, coined by Prince TRUBETZKOY.

From this mutual relation of the linguistic disciplines it seems to follow that the standpoint of the traditional phoneticians should be excluded from purely phonological questions, while the new phonological method should not be applied to essentially phonetic subjects.

(1) The notion implied by the term *phonetic word* (VENDRYES) would seem to be an instance of the former offence against good

method. A syllable or phrase is a succession of sounds, a word is not. For in one syllable (as French *au*, *du* = *à*, *de* + *le*) you may have the phonetic realization, or expression, of more than one word, and important parts of a word (such as French plural endings) may in certain cases have no phonetic expression at all. They are meant, but not pronounced.

(2) To speak of the phonological importance of the syllable or to consider syllabication as part and parcel of a given phonological system (Prof. SOMMERFELT) would seem to be a trespassing of Phonology upon the consecrated grounds of Phonetics. Articulation and division of syllables is of course of the utmost importance in describing a language as pronounced by certain speakers—just as speech or melody would be. But the syllable being necessarily defined as a time-totality, as a successive combination of phonic elements, its form or rhythm can never be derived from, or even have anything to do with, the timeless system of phonemes, which may be employed in combinations entirely different from those temporarily chosen by the actual speakers.

It does not follow that Phonetics and Phonology should be entirely separated studies, or that linguists treating of phonic matters should divide themselves into Phoneticians and Phonologists. That would be as vain as it would be unjustified. The two standpoints are really complementary and should be regarded as equally indispensable.

(1) Phoneticians ought to remember that the abstract phoneme is absolutely necessary in order to define the limits and latitudes of given sounds, and their normative value in a given language.

(2) Phonologists, on their side, should admit that the sound as a fact is not completely defined by the phoneme alone. The analysis of a fact can never be absolutely complete; for a fact is a relationship of factors, and the totality of these factors is inexhaustible.

Classical Phonetics, especially in this country, has been inspired by certain Baconian principles: empirical and practical principles favouring a full and free enquiry into the immediate sources of knowledge, a patient and thorough investigation of nature. It looked to a practical aim which it has served splendidly, the teaching of modern languages. And very many of its results will always be of value.

But we are now at a point where a revision of principles, a re-orientation in phonetic science as well as in linguistics generally, would seem both necessary and possible. Our science should not be a mere storehouse of facts and figures (as has too often been the case in Instrumental Phonetics). Our experience should not be confined to mere ear and eye and hand-experience. And our quest, as scientists, should not be Power, but Truth.

Those of my audience who are active workers in Phonetics, many of them empirically or practically minded British people, may have been surprised or even shocked by what they may be tempted to regard as a "continental" outlook, by my advocacy of entities to be found neither in space nor in time, neither in body nor in mind, of formative elements in the world of language that we *find* (when we seek), but which we do not in any sense *make*.

I admit frankly that this amounts to considering phonemes as "Ideas" in something like the Platonic sense. But may I remind you that this theory constitutes no condemnation or even neglect of experience, but simply a research of greater consistency, of deeper unity of knowledge, an attempt to penetrate into the structure of things and find their permanent and universal elements.

And may I remind our insular fellow-students that in all periods of British thought—from scholasticism to our own day—you have always possessed what a Norwegian student of your intellectual life (WINSNES) has happily called "The other Front", i.e. a sense of abstraction or generalization, an appreciation of vigorous deduction, a comprehension of the theory of value, founded on that greatest of European traditions, Platonic Idealism.

9. Prof. N. TRUBETZKOY (Vienna): *Die phonologischen Grenzsignale*.

Die ungezwungene menschliche Rede ist ein kontinuierlicher Fluss von Lauten, der nur ganz selten durch kurze Pausen unterbrochen wird. Betrachten wir aber die Sache näher, so bemerken wir, dass fast jede Sprache eine Reihe von Lautmitteln besitzt, mit deren Hilfe die einzelnen Wörter, und innerhalb der Wörter die einzelnen morphologischen Elemente von einander abgegrenzt werden. Eine Abgrenzung in der Form der Unterbrechung des Redeflusses geschieht gewöhnlich nicht, wird aber angedeutet, signalisiert, und daher nennen wir die für diesen Zweck verwendeten Lautmittel *Grenzsignale*.

Die Grenzsignale der verschiedenen Sprachen sind äusserst mannigfaltig, lassen sich aber alle nach gewissen Gesichtspunkten leicht und zweckmässig einteilen. Wir schlagen folgende Einteilung vor.

Erstens müssen *phonematische* und *aphonematische* Grenzsignale unterschieden werden. Das schriftdeutsche *j*, welches nur im Wurzelanlaut stehen darf und daher immer die Anfangsgrenze einer Wurzel signalisiert, hat ausser dieser abgrenzenden Funktion noch eine bedeutungsdifferenzierende, indem es den anderen Phonemen der deutschen Sprache gegenübersteht (z. B. *verjagen*—*versagen*—*vertagen*, *Joch*—*Koch*—*Loch*—*noch*—*roch*—*doch* usw.). Daher ist das schriftdeutsche *j* ein *phonematisches* Grenzsignal. Ebenfalls phonematische Grenzsignale sind im Tschetschenischen die glottalisierten, d. i. mit Kehlkopfverschluss verbundenen *ṭ*, *p̣*, *ḳ*, *ç*, *č* (spr. *tʔ*, *pʔ*, *kʔ*, *ʂʔ*, *ʧʔ*), welche nur im Wortanlaut vorkommen, in dieser Stellung aber auch bedeutungsdifferenzierende Rolle spielen (z. B. *ka* "Weizen"—*ca* "Haus"—*ka* "Hammel"—*ča* "Bär"—*ga* "Ast", *taj* "Brücke"—*daj* "Väter" *saj* "Hirsch"—*laj* "Sklave" usw.). Dagegen ist der feste Vokaleinsatz im Deutschen, sowie im Tschechischen, im Ungarischen usw., kein besonderes Phonem, sondern nur eine Eigenschaft der Aussprache der Vokale im Anlaute eines Präfixes oder einer Wurzel. Seine einzige Funktion besteht in der Signalisierung der Anfangsgrenze eines Präfixes oder einer Wurzel. Das ist ein *aphonematisches* Grenzsignal. Als aphonematische Grenzsignale dür-