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NOTES ON THE DEVELOPMENT OF LANGUAGE  
SEEN AS A SYSTEM OF SYSTEMS

(A Contribution to Comparative Phonematic Studies of English and some Slavonic Languages.)

I. If language is defined as a system of systems,<sup>1</sup> such definition implies, first of all, the existence in language of a number of levels or planes, each of which is characterized by its specific structure and its specific problems (the most important planes being commonly denoted as phonic, grammatical, and lexical). But the systematic character of language implies more than the fact that each of such planes constitutes a more or less (though never absolutely) balanced system. Even more characteristic of language is the circumstance that each of such planes is more or less closely interlinked with the other planes. It is exactly the existence of such mutual interrelations that can justify the above-mentioned definition of language as a system of systems. Obviously, the existence of such interrelations entails some important consequences, one of which will be discussed here at some length.

If all language planes are more or less interdependent, it logically follows that a change in one of the planes may call forth one or more changes in another plane (or in more planes) of the concerned language. To this might be objected that this kind of interdependence had been acknowledged long before language came to be regarded as a system of systems. Thus, e. g., it has long been a commonplace point of historical grammar of many languages that the reduction (and ultimately loss) of vowels in unstressed syllables made an essential contribution toward the well-known grammatical change of the so-called "synthetical" inflexion into the one termed "analytical". In such cases one has to do with an impact of the changes in the phonic plane upon the structure of the grammatical plane. But such interrelations of language planes cannot be interpreted as acting in one direction only. From time to time, instances pointing to the opposite direction of influence can be detected in languages: the structure of the phonic plane appears to have been affected by changes, actual or even only imminent, in the lexicological and/or grammatical planes of the given language. Instances of this kind of interdependence were decidedly unknown to pre-structuralist study of language, and even structurally-minded scholars do not seem to pay due regard to them. In the present paper an attempt is made at an examination of some specimens of such interdependence: we intend to discuss some instances of English and Slavonic consonant phonemes whose way of articulation appears to have been more or less influenced by the needs and wants of the grammatical and/or lexical planes of their languages. Prior to this examination, however, some essential points concerning our conception of the development of language must be briefly noted.

First, in our opinion the structuralist conception of language (and, consequently, of the development of language) cannot be true to facts unless it takes into account the basic function of language, i. e. its task to act as a means of mutual understanding among the members of the given language community. In order to fulfil this task, language must possess adequate means so as to cope with all needs of communication existing or arising in the community. As a matter of fact it appears that, at least to a considerable extent, the development of language is equivalent to adapting the means of language to the changing, ever-increasing tasks language has to fulfil. Therefore, the student of language should always keep in mind the mutual interdependence of form and meaning in the examined language system.

Second, in tracing the development of language due attention should be paid to the part occasionally played in it by external factors, such as important political, economic, and cultural events.<sup>2</sup> Admittedly, the operation of these factors becomes regularly and directly reflected in the lexical plane of language. In some, though much less frequent situations, such extralinguistic factors may indirectly influence even the grammatical and/or phonic plane of the concerned language. In such instances one has to do with a particular kind of impact, by which the changing structure of the outside world (of the "extralinguistic reality", as it is sometimes called) enforces a change in the structure of the language. Such impact can be distinctly observed in the development of some languages, as e. g. in English, whose phonic and grammatical structures have been subjected to changes that can be attributed, at least to some extent, to the indirect influence exercised upon English by French in the centuries following the important historical event known as the Norman Conquest.

Last but not least, it should always be kept in mind, that the primary, and the only indispensable, aspect of language is the spoken one,<sup>3</sup> that is, that language forms become primarily manifested (or, implemented) by sounds produced by the organs of speech and perceived by the organs of hearing. From this it follows that the phonematic development of language must conform to the laws governing the activities of its articulatory mechanism and/or those of its auditory perception. Therefore, no phonematic change is possible unless it is phonetically feasible (e. g., it is extremely unlikely that a vowel might be capable of a direct change into a voiceless consonant). In other words, there is another relation that should be taken into account by the student of language, viz. the one existing between the phonic plane of language on the one hand, and what might be called the technical pre-requisites of its manifestation on the other. For this reason, phonematics and phonetics should always co-operate, however different their objectives may be in principle.

So much had to be said for the purpose of clarifying our approach to some fundamental problems connected with language development. It should only be added that this approach is roughly identical with that of the Prague group, whose ideas, though modified in a number of points, have proved to be a fruitful basis for actual research-work also in the phonematic history of language.<sup>4</sup>

II. To turn now to concrete issues, we want to discuss at some length two interesting instances of the development of sounds (or categories of sounds) occupying analogous positions in the systems of English and some Slavonic languages. These sounds or sound-categories, although placed in analogous word-positions in all the above indicated languages, are nevertheless found to develop in English on lines diametrically opposed to those which can be ascertained in the

concerned Slavonic languages. It appears that this difference of development is ultimately due to differences ascertainable in the grammatical structures of the compared languages.

The first of the two issues is concerned with the laryngal sound *h* of English on the one hand and with its analogues in Czech, Slovak, Upper Sorabian and Ukrainian on the other. The English *h*-sound differs from its Slavonic counterparts by its voiceless character (the Czech, Slovak, Upper Sorabian and Ukrainian *h*'s being voiced), but the origin of all these laryngal consonants may be denoted as parallel: they all go back to velar fricatives—voiceless  $\chi$  or voiced  $\gamma$  as the case may be—, from which they primarily arose through assimilation to the neighbouring vowel or vowels. The assimilatory process was undoubtedly called forth by the fact that in regard to articulation a laryngal fricative resembles a neighbouring vowel more closely than does a velar fricative; as a matter of fact, the English (and, for that matter, the German) voiceless initial *h*- has often been described by phoneticians as a voiceless beginning of the articulation of the following vowel (so that, e. g., ModE [ha : t] might also be transcribed as [a : t]).<sup>5</sup>

This close articulatory kinship of the English *h* and the neighbouring vowel resulted in the well-known early contractions of the type PrehistOE \**fōhan* > OE *fōn* and, later on, in the ever-increasing tendency to discard the *h*/ $\chi$ -phoneme in English altogether.<sup>6</sup> Compared to this, the Slavonic *h*-phonemes show no sign of any tendency aimed at their abolishment. This fact is the more striking, since a voiced *h*-sound might be regarded as particularly susceptible to assimilation by, and consequently to absorption into, the neighbouring vowel. A closer inquiry into the matter reveals that the shape of the glottis during the articulation of the Czech *h*-sound has been particularly adjusted: it is characterized by a specific position of both the vocal chords and the cartilages.<sup>7</sup> Obviously, it is exactly this particular shaping of the glottis which safeguards the Czech (and most probably also the Slovak, Ukrainian, and Upper Sorabian) *h*-sound against mechanical assimilation by, and consequently absorption into, its vocalic neighbourhood, while the absence of such particular shaping must have essentially contributed to the above-mentioned contractions, amounting to the ultimate loss of the intervocalic voiceless *h*-sound in English and, to a degree, also in German and in some other Germanic languages.

The above-ascertained facts raise another question, viz. that of the motivation of the specific shaping of the glottis in the pronunciation of the *h*-phoneme in Czech (and most probably in the rest of the enumerated Slavonic languages). In our opinion, this problem can be satisfactorily handled by taking into consideration the above-noted fact of mutual interrelation and interdependence of the planes of language. If the problem of, e. g., the Czech phoneme *h* is viewed from this angle, it cannot be overlooked how deeply rooted that phoneme has become in the morphological system of Czech. This will be realized from the fact that Czech morphological oppositions of the types Nom. *vraž* 'murderer' — Gen. *vraha*, Nom. *nehet* 'finger-nail' — Gen. *nehtu*, Nom. *stuha* 'ribbon' — Gen. pl. *stuh*, are perfectly equivalent to the oppositions of the respective types Nom. *krab* 'crab' — Gen. *kraba*, Nom. *drobet* 'morcel' — Gen. *droptu*, Nom. *huba* 'mouth' (vulg.) — Gen. pl. *hup*. If, owing to assimilation and consequent absorption, the intervocalic *-h* should become dropped, the resulting forms \**vraa* > \**vra*, \**neet* > \**nét*, \**stua* > \**stvá* (?) would stand out as most inorganic exceptions within their morphological paradigms, the more so that the grammatical system of Czech is still built up on "synthetical" lines, which have been preserved in

it virtually intact for a long series of centuries. It appears, thus, that the rise of the peculiar articulation of the Czech *h*-phoneme may have been motivated by the underlying tendency to preserve a clear phonematic make-up of the words containing intervocalic *h*'s, so that any danger of obscuring the paradigmatic classification of such words might be forestalled. It remains to be noted that what has been said here about the Czech morphological situation is also applicable to that of the other Slavonic languages enumerated above, as their grammatical systems, too, have preserved their synthetical structures up to the present period. Therefore, a theory seems justified that the preservation of the intervocalic *-h* in those languages was prompted by the same motive as in Czech.

The validity of the above-outlined theory is borne out by the situation in Old English, where, as already stated, the intervocalic, voiceless *h*-sound became fully assimilated by, and finally absorbed into, its vocalic neighbourhood. Obviously, in OE the phoneme *h* (more exactly, *h/χ*) had not taken such a firm root as its counterpart had in Czech; this might explain contractions like \**seohan* > *sēon*, \**eohe*s > *ēos*, \**scōhe*s > *scōs* and the like. Still, one should account for the fact that forms like *weorþan*, *dæzes*, *stānes* etc., paradigmatically closely allied to \**seohan*, \**eohe*s, \**scōhe*s etc., apparently did not intervene to preserve the phonematic make-up of the forms containing the intervocalic *-h*. The explanation is not far to seek: although the OE grammatical system was still essentially synthetical (its basic reshaping on analytical lines was to be effected only in the Middle English period), its synthetical character had already been perceptibly weakened in a number of points. Historians of English<sup>9</sup> have shown that as early as in OE, the soil was being prepared for the ensuing victory of the analytical principle. Already in OE, grammatical relations were being increasingly expressed by means of auxiliary words; the syncretism of the declension types resulted in underlining the importance of the stem at the expense of the inflexional endings, which again had to cede many of their functions to less vulnerable auxiliary expressions. Under such circumstances the impoverishment of this or that paradigm by one or two items not only could not be prevented by the pressure of the old system, but was rather in full agreement with the disintegrating tendencies already at work in it. It was clearly for this reason that no tendency towards articulatory differentiation of *h* from its vocalic vicinity can be discovered in the development of English. The interdependence of language facts belonging to various planes of language, as it has been exemplified in this chapter, appears thus highly probable.

III. A similar kind of interdependence emerges from the examination of the other issue which will have our attention here. It is concerned with what is traditionally denoted as voiced and voiceless paired consonants of the type *p—b*, *t—d*, *s—z*, and the like in English and in Slavonic languages (as representatives of the latter will be taken here Czech, Slovak, and Russian). The comparison of the phonematic oppositions of the said type reveals some interesting differences between English and the enumerated Slavonic languages. While there has always been complete agreement that in the latter languages one has to do with genuine oppositions of "voiceless vs. voiced" character (with what is usually denoted, in the terms of the Prague group, as the "correlation of voice"),<sup>9</sup> students of the phonematic structure of English have recently come to the conclusion that oppositions of English consonantal pairs like *p—b*, *t—d*, *k—g*, *f—v*, *s—z*, and the like, should be functionally evaluated as "tense vs. lax"<sup>10</sup> (or, for short, as the correlation of tension; in historical grammars, this opposition is usually referred

to by the terms "lenis vs. fortis"). This qualification is borne out by the well-known fact that the opposition of tension is much more stable in the articulatory and acoustic make-up of concrete English contexts than the opposition of voice. As was shown in detail by D. Jones and others,<sup>11</sup> the latter opposition often becomes more or less neutralized in word-final, and sometimes even in word-initial, positions, while the opposition of tension regularly persists unimpaired. Differences of voiceless vs. voiced character in the examined English consonantal pairs are evaluated only as concomitant (or, redundant) features that help to identify the concerned phonemes but are not essential for their phonematic classification.

What has so far been said about the state of things in ModE becomes even more interesting if confronted with the situation prevailing in OE. The reconstruction of the OE phonematic situation in the concerned points is comparatively easy, in view of the relative consistency of the OE spelling, based mostly on regular correspondence of phonemes and graphemes.<sup>12</sup> As is well known, already in Early OE words like *plōz*, *burz*, containing an etymological -z, were often spelled as *plōh*, *burh*. Such spellings clearly indicate a devoicing of the originally voiced fricatives; the same kind of devoicing is evidenced by spellings like *līf*, *hlāf*, with -f going back to an earlier voiced fricative \**ð*. It should be noted that the devoicing had occurred in those word-positions in which the energy of articulation must have been perceptibly weakened. And it is exactly the occurrence of the changes of *z* > *h*, \**ð* > *f* in such word-positions that may be regarded as evidence for the thesis that the relations of *z*—*h*, *ð*—*f* and the like must have been evaluated as oppositions of voice, not as those of tension. Where the actual opposition of tension is involved, the difference of the opposed sounds in word-final positions is usually preserved (i. e. no neutralization occurs), and if any change does take place in such word-positions, characterized by the weakening of articulatory energy, it is the change of a tense fricative into its lax counterpart, such as *f* > *v*, *s* > *z* etc. Most recently, this has been convincingly shown by W. Horn and M. Lehnert in their treatment of English phonological development in unstressed words and final syllables ("druckschwache Wörter und Endsilben") since the Early ME period.<sup>13</sup>

Analogue evidence of the presence of the voice correlation in OE consonants is furnished by occasional Early OE spellings like *lamp*, *hēafut*, *kyninc*, standing for regular *lamb*, *hēafod*, *cyning*.<sup>14</sup> The change of the voiced explosive into its voiceless counterpart occurred mainly in unstressed syllables and in those stressed syllables in which the final consonant was separated from the stressed vowel by an intervening *l* or nasal. Clearly, the change again occurred in word-positions characterized by markedly weakened articulatory energy. — The fact that in other OE monosyllables final -*b*, -*d*, -*g* are not recorded as -*p*, -*t*, -*k*, respectively, is attributed by Luick to their supposed phonetic qualities -*b̥*, -*d̥*, -*g̥* which in his opinion continued to be phonematically identified with the respective voiced sounds *b*, *d*, *g*, found in other positions. This theory, however, does not sound very convincing, especially in view of the undoubted changes of -*z* > -*h*, and -*ð* > -*f*. It appears more probable that the OE writings in -*b*, -*d*, -*g* are due to morphematic analogy, so well known from the written systems of modern Slavonic languages (such as Czech, Slovak, Russian, etc.). This explanation might be supported by the notorious tendency of the OE spelling not to change the graphical make-up of the morpheme even though its phonetic (and sometimes also phonematic) structure might be altered, cp. *hlāf* — *hlāfas*, *ris* — *risan*, *wez* — *wezas* etc.

So much for the state of things in OE. Since, as has been shown above, the functional opposition of ModE consonants like *p—b*, *f—v* etc. is one of tension, one is faced with the problem of how and why the revaluation of the opposition of voice into that of tension took place. K. Luick, too, though he did not realize the problem in its full complexity, was struck by the contradiction existing between the ModE forms like *field*, *wind* on the one hand, and the corresponding occasional OE (and regional ME) forms ending in *-t* on the other. In other words, Luick did not overlook the fact that in a great majority of instances (and especially in the East Midlands whose dialects were to become the basis of the Southern British norm of ModE) the word-final voiceless lenis, whose existence in OE he takes for granted, not only failed to be replaced by a voiceless fortis, occasionally evidenced by some OE writings, but that this supposed voiceless lenis sound was evidently to give way to a voiced (or at least partially voiced) lenis. Luick tried to account for this surprising fact by a number of partial explanations, the most important of which was his suggestion of levelling due to analogy, especially operating in such sandhi situations in which the supposed lenes had preserved their voiced character ("die stimmlose Lenis war durch Ausgleich wieder beseitigt worden," *Hist. Gr.* § 713).

Luick's explanation is obviously too mechanical; in our opinion, the real motives of the process undoubtedly lay deeper. They can only be detected by taking into consideration the conditions prevailing in the entire system of English during the critical period. It is only by keeping to this principle that one can hope to establish a theory covering all involved facts.

In his recent compendium of diachronic phonematics,<sup>15</sup> A. Martinet rightly insists on the presence in any language of two opposed forces the co-operation of which can more or less account for the development of language. One of these two forces is the necessity to satisfy all communicative and expressive needs and wants of the given language community, while the other may be denoted as inertia, i. e. an effort to reduce to the lowest possible limit any bodily or mental activity connected with speaking. It appears that the co-operation of these two tendencies may suggest an adequate solution of our problem. There can be no doubt that the devoicing of paired consonants in word-final positions (such as seems to have been typical of OE) is one of the ways in which the factor of inertia asserts itself in many languages: by its assimilative character it certainly contributes to what is commonly called "economy of articulation". But the factor of inertia in Martinet's conception can only assert itself if its operation does not endanger the basic function of language. And since this basic function of language can be defined as that of acting as a means of communication and expression, the operation of the factor of inertia is necessarily controlled by the communicative and expressive function of language.

Such control is especially essential in those cases in which the impending sound change may considerably restrict the functional load of some particular phonematic opposition. And this is exactly what is due to happen in the event of the devoicing of paired consonants in word-final positions. This change is bound to lead to the neutralization of the opposition of voice in such positions, and so to increase the number of homonyms in the lexical plane of the concerned language, and possibly, somehow to affect its grammatical plane as well. In the concrete case of English, the devoicing of its voiced paired consonant phonemes threatened not only to make homonymous the members of word pairs like *back — bag*, *let — led*, *cap — cab*, etc., but also to wipe away the phonematic

signals of the categorical distinction of nouns like *use, house, belief* on the one hand and verbs like *use, house, believe* on the other. If, in addition to this, one realizes that in English contexts the majority of words are monosyllables among which the percentage of homonyms<sup>16</sup> is always the highest, it will become apparent that the increase of homonyms called forth by the devoicing of word-final paired consonants might indeed render the main task of the English language, i. e. mutual communication and expression, markedly more difficult than before the devoicing.

To this it might be objected that the difficulties caused by the numerical increase of homonyms should not be overestimated; it has been generally admitted by linguists that the sentence context may, and generally does, make up for the ambiguousness of meaning in the homonymous words. In principle this is undoubtedly true, but it should be kept in mind that the ModE sentence context is burdened by a relatively high number not only of stylistic, but mainly of grammatical functions. It is utilized for the signalling of morphological and syntactical categories in words which, except for their positions in the sentence context, are entirely homonymous. Thus, it is commonly known that a word like *while* can function either as a substantive or as a verb, or even as a conjunction, according as it is placed in this or other position within the sentence. Or, a word-group like *this day* may be morphologically evaluated as a nominative case in some sentence situations, but as an accusative case in others; syntactically, only its position in the sentence may decide whether it stands for a subject, an object, an attribute or an adverbial. Obviously, the English sentence context has already been burdened by a considerable number of tasks, and therefore one can easily understand that any further addition to this number may have been found unfeasible. In other words, it appears probable that the devoicing of word-final paired consonants was not found particularly compatible with the communicative and expressive function of the English language seen as a structural whole, i. e. as a system of systems.

IV. Here it must be recalled that in some languages the devoicing of word-final paired consonants is tolerated, although it also increases the number of homonyms. Such is the case of Slavonic languages like Czech, Slovak or Russian, in which the opposition of voice in the paired consonants has been phonematically neutralized in word-final (and in some other) positions, as is shown by word pairs like Czech (and also Slovak and Russian) *plod* 'fruit' — *plot* 'fence', Cz. *vez* 'take by carriage [imp.]' — *ves* 'village', Slk. *vied* 'of sciences [Gen. pl.]' — *viet* 'of sentences', Russ. *bog* 'god' — *bok* 'side' etc. — Members of each of these pairs end in one and the same phoneme, i. e., respectively, in *-t*, *-s*, *-t* and *-k*.<sup>17</sup> If it is asked why the devoicing of such final consonants was tolerated in these languages, one is naturally led to suppose that, unlike in English, the process of devoicing in Czech, Slovak, and Russian must have been fairly compatible with the laws obtaining in the grammatical and lexical planes of these languages.

A closer examination of the conditions typical of Czech, Slovak, and Russian reveals that such an assumption may be regarded as fully justified. It will be readily admitted that in these three languages the sentence context is much less burdened than in English. As a rule, it is not charged with the function of distinguishing word-categories (which in Slavonic languages are regularly characterized by special suffixes and/or sets of inflexional endings); in most cases, it does not distinguish declension cases either, these being again mostly differentiated by inflexional endings. Last but not least, since the positions of sentence elements

within the sentences of Slavonic languages are demonstrably much less fixed than in English, the Slavonic word-orders may also be regarded as relatively free from acting as main signals of syntactical values. All these facts considered, the word-orders of Czech, Slovak, and Russian appear to have been fairly well capable of taking on an additional function, that of distinguishing a certain number of new homonymous word pairs, due to the devoicing of word-final paired consonants.

It should be added that the Slavonic word-orders had no special difficulty in performing this new task, inasmuch as the numbers of homonyms added to the concerned languages through the discussed process of devoicing had been relatively low, certainly much lower than the analogous number that might have been added to English. This may be safely inferred from the well-known circumstance that the contexts of the Slavonic languages contain a considerably lower percentage of monosyllables than the English contexts (see above Note 16). As the number of homonyms is regularly the largest among monosyllables, it will be found obvious that Slavonic languages are much less exposed to homonymy than English, and therefore can easily afford a certain rise in its percentage.

V. Let us now turn again to the phonematic development of English, faced with the above-described situation. As it did not appear feasible to increase the number of homonyms in English, and so to overburden the English context beyond its functional capacity, it was necessary for the functional oppositions of the type *p-b*, *t-d*, *f-v*, and the like, to remain preserved. Such preservation, however, could not be effected by maintaining (or, perhaps, by restoring) the voiced pronunciation of *b*, *d*, *v* etc. The English articulatory habits, noted for slackness and general lack of muscular exertion, were averse to such integral restoration of the differences of voice in word-final positions, in which the force of inertia had been making itself felt very strongly since the OE period (one should recall the OE and EME devoicings referred to above). Under such circumstances the best, and perhaps the only possible, manner in which the concerned type of opposition could be maintained consisted in its revaluation: the correlation of voice came to be revaluated into that of tension.

The process involved in the revaluation can be specified as follows: differences of voice, which by themselves were no longer functionally dependable (at least in some important word-positions), were relegated to the status of concomitant (or, redundant) features, while the differences of tension, much less susceptible to being suppressed by the influence of phonic environment, were promoted to the rank of phonematically essential features, i. e. — to use the terminology of classical phonology — to function as a new mark of correlation. This new hierarchy of the two features, tension and voice, is convincingly proved by some observations made by phoneticians of English. Here belongs the (at least partial) devoicing of ModE paired consonants in word-initial positions. It is true that the process of devoicing in such positions may have been, too, indicated by the operation of the factor of inertia. But one should not overlook the remarkable fact that the functional importance of oppositions like *p-/b-*, *t-/d-*, *k-/g-* etc. is preserved even in those cases where the opposition of voice has been fully replaced by that of tension (see, e. g. Torsuev, l. c.). This fact furnishes clear and convincing evidence of the new hierarchy.

To sum up, the real motives of the functional revaluation of the opposition of voice into that of tension was the incompatibility of the above-discussed process of devoicing with the structural situation of English envisaged as a system

of systems. As regards the analogical levelling, considered by Luick to have been the main source of the voiced character of the ModE final consonants in words like *wind*, *field*, one can admit the operation of such levelling, but certainly not as a motive of the revaluating change, but merely as an instrument that helped to carry it through.<sup>18</sup>

The last question to be answered in this connection is at what time the discussed revaluation may have taken place. All that has been said here so far seems to indicate that the critical period must have been about the close of the 14<sup>th</sup> century. At that time the dialect of the Southeast Midland (on which the Southern British standard was to become principally based)<sup>19</sup> had lost its vowels of unstressed syllables. This change not only raised the problem of the devoicing of paired consonants which had become word-final through that loss, but at the same time also introduced a high percentage of new monosyllables into actual English contexts. At that time, too, the suffixes and endings originally distinguishing nouns and verbs had become lost with the result that, from then on, these two grammatical categories (and others as well) could be identified with the help of the sentence context alone; analogous comment could be made on the distinction of declension cases. Finally, at that time foundations were laid for the fixation of word-order, so typical of ModE.<sup>20</sup>

VI. Our survey of the circumstances connected with the revaluation of the English correlation of voice may throw some interesting light on the development of the three Slavonic languages under our consideration (and probably of some of the others as well). There can hardly be any doubt that the above-described English historical situation that raised the problem of the devoicing of final paired consonants had an interesting parallel in an historical situation ascertainable in the development of our three (or more) Slavonic languages. Just as in English the need of devoicing arose after the loss of vowels in unstressed syllables, so in Czech, Slovak, and Russian analogous need could only emerge after the loss of unstressed semivowels *ъ*, *ь* (the "weak yers", as they are conventionally called in Slavonic linguistics), see, e. g., PrimSlav. \**plodъ* > CzSlkRuss. *plod* 'fruit'.

It is worth pointing out that in Slavonic languages the "weak yers" disappeared also in some other, non-final positions, with the result that the paired consonants, originally separated by them, became assimilated (see, e. g., PrimSlav. \**sъde* > Russ. *zde(s')*, Cz. *zde* 'here').<sup>21</sup> The interesting point is that in Old Cz. manuscripts words of this type are often recorded in writing as if no assimilation had taken place, e. g. *sde*, *dchoř* (< *dъchorъ*) 'polecat', etc. On the basis of such writings it is usually taken for granted that the concerned groups of consonants really remained unassimilated for some time, possibly up to the end of the 13<sup>th</sup> century<sup>22</sup>. On purely physiological grounds, however, the existence of unassimilated consonants groups, though not impossible, does not seem very probable.<sup>23</sup> If the assumption of an immediate assimilation of voice after the loss of "weak yers" is correct, then the OCz. writings of the type *sde*, *dchoř* may reflect not the differences of voice but those of tension. In other words, in *sde* the letter *s* may refer to a voiced, but fortis consonant, while the letter *d* in *dchoř* may represent a voiceless lenis. If this was so, the spellings may be interpreted as reflecting the following historical situation: After the loss of "weak yers" Czech (and most probably also Slovak, Russian, and perhaps other Slavonic languages as well) was faced with the possibility of preserving the differences of phonematic pairs like *p—b*, *t—d*, *f—v* in neutralizing

positions at the cost of the functional revaluation of the voice correlation in consonants into that of tension. The subsequent history of Czech, Slovak, and Russian reveals that this possibility, so amply utilized in the phonematic development of English, was never resorted to. The cause of the different directions taken by the development in English and in the discussed Slavonic languages was suggested above — it appears to have been grounded in structural differences of the examined languages, envisaged as systems of systems.

VII. The two above-discussed kinds of solution, the English and the Slavonic, must not be regarded as the only methods applicable to the situation described. It is true, of course, that what has been presented here as the Slavonic type of solution will necessarily have its parallels in many Slavonic idioms (i. e., languages and dialects), while the English type will more or less appeal to at least some of the Germanic idioms. The Slavonic parallels will be easily accounted for by close structural relationship of most of the Slavonic idioms; similarly, the various Germanic idioms reveal some important analogies to the English structural pattern, though the relationship is definitely less striking than in the Slavonic case. There are, however, other methods that can be applied in the situation of the discussed type. Let us point out here at least the French solution, which prevented the increase of homonyms by propping up the opposition of voice by way of emphasizing the voiced articulation of word-final paired consonants.<sup>24</sup> This solution was made feasible by some specific features of French, especially by the rising pattern of the French word and sentence rhythm as well as of the French articulatory effort in actual utterances. It is this rising pattern that enables French speakers to apply the energy of articulation indispensable for the genuinely voiced articulation of a word-final paired consonant. Here the French pattern of articulation strikingly differs from the corresponding patterns of both English and Czech (and most of the other Slavonic languages), in which the word-final consonant is particularly subject to the operation of the tendency of inertia referred to above.

Another remark may not be wholly devoid of interest. A remote parallel to the French solution can also be met with among the varieties of Czech. It is, among other things, the case of a dialect in Northeastern Bohemia, noted by a number of Czech scholars.<sup>25</sup> In this dialect words containing a final voiced paired consonant, such as *dub* 'oak', *vid* 'see!' are pronounced with genuine voiced *-b*, *-d*, to which is added a voiced off-glide, so that the pronunciation of such words is described as "almost dissyllabic", viz *dubə*, *vidə* (see Frinta, l. c.).

There is one point in which this dialectal solution of the given problem is particularly noteworthy. It shows how oppositions of voice can be preserved in word-final positions even in such idioms as lack the rising pattern of word and sentence rhythm (and of the articulatory effort) which has been singled out here as typical of French. The method applied in such idioms consists in the addition of another syllable (or, quasi-syllable), which will bring the concerned words in harmony with the falling pattern of word and sentence rhythm (and of articulatory energy), so typical of Czech. It should be noted that the off-glide *-ə*, in spite of its "almost syllabic" character, obviously lacks phonematic status. It is, of course, an item of syntactical phonematics, i. e., it acts as a signal of word-limits within the sentence. (This functional evaluation of *-ə* is corroborated by the fact that, following the rule of the association of contrasts, such *-ə* is also added to words ending in a voiceless paired consonant — Frinta, l. c., registers a pronunciation of the type *sukə*!) Undoubtedly, more detailed examination of

these and analogous dialectal facts might bring new interesting materials throwing still more light on our problem.<sup>26</sup>

The above very sketchy outline could do no more than point out very briefly some cases of interdependence ascertainable among various language planes. The present writer's intention was to make a special point of showing that even the facts of the phonic plane, which are usually regarded as purely acoustico-physiological phenomena of an entirely mechanical order, are in reality indissolubly linked with the higher planes of language: it forms a structural whole with these planes, and it can be influenced by them in its make-up. Obviously, the interdependence of the phonic, grammatical, and lexical planes deserves close and careful study based upon materials taken from as many languages as possible.

### NOTES

<sup>1</sup> The term was used by V. V. Vinogradov in one of his lectures held in Prague in 1957 (the lecture was reviewed by K. Horálek in: *Slovo a slovesnost* 18, 1957, p. 98).

<sup>2</sup> This fact was duly noted in the 1950 Soviet linguistic discussion (see *Soviet Literature* 1950, No. 9, p. 14).

<sup>3</sup> This detracts nothing from the importance of "written language" which, though a secondary, derived aspect, performs important cultural functions and tends towards a relatively high degree of autonomy (see J. Vachek, *Some Remarks on Writing and Phonic Transcription*, *Acta Linguistica* 5, 1945-9, pp. 86-93, and the same author's paper *Written Language and Printed Language*, in: *Recueil Linguistique de Bratislava* 1, 1948, pp. 67-75).

<sup>4</sup> Some of the ideas of the Prague group have recently been summarized by B. Trnka et al., *K diskusi po voprosam strukturalizma*, in: *Voprosy yazykoznanija* 6, 1957, No. 3, pp. 44 až 52.

<sup>5</sup> See, e. g., D. Jones, *An Outline of English Phonetics*<sup>6</sup>, Cambridge 1956, §§ 777-8.

<sup>6</sup> For details of the operation of this tendency, see J. Vachek, *On the Interplay of Quantitative and Qualitative Aspects in Phonemic Development*, *Zeitschrift f. Anglistik u. Amerikanistik* 5, 1957, pp. 5-28 (where also the operation of an analogous tendency in German is briefly outlined).

<sup>7</sup> The phonetic fact that by the side of the voiceless *h*-sound also a voiced *h* exists (sometimes as a variant of the voiceless *h*) was stressed by E. A. Meyer many years ago, v. his paper *Stimmhaftes H*, *Die neueren Sprachen* 8, 1900-1, pp. 261-263. — The problem of how the voiced *h* of Czech is articulated was dealt with, after the pioneering works by Purkinje and Czermak, by B. Hála and B. Honty, *La cinématographie des cordes vocales à l'aide du stroboscope et de la grande vitesse*, *Otolaryngologia Slavica* 3, 1931, pp. 1-13 (esp. p. 10).

<sup>8</sup> See, e. g., A. C. Baugh, *A History of the English Language*, London 1952, p. 205.

<sup>9</sup> See, e. g., N. S. Trubetzkoy, *Grundzüge der Phonologie*, Prague 1939, p. 139 ff.

<sup>10</sup> See, e. g., Roman Jakobson - G. Fant - M. Halle, *Preliminaries to Speech Analysis*, Cambridge (Mass.) 1952, pp. 36 ff.

<sup>11</sup> See, e. g., D. Jones, *Outline*,<sup>8</sup> §§ 373, 789 et pass. — See also G. P. Torsuev, *Obuchenie anglijskomu proiznosheniju*,<sup>3</sup> Moscow 1956, esp. p. 110 f.

<sup>12</sup> Problems of the OE spelling are discussed in J. Vachek's paper *K vývoji anglické psané normy* (with a summary in English: *On the Development of the English Written Norm*), *Časopis pro moderní filologii* (Praha) 37, 1955, pp. 120-129.

<sup>13</sup> W. Horn - M. Lehnert, *Laut und Leben*, Berlin 1954, § 441. — Incidentally, it should be recalled that also the PrimGmc voicing of the type \**f* > \**b*, \**s* > \**z* etc. (popularly known as changes covered by Verner's Law) seems to suggest that the consonantal correlation in PrimGmc was one of tension, not one of voice. This problem, of course, lies outside the scope of the present paper. — Most recently, I. D. Andreev has voiced the opinion that already in Late IE the opposition of stop consonants must have been one of tension, not voice (see his paper *Periodizacija istorii indoevropskogo prazykyka*, in: *Voprosy yazykoznanija* 1957, No 2, pp. 3-18). But this theory, although ingeniously worked out, appears hardly compatible with the situation in PrimGmc (and, to a lesser degree, in Armenian).

<sup>14</sup> See Karl Luick, *Historische Grammatik der englischen Sprache*, Leipzig 1914 - 40, § 653.

<sup>15</sup> André Martinet, *Économie des changements phonétiques*, Berne 1955, esp. p. 94.

<sup>16</sup> In English contexts the percentage of monosyllables usually reaches from 60 to 80 per cent. according to the contents and style of the concerned context (in Czech the corresponding figures oscillate between 30 and 40 per cent). — On homonymy in English see, e. g., B. Trnka, *Bemerkungen zur Homonymie*, Travaux du CLP 4, pp. 152—6.

<sup>17</sup> Cp. Olaf Broch, *Slavische Phonetik*, Heidelberg 1911, § 199.

<sup>18</sup> What actually happened in that levelling was the functional revaluation of the word-final voiceless lenis, which had arisen from the voiced lenis after the loss of ME vowels of unstressed syllables, not into a voiceless fortis (as had occurred in Czech, Slovak, and Russian) but into a lenis admitting of a concomitant voiced articulation, preserved in some sandhi situations.

<sup>19</sup> Cp. Hans Kurath's interesting observations in his paper *The loss of long consonants and the rise of voiced fricatives in Middle English*, in: *Language* 32, 1956, pp. 435—445 (see esp. pp. 442f.).

<sup>20</sup> It may be of use to recall here that in OE, still characterized by the opposition of voice, (1) the monosyllables were in the minority, although the prevalence of polysyllables was not so outspoken there as in modern Slavonic languages (for more detailed information see J. Krámský, *Přispěvek k fonologické statistice staré a nové angličtiny*, in: *Časopis pro moderní filologii* 28, 1942, pp. 376—384); (2) grammatical categories, and sometimes also declension cases, were regularly distinguished by specific sets of suffixes or inflexional endings; and (3) the word-order was much less fixed than it was to become in the later periods.

<sup>21</sup> Cp. O. Broch, *Sl. Phon.* § 197.

<sup>22</sup> See Jan Gebauer, *Historická mluvnice jazyka českého I*, Praha—Videň 1894, p. 325; Bohuslav Havránek, *Neasimilované párové souhlásky znělé a neznelé v staré češtině*, in: *Slovanský sborník věnovaný F. Pastrnkovi*, Praha 1923, pp. 102—111.

<sup>23</sup> This was duly noted by W. Vondrák, *Vergleichende slavische Grammatik*<sup>2</sup>, Göttingen 1924, p. 462f.

<sup>24</sup> Otto Jespersen states expressly, as early as 1904: „Am ausgeprägtesten findet sich der Stimmklang bei [b, d, g] im Französischen...“ (*Lehrbuch der Phonetik*, Leipzig—Berlin 1904, § 103); most recently, cp. D. Jones, *Outline*<sup>3</sup>, § 577.

<sup>25</sup> Jan Gebauer, *Hist. mluvn. I*, p. 325; Ant. Frinta, *Novočeská výslovnost*, Praha 1909, p. 83; Boh. Havránek, *Československá vlastivěda 3*, Jazyk, p. 141. It should be added that F. Bartoš, *Dialektologie moravská*, Brno 1886—1895, registers this type of pronunciation as fairly common in wide regions of Moravia (esp. in its south-eastern and western parts).

<sup>26</sup> The above-mentioned Czech dialectal development does not contradict our theory asserting that the structural situation in the Czech language system envisaged as a structural whole admits of a rise of new homonyms, and therefore is not opposed to neutralizations of the opposition of voice in word-final positions. The contradiction is only a seeming one: we say expressly that the structural situation in Czech admits of the rise of new homonyms, not that it enforces it. The structure of language, as we take it, is essentially a negative factor in language development. In other words, all the structure of language can do is to exercise the right of control: it can prevent the realization of changes which might be contrary to its structural interests (this very fact happened in English), but it does not necessarily further those changes which, though they might be in agreement with its tendencies, are not vitally essential to its functioning. For this reason, one can hardly be surprised to find in the domain of Slavonic idioms isolated specimens of what has been termed here the French solution of our problem (such specimens may exist in some West Ukrainian and in some Serbian dialects, cp. O. Broch, *Sl. Phon.* § 54).

## POZNÁMKY O VÝVOJI JAZYKA POJATÉHO JAKO SYSTÉM SYSTÉMŮ

(Přispěvek k srovnávací fonologii angličtiny a některých slovanských jazyků)

Z pojetí jazyka jako systému systémů plyne, že změna v jednom jazykovém plánu může mít důsledky i pro strukturu plánů ostatních. Zvláště zajímavé jsou případy, v kterých struktura plánu zvukového podléhá vlivu vyšších jazykových plánů (lexikálního a gramatického) a mění se tak, aby lépehověla jejich potřebám.

Jeden takový případ se týká českého (a obdobně i slovenského, ukrajinského a hornolužického) intervokálního *h*, jež na rozdíl od *h* anglického nebylo asimilováno a nakonec pohlceno svým samohláskovým okolím. Důvod různého vývoje slovanského a anglického

je patrné v tom, že slovanské *h* je mnohem pevněji zakořeněno v důsledně syntetické tvaro-slovné soustavě slovanské, než bylo *h* doby staroanglické, v níž k změnám intervokálního *h* došlo. Snaha zachovat české (a patrně vůbec slovanské) *h* vedla zřejmě také k jeho specifické artikulaci, jež toto *h* zabezpečuje před mechanickou asimilací se strany samohláskového okolí.

Druhý případ se týče souhláskových fonémů párových podle znělosti. Zatím co v češtině (slovenštině, ruštině atd.) byly na konci slov párové znělé souhlásky v důsledku neutralisace vystřídány neznelými, byly v angličtině protiklady typu *p — b*, *f — v* atp. v takových polohách zachovány, a to za cenu přehodnocení protikladu znělostního v napjatostní. Rozdílný vývoj tu byl zase dán potřebami vyšších plánů příslušných jazyků. V článku se podrobně dovozuje, že přetíženost anglického větného kontextu řadou gramatických funkcí nepří-pouštěla jeho další zatížení, k němuž by bylo došlo vznikem nových homonymních slovních dvojic. Naproti tomu při poměrně malém funkčním zatížení českých (slovenských, ruských atd.) větných kontextů bylo jejich pověření dalšími úkoly zcela dobře únosné.

Tato teorie vrhá nové světlo i na t. zv. neasimilované stč. souhláskové skupiny, j. v slo-vech *sde*, *tchoř*. Je možné, že takové způsoby psaní ukazují na přechodný stav, kdy čeština byla postavena před možnost přehodnotit znělostní souhláskový protiklad v napjatostní. T. zv. definitivní asimilace (s výsledkem *zde*, *tchoř*) by pak znamenala definitivní utvrzení znělostního protikladu v češtině.

## ЗАМЕТКИ К РАЗВИТИЮ ЯЗЫКА, ВОСПРИНЯТОГО КАК СИСТЕМА СИСТЕМ

(К сравнительной фонологии английского и некоторых славянских языков)

Из концепции языка как системы систем вытекает, что изменение в одном плане языка может иметь последствия также в структуре других планов. Особенный интерес представляют такие случаи, когда структура звукового плана подвергается влиянию со стороны высших планов языка (лексического и грамматического) и изменяется таким образом, чтобы лучше удовлетворять их нуждам.

Один такой случай касается чешского (*h*, подобно, словацкого, украинского и верхнелужицкого) *h* в положении между гласными, которое, в отличие от английского *h*, не подверглось ассимиляции и не было впоследствии поглощено своим вокалическим соседством. Причина различного развития в славянских и английском языках заключается, повидимому, в том, что славянское *h* гораздо крепче коренится в последовательно синтетической морфологической славянской системе, чем *h* древнеанглийского периода, к которому изменения интервокалического *h* как раз относятся. Стремление сохранить чешское (*h*, вероятно, вообще славянское) *h* влекло за собой, очевидно, также его специфическую артикуляцию, обеспечивающую это *h* от механической ассимиляции со стороны вокалического соседства.

Другой случай касается согласных фонем, парных по звонкости. Между тем как в чешском (словацком, русском и т. д.) парные звонкие согласные в конце слов в силу нейтрализации сменились глухими, в английском языке противоположности типа *p—b*, *f—v* и т. п. в таких положениях сохранялись, даже за счет переоценки противоположности по звонкости в противоположность по напряженности. Различное развитие здесь, в свою очередь, обусловливалось потребностями высших планов соответствующих языков. В статье подробно указывается, что перегрузка английского контекста предложения рядом грамматических функций не позволяла его дальнейшей нагрузке, которая произошла бы в результате возникновения новых омонимичных словесных пар. С другой стороны, относительно малая функциональная нагрузка чешских (словацких, русских и т. д.) контекстов предложений создавала предпосылки для присвоения им еще дополнительных функций.

Эта теория проливает новый свет также на т. н. неассимилированные др.-чешс. сочетания согласных, напр. в словах *sde*, *tchoř*. Возможно, что такие способы написания отражают переходное состояние, когда чешский язык был поставлен перед возможностью переоценки противоположности согласных по звонкости в противоположность по напряженности. Т. н. окончательная ассимиляция (с результатом *zde*, *tchoř*) означала бы, согласно высказанному, окончательное закрепление в чешском языке противоположности по звонкости.

Перевод: Роман Мрагек