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THE EMERGENCE OF MORPHOPHONEMICS: A SURVEY OF THEORY AND PRACTICE FROM 1876 TO 1939

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Much current discussion in linguistics is focussed on problems of morphophonemics, which came to receive general attention in American linguistics after 1939. The advent of generative phonology in recent years has brought about a re-evaluation of morphophonemics and has raised new theoretical problems. Few linguists, however, are familiar with the period in which morphophonemics emerged as an area of investigation, and it is just this period that is discussed in the present survey. From the objective of the paper it follows that I have not presented my own view of morphophonemics and that the discussion is by no means exhaustive. The survey was written in the hope that an acquaintance with earlier studies will deepen linguists' understanding of current issues. [1]

The linguistic phenomenon now generally called 'alternation' was first investigated by the Hindu grammarians of ancient India. Baudouin de Courtenay discusses them and their studies in his *Attempt at a theory of phonetic alternation* (147–8):

> "The greatest heights here were obtained by the Indic grammarians, who developed a very refined theory of the 'laws of sandhi,' on the one hand and the 'laws of guṇa' and 'vṛddhi' on the other hand. But the Indic grammarians lacked a feeling for history and were unable to grasp the significance of gradual development, historical sequence, or chronology in general. As a result, their findings lay, so to speak, on a single temporal plane; everything happened simultaneously, as though there were neither a past nor present nor future. Thence also the purely mechanical character of their grammatical rules ..."

[1] I am indebted to C.F. Hockett, L.R. Waugh and F. van Coetsem, who gave their detailed comments and suggestions after reading a draft of this paper.

The theory and practice of the Hindu grammarians in the description of alternations is a topic in itself, but also is easy to separate from this survey, since no linguist after the Hindus discussed the subject in a reasonably systematic way until Baudouin. [2]

He set about to correct the inadequacies he saw in the Hindu theory and states in the introduction to his *Attempt* that he first began to present his own ideas on the subject in his lectures of 1876. The same introduction contains an informative account of contemporary work by other linguists, and Baudouin indicates that August Leskien's *Der Ablaut der Wurzelsilben im Litauischen* (1884) is "one of the works which most closely approaches the concept of alternations" in his study (148).

Leskien's book is a lengthy list of forms grouped according to the ablaut series they exemplify. It contains virtually no text but clearly follows Baudouin's principle that one must recognize "the *coexistence* of phonetically different but etymologically related speech sounds; only after establishing this fact can one proceed to the investigation of its causes" (149).

Baudouin works with an essentially modern terminology including 'phoneme', 'morpheme', and 'alternation' (Russian '*čeredovanie*'); he distinguishes between grammatically and phonemically conditioned alternations but is unclear in his division between phonetics and phonemics (and consequently between subphonemic variation and automatic alternation). Following his criticism of the Hindu grammarians, he emphasizes the relative productivity of alternations.

E. Stankiewicz, in his introduction to *A Baudouin de Courtenay Anthology* (p. 26) speaks of Baudouin's "tendency to list the alternants but to omit rules that would correlate and derive one set of alternants from another, more basic set"; he further notes that "Baudouin's reluctance to operate with base forms and rules is understandable if we keep in mind the novelty of his theory and his apprehension that any reference to 'change' or to prior and 'derived' forms might be misinterpreted as meaning historical phonetic change (which happened anyway)". The failure to recognize basic alternants was later corrected.

Baudouin claims that one student of his, Mikołaj Kruszewski, took his theory and "merely gave a finer form to what he had learned from

[2] Readers with a serious interest in Baudouin's numerous works on alternation should turn to the Russian edition of his selected works or the smaller anthology by Stankiewicz.

someone else" (150). Examination of the latter linguist's work makes this assessment sound far too modest.

Kruszewski's *K voprosu o gune: issledovanie v oblasti staroslavjanskogo vokalizma (On the question of Guna: an investigation in the field of Old Slavic vocalism)* (1881a) was written under Baudouin as a master's dissertation; it contains a classification of alternations that excels in rigor and clarity the system presented by the latter linguist in his *Attempt* of 1895.

Kruszewski's classes of alternations appear to include (1) subphonemic variation, (2) grammatically conditioned alternation not serving a *particular* morphological function, and (3) grammatically conditioned alternation with a definite morphological function. Although he worked according to the phonemic principle and was a specialist in Sanskrit, Kruszewski provides no place for automatic alternations. [3]

He published a pamphlet *Ueber die Lautabwechslung* (1881b) in hopes of catching the attention of scholars in western Europe. Contemporary reactions to the work are of interest. In a basically positive review K. Brugmann (1882) sees the classification of alternations in terms of historical processes. A more enthusiastic reaction is found in a paper by V.V. Radlov (1882), where Kruszewski's theory is discussed and applied. The author mentions some of the problems that kept Kruszewski from finding a wider audience (58):

"Für die Verbreitung des Schriftchens ist es gewiss nicht vorteilhaft, dass es so weit im Osten in deutscher Sprache erschienen ist, der Verfasser war aber leider gezwungen, die Abhandlung auf eigene Kosten in Kasan zu drucken, denn er verzweifelte, sie in einer deutschen Zeitschrift veröffentlichen zu können, da sie ihm aus Leipzig und Königsberg mit dem Bemerken zurückgestellt wurde, dass die Abhandlung sich mehr mit Methodologie als mit Sprachwissenschaft beschäftige."

Radlov suggests the term *'Lautalternation'* for *'Lautabwechslung'* but at the same time slips into the use of *'Lautgesetz'*. This gives us an insight into the incredible difficulties faced by linguists attempting to introduce notions of purely synchronic analysis at a time when linguistics was dominated by the almost exclusively historical studies of the neogrammarians. At the same time it suggests the confusion that surrounded the debate over regularity of sound laws, since some scholars must have taken these to include phenomena of all sorts.

[3] At this point the reader may wish to turn to the appendix of this paper, which is a translation of the most crucial passages from Kruszewski (1881a).

In his doctoral dissertation, *Očerk nauki o jazyke (Sketch of the science of language)* (1883), Kruszewski continued his investigation of alternations. Again following the phonemic principle, he notes that Russian *k* and *k'* (before front vowels) differ "only by an insignificant shading of the same sound" (1883:37). Some instances of *č* before front vowels involve an alternation with *k* (e.g. *pečenie–peku, česat'–kosa,* etc.), while others do not (e.g. *četa, isčezat',* etc.); the accompanying front vowels, however, *do not condition č* (36). In effect he says that in order to represent *č* as *k* plus front vowel it would be necessary to show "the impossibility of these combinations or their complete absence in the language" (40).

Together, Baudouin and Kruszewski formed the nucleus of the Kazan school of linguistics, which has been discussed by Roman Jakobson (1971a,b). The work of the two linguists is difficult to keep separate, and Baudouin's polemics (1963, I: 146 ff) against Kruszewski shed little light on the problem. After the latter's untimely death in 1887, Baudouin's work in general linguistics showed a decline, including the renunciation of many ideas developed in the Kazan period. The publications of both men were largely inaccessible in the west and have remained so up to the present.

Both linguists were strongly impressed by the descriptive and essentially synchronic approach of Saussure's *Mémoire sur le système primitif des voyelles dans les langues indo-européennes* (1879). Their work in turn influenced Saussure, but his *Cours de linguistique générale* contains only a brief discussion of alternations (215–220). It is clear, however, that Saussure is partially responsible for spreading the ideas about alternation formulated by the Kazan school. Indeed, the new notions concerning the synchronic analysis of alternations undoubtedly reached many, if not most, western linguists through works on Indo-European, first by Saussure and then especially by Meillet, whose *Introduction à l'étude comparative des langues indo-européennes* (1903) devotes separate chapters to alternations (123ff) and the form of morphological elements (145ff); the author specifies the positions and grammatical categories in which alternations occur and distinguishes alternations with and without grammatical significance (129). Meillet (1906: 208 ff; 1930) emphasizes that his understanding of alternations derived from Baudouin.

J.R. Firth (1934) draws attention to the Kazan school and stresses Kruszewski's contribution. Illustrating the notion of alternation, Firth

speaks of the English plural alternants [-s, -z, -iz] as constituting a 'morphological phoneme'.

The ideas of Baudouin and Kruszewski were passed on directly in eastern Europe. L. Ščerba (1912:§ 1,§ 15) shows this continuity.

H. Ułaszyn (1931: 53) indicates that his own ideas led him to coin the term *'Morphonema'* in 1927. It was then adopted by N. Trubetzkoy but used by him in a different sense. [4] The latter's *Sur la 'morphonologie'* (1929b) defines the new area of investigation (85):

"A côté de la phonologie, qui étudie le système des phonèmes considérés comme étant les idées acoustico-motorices, significatives dans une langue donnée, les plus simples, et de la morphologie, qui étudie le système des morphèmes, la grammaire doit comprendre encore un chapitre particulier, qui étudie l'utilisation morphologique des différences phonologiques, et qui peut être appelée la *'morpho-phonologie'* ou, en abrégeant, la *'morphonologie'*."

Considering the alternation of phonemes *k* and *č* in the Russian words *ruka* and *ručnoj*, Trubetzkoy states that the *acoustic ideas, k* and *č*, give rise to a *complex* idea of the alternation; he then defines the unit (85): Ces idées, complexes, de *deux ou plusieurs phonèmes susceptibles, en fonction des conditions de structure morphologique du mot, de se remplacer l'un l'autre au sein d'un seul et même morphème*, peuvent être appelées des *'morpho-phonèmes'* ou des *'morphonèmes'*..."

Trubetzkoy stresses that the difference between the stops in *ruka* and *ruk'i* involves only a variation of sounds that are realizations of the same phoneme conditioned by the phonemic environment (85); in contrast, *ruka* and *ručnoj* involve an alternation – not conditioned by the phonemic environment – of two phonemes that can occur in the same position (86). Seemingly addressing his remarks to Kruszewski, he states that the last alternation occurs only as the final element of morphemes, so that *kosa* and *česat'* do not display the alternation but involve different roots, despite their historical connection (86). Following this reasoning he emphasizes the importance of distinguishing productive from unproductive alternations (87).

Gedanken über Morphonologie (1931) indicates the divisions within 'morphonology' (161–162):

"(1) die Lehre von der phonologischen Struktur der Morpheme; (2) die Lehre von den kombinatorischen Lautveränderungen, welche die Morpheme in den Morphemverbindungen erleiden; (3) die Lehre von den Lautwechselreihen, die eine morphologische Funktion erfüllen."

[4] See the discussion in Stankiewicz (1967: 1897–8).

Trubetzkoy's new ideas are extensively applied and further elaborated in his *Polabische Studien* (1929a), *Das morphonologische System der russischen Sprache* (1934), and the posthumous *Altkirchenslavische Grammatik.*[5] In the second work he divides morphological processes into two categories: 'Morphemwechsel', "die Verbindung desselben Wurzelmorphems bald mit einem, bald mit dem anderen Suffix- bezw. Endungsmorphem", and 'Morphemänderung', die Veränderung der Lautgestalt eines Morphems" (1934: 20). Trubetzkoy is concerned with the second category and further divides it (1934: 20):

"Die Veränderungen der Lautgestalt eines Morphems können entweder *kombinatorisch* oder *frei* sein. Die kombinatorischen Veränderungen sind durch die äussere Lautstellung des Morphems und durch seine Berührung mit anderen Morphemen hervorgerufen."

This category is contrasted with "freie Morphemänderungen oder Alternationen" (1934: 29), where the change involves no shift of the phonemic environment (cf. 1954: 102); the distinction leads back to his basic notion of the 'Morphonem' (1934: 30):

"Jeder Alternation entspricht im Sprachbewusstsein ein *Morphonem*, d.i. die als morphologische Einheit gedachte Gesamtheit der an der betreffenden Alternation beteiligten Phoneme."

Trubetzkoy clearly takes 'alternation' in a narrow sense *excluding* automatic changes (1934:22):

"Es muss besonders betont werden, dass weder in Fällen wie ŗìb̯ă: ŗìP̣kă, noch in solchen, wie rèžu: reš für das russische Sprachbewusstsein eine Alternation von stimmhaften und stimmlosen Konsonanten besteht. Psychologisch handelt es sich hier vielmehr um den Wechsel eines stimmhaften Konsonanten mit einem hinsichtlich der Stimmbeteiligung neutralen."

Trubetzkoy's point involves the notions of 'neutralization' and the 'archiphoneme' introduced by Jakobson (1929: 8ff), according to which, for example, the opposition of voicing linking Russian *p* and *b* is neutralized except before vowels and sonorants (the latter taken to include *v*), so that in these positions neither consonant occurs, but rather the archiphoneme *P*, which possesses all the features common to both *p* and *b*. Neutralization itself is a phonological phenomenon but often has morphological consequences, as in Trubetzkoy's example above, where *rib-* and *riP-* are phonologically distinct but morphologically identical. Martinet (1936: 56) takes the term 'alternation' to in-

[5] Kats (1939) uses Trubetzkoy's morphophonemic framework in describing a dialect of Dutch.

clude such cases and stresses that they must be distinguished from those where neutralization is without morphological consequence.

These ideas were widely discussed in the Prague Linguistics Circle and elsewhere. The resulting literature is considerable and cannot be discussed in this survey; we turn instead to linguistic studies across the Atlantic.

Boas' early interest in the methodological problems of over- and under-differentiation in the perception of foreign speech sounds, as reflected in his *On alternating sounds* (1889) should, and in fact may have led him to the phonemic principle. But the lesson he drew from this study was that earlier practice in transcription had been largely faulty, and that accurate phonetic transcription was the proper departure point for scientific study of America's native languages. His fear of phonetic inaccuracy is reflected in the very narrow transcription found in most of his grammars and in many works produced under his guidance. Serious study would be required to distinguish the cases of subphonemic variation from those of automatic alternation in the material he presents. The discrepancy between Boas' theory and practice may be comparable to that of Bloomfield and Sapir, who taught the ideas of phonemics but usually transcribed morphophonemically.

In his *Handbook of American Indian languages* (1911) Boas speaks of "laws of euphony" (290ff, 431ff), which govern the combination of sounds. Sound shifts, sound correspondences between dialects, alternations and (probably) subphonemic variation are all presented together here. 'Laws of euphony' are equivalent to 'phonetic laws' (566ff) or 'phonetic changes' (844ff).

If Boas fails to distinguish variation of allophones, he *does* clearly separate nonautomatic alternation from other types:

> Thus the compound of the stem *qās-* TO WALK, and the suffix *-x$^{\epsilon}$îd* TO BEGIN, would result in the phonetically admissable combination *qā'sx$^{\cdot\epsilon}$îd*, which we find in a word like *$^{\epsilon}$wālasx$^{\cdot}$ĕ'* LYNX. Nevertheless, the resulting form is *qās'$^{\epsilon}$îd*. The elision of the initial sound of the suffix is therefore not entirely due to phonetic causes, and must be treated in detail in a discussion of the suffixes" (1911: 433).
>
> "Only the first two of these laws are purely phonetic, while the others are restricted to certain grammatical forms" (1911: 566).

From a passage in his Tlingit study (1917: 20) we can infer that Boas makes another distinction in changes depending on whether or not they correspond to a distinction in meaning:

"The significance of the stem is modified by internal changes, which affect pitch and quality of the stem-vowel, but which in some cases extend farther, certain consonants being either added or omitted."

The expression 'external change' will be clarified below in the discussion of Sapir.

One technique seen in this last work is entirely comparable to Bloomfield's use of morphophonemic symbols: in his notation Boas distinguishes two sounds that are phonetically identical "because the behavior of the two sounds is quite different" with respect to alternation (10).

His late *Dakota Grammar* and the posthumous *Kwakiutl Grammar* incorporate the phonemic principle (e.g. 1947: 8) and give a lucid handling of alternations (1941: 6–22; 1947: 211–220) but make no theoretical contribution on the subject and in any case fall outside the period under discussion.

The lack of a general treatise on alternations from Boas is in part compensated by the book *Language* (1921) written by his student Edward Sapir. This also shows deficiencies, however. A certain looseness of terminology pervades the book, and the 'method of postulates' is certainly foreign to Sapir. But it is not, nor was it intended to be, a technical work on the scale of Bloomfield's *Language*, so that such looseness may or may not be a reflection of Sapir's theory itself.

Nevertheless, obviously following Boas' teachings, Sapir clearly opposes phonetic 'laws' or 'processes', which govern 'purely external, mechanical' modification of morphological elements and have 'no functional significance' to those 'grammatical processes' which constitute or produce 'internal modification' (1921: 61ff). This passage should make clear that Boas' 'internal change' is not confined to *within* words or morphemes, but may include changes at morpheme boundaries. Sapir shows a fine appreciation for the subtle interaction of phonetic and grammatical processes, and for how the former, through analogy and sound change, can be replaced by the latter (1921: 187–191).

In his early *Takelma* (1922: 24, 59) Sapir notes that both phonetic and internal changes may result in homonyms. In practice he works with base forms and rules of combination. But the problem with Sapir is precisely that we can see so *little* of his practice. His death in 1938 was early, and his late and posthumous works give no further insight into his approach to alternations. Early American linguistics suffered from its unfamiliarity with the Kazan school's theory of alternations,

and no American provided a discussion of comparable value before Leonard Bloomfield.

The latter linguist's *An introduction to the study of language* (1914) clearly presents the phonemic principle (54):

"Each language, or, better, each dialect distinguishes only a limited number of places of articulation, and in each place only a limited number of manners of articulation, and any variations from these are never significant."

Such variations, termed 'automatic sound-variation' (55), are confused with the automatic alternation of phonemes (151). No reference is made to the works of Saussure or Baudouin, although numerous other linguists are cited.

Bloomfield's grammar of Tagalog presents a striking foreshadowing of his later theoretical views (1917: 332):

"Other modifications besides affixation, 'doubling', and reduplication affecting the meaning are *shifting of the accent* toward the end of the word, and the use of *secondary accents.*

Modifications not affecting the meaning, but merely accompanying those already named, are *sound-variation* and *retraction of the accent* toward the beginning of the word.

The same morphologic elements may be variously distributed; it is most convenient and corresponds most nearly to the speech-feeling to describe these differences as though they were due to different successions in which the modifications are applied: sumù-sálat is súlat reduplicated and with the infix -um-; but (nag-)tùtu-mirà is tirà with infix -um-, then reduplicated (plus prefix nag-).

The part of a word to which a modification is (in this sense) said to be added will be called the *underlying word* (or phrase)..."

Bloomfield's notions of 'ordered rule' and 'underlying' are seen here, but one must note that the latter term is used as in his *Language*, as discussed below. The subsequent passages contain a full description of the phonemic structure of morphemes (§ 333) and the distribution of alternations (§ 334) together with the account of the alternations themselves. He clearly works within a general classification of alternations, but does not present this explicitly.

Nor can one find such a classification in his *Notes on the Fox language* (1925), which describes alternations within the framework of Sanskrit grammar. Excellent in technique, the work is theoretically noncommittal in comparison with the earlier Tagalog study. It is important, however, for its remarks on productivity, which are reflected in the description itself (1925: § 13):

"When morphologic elements come together within a word, they are subject to variations which differ from those of external sandhi. There is great irregularity, because words are kept which embody some old law of internal combination that is no longer active and is violated in newer formations. It is therefore important to distinguish between habits of combination which are carried out in the actual language and mere traces of older habits (irregularities)."

A set of postulates for the science of language (1926) finally provides a general discussion of alternations. Bloomfield's classification includes the following distinctions:

(1) The alternation of a phoneme "with another phoneme according to accompanying phonemes" (§ 39) is *phonetic*, as opposed to the *formal* alternation of a form in a construction "with another form according to accompanying forms" (§ 41).

(2) Formal alternations are *automatic* if "determined by the phonemes of the accompanying forms" (§ 45) and otherwise are *grammatical* (§ 47).

(3) Members of a grammatically determined alternation are *regular* if they predominate in number and otherwise are *irregular* (§ 48).

The influence of Sanskrit grammar is to be seen in Bloomfield's examples, but one also notes with interest his citation of Baudouin's *Attempt*.

Language (1933) shows the development of its author's thoughts on alternations since the *Postulates*. In § 13.4 two terms are defined differently than in the earlier work:

(1) An alternation is *phonetic* if the differences between its members "can be described in terms of phonetic modification" and otherwise is *suppletive* (cf. § 13.7; 1926: § 49).

(2) An alternation is *regular* if the distribution of alternants "is regulated according to a linguistically recognizable characteristic of the accompanying forms".

Several terms are either clarified or introduced:

(3) An *underlying form*, equivalent to an *underlying word* (cf. § 13.9), is the free form in a derived secondary word (the latter being a word which contains, but is not identical to, a single free form), e.g. *boy* in *boyish*, *old maid* in *old-maidish*, *glass* in *glasses*, and *land* in *landed* (§ 13.3–4). 'Derivation' is taken here to include inflection.

(4) A *basis* (cf. § 13.7) or *basic form* is the member of an alternation that has the wider or widest 'range', i.e. that is least limited in its distribution; other members of the alternation are characterized in terms of modification of this form (§ 10.4).

The reader will note that the current general use of 'underlying' and 'basic' differs from that found here. This may have resulted from a shift of emphasis in reading passages where Bloomfield speaks of 'setting up' an 'artificial underlying' or a 'theoretical basic' form (§ 13.9). The first adjectives in these expressions have been given a nonrestrictive reading.

but this veers from Bloomfield's intent, for he clearly means to oppose *these* basic or underlying forms to those that are pronounced without phonetic modification from the shape of their morphologic representation.

Parallel to the above distinction is his emphasis that the order of statements specifying successive modifications of morphologic elements to arrive at pronounced forms is 'purely descriptive', and that the speaker does not in fact pass through such successive steps (§ 13.6):

"The terms 'before, after, first, then,' and so on, in such statements, tell the *descriptive order*. The actual sequence of constituents, and their structural order (§ 13.3) are a part of the language, but the descriptive order of grammatical features is a fiction and results simply from our method of describing the forms; it goes without saying, for instance, that the speaker who says *knives*, does not 'first' replace [f] by [v] and 'then' add [-z], but merely utters a form (*knives*) which in certain features differs from a certain other form (namely, *knife*)."

It is important to note that it is simplicity of description that justifies the use of such artificial devices (§ 13.9):

"We have seen that when forms are partially similar, there may be a question as to which one we had better take as the underlying form, and that the structure of the language may decide this question for us, since, taking it one way, we get an unduly complicated description, and, taking it the other way, a relatively simple one. This same consideration often leads us to *set up* an artificial underlying form."

An equally fundamental point in the above passage is that the use of theoretical forms and descriptive order was not *arbitrary* for Bloomfield. But he was suspicious of such devices and did not fully appreciate their value, kept close to units he considered to be 'actual', and made no use of such terms as 'morphophonemics' and 'morphophoneme'.

Both terms, however, are highlighted in his *Menomini Morphophonemics* (1939), where he defines 'morphophonemics' or 'internal sandhi' as the variation of morphologic elements as they enter into different combinations (§ 2); it is to be distinguished from 'morpholexical variation', which is irregular, yet still involves phonetic modification rather than suppletion (§ 3).

Bloomfield again speaks of 'theoretical basic forms' and 'ordered' rules, but the former may now be set up merely to bar application of a rule (§ 16), while the rules themselves are developed into a system of complexity not suggested in *Language*. The term 'morphophoneme' is applied to the units that make up the theoretical basic forms, but, uncharacteristically, no definition is provided for the unit.

In the best known paragraph of the paper, Bloomfield confronts the

parallels between historical and morphophonemic description but offers no explanation (§ 4):

"The process of description leads us to set up each morphological element in a theoretical *basic* form, and then to state the deviations from this basic form which appear when the element is combined with other elements. If one starts with the basic forms and applies our statements (§§ 10 and following) in the order in which we give them, one will arrive finally at forms of words as they are actually spoken. Our basic forms are not ancient forms, say of the Proto-Algonquian parent language, and our statements of internal sandhi are not historical but descriptive, and appear in a purely *descriptive order*. However, our basic forms do bear some resemblance to those which would be set up for a description of Proto-Algonquian, some of our statements of alternation (namely, those in §§ 10 to 18) resemble those which would appear in a description of Proto-Algonquian, and the rest (§§ 19 and following), as to content and order, approximate the historical development from Proto-Algonquian to present-day Menomini.

The above passage shows again that the choice of theoretical basic forms is not *arbitrary*, for mention of the parallel would in that case make no sense.

A clear example of Bloomfield's technique is seen in § 13. The sound *n* alternates with *s* before certain palatal sounds. But some instances of *n* belong to no alternation; these are represented by the morphophoneme *N* in transcription to distinguish them from the others, to which the rule applies. This contrasts with his handling of essentially the same alternation in the *Notes on the Fox language* (§ 22), where the cases of nonalternating *n*, being relatively few, are simply listed.

Although it is a digression, one might pause here to wonder about the circumstances that attended Bloomfield's decision to submit the *Menomini Morphophonemics* as his invited contribution to a memorial issue of *Travaux du Cercle linguistique de Prague* for Trubetzkoy, who died in 1938. The two scholars may have met in 1913 in Leipzig, and each must have followed the work of the other. Yet Trubetzkoy's only mention of Bloomfield is a brief reference to the *Notes* in his *Grundzüge der Phonologie;* Bloomfield does no more than acknowledge the existence of *TCLP* in his *Language*. He saw his main task in the clarification of the very neogrammarian principles that Trubetzkoy considered a stumbling block to progress in linguistic theory. Bloomfield had viewed morphophonemics with suspicion but revealed remarkable ideas on the subject in this volume.

Bloomfield's approach may have been presented as an alternative to Trubetzkoy's, or it may derive from and constitute a final recognition of the latter's work. The actual relationship here is unclear. And whatever further development Bloomfield's ideas may have taken is un-

known to us, for he wrote no more on the subject before his death in 1949.

The posthumously published *Eastern Ojibwa* and *The Menomini Language* continue to practice the technique of morphophonemics, and the second work is unquestionably Bloomfield's finest piece of grammatical writing. But they pull away from the theoretical questions raised in the short paper and speak only of 'special symbols' rather than 'morphophonemes' (1962: 80).

From this survey it is evident that a coherent theory of alternations could only come after the distinction of sounds as against phonemes, on the one hand, and phonemes as against morphophonemes, on the other. Great progress came early, especially in the unjustly neglected works of Baudouin and Kruszewski, but this was largely overshadowed by the dominant concern with historical studies in linguistics. By the end of the period, the two outstanding figures that had emerged were Trubetzkoy and Bloomfield. It must be emphasized [6] that the theories developed by them were shaped largely by the respective languages to which they were applied: Slavic languages characteristically exhibit alternations arising from neutralization, while the Algonquian languages are distinguished by processes of internal combination involving truncation and epenthesis.

Bloomfield's greatest merit lies in the scope and rigor of his theory, with its subtle distinctions and carefully constructed terminology. His ordered rules handle phenomena outside the limits of Trubetzkoy's theory, and the use of 'special symbols' or morphophonemic diacritics is an important device that has yet to be investigated adequately.

Trubetzkoy, however, gives a unified view of the phenomena Bloomfield treats separately, and thus surpasses the latter in his conception of morphohonemics as "the study of the morphological utilization of the phonological means of a language". Likewise, his recognition of distinctive features allows him to show parallelisms that escape Bloomfield's treatment.

Neither linguist makes the distinction reflected in the later term 'allomorph'; Bloomfield shows this in his inconsistent (apparently, technical and nontechnical) use of the term 'form' (cf. 1933: 161, 164). A

[6] I am indebted to R.A. Hall, Jr. for this observation.

more serious error [7], however, is Bloomfield's failure consistently to distinguish 'regular' from 'productive' alternations.

Both linguists mirror the nonlinguistic issues of their times. Trubetzkoy frames his definitions in terms of 'consciousness' and 'ideas', while Bloomfield is preoccupied with separating 'real' or 'actual' entities from those he considers 'fictitious' or 'theoretical'. Unprejudiced reading, however, shows that this does not distract in substance from the work of either.

It is not appropriate to ask which linguist contributed more to the understanding of alternations. Their work was complementary; together, it formed a sound basis for subsequent investigation.

Many linguists feel that our science is cumulative, in that one need only follow current studies, or even studies within a single movement, in order to keep abreast of what can truthfully or thoughtfully be said of language. This view is incorrect and always has been. The study of older works may belong to the 'history of linguistics', but this distinction is artificial, for each successive current stage of linguistics is only the most recent part of its history.

Genuine changes of methodology and theory within linguistics are easier to deal with than questions involving collective social prejudices or fashions. These come from outside and cannot be settled or even discussed in terms shared by all practicing linguists; attitudes often are simply presupposed and may completely color or even give rise to a movement in linguistics. Thus, influences on western linguistics have included rationalism, mechanism, and the nineteenth century preoccupation with organic development; non-western traditions may derive from religious assumptions about language, as the western tradition once did.

Even with regard to matters of pure fact, we cannot lay complete trust in our contemporaries; for it is a *theory* that dictates which facts are interesting and essential for presentation, and knowledge that has no bearing on a theory, or even speaks against it, may be omitted from discussion and ultimately forgotten, so that a theory cannot be replaced by a more adequate one until the most basic facts are reassembled.

Since it cannot reasonably be hoped that linguists will free themselves from such difficulties, one's best defence is to read widely from all periods and points of view.

[7] See Jakobson (1948:167).

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Appendix. Kruszewski's classification of alternations. [8]

First category, e.g. ʌ‖*o in Russian* vʌdá‖vódu *(1881a: 8–9).*

Let x signify the conditions in which the sound s appears, and x_1 the conditions in which s is impossible and must be changed into another. This sound, being very close to the first, we designate with s_1. We obtain the following distinguishing properties of alternations [9] in the first category.

(1) *The direct determinacy and presence of the alternations's cause.* In each alternation of any sounds $s \| s_1$, we find the alternation of some causes or conditions $x \| x_1$.

(2) *General occurrence of the alternation.* The alternation $s \| s_1$ occurs everywhere, i.e. under the indicated conditions the sounds alternate *in all words* without any regard to the morphological categories to which these words belong.

(3) *The necessity of the alternation.* The alternation $s \| s_1$ under conditions $x \| x_1$ is necessary and allows absolutely no exceptions, i.e. the appearance of s with x_1 or s_1 with x is impossible.

[8] My translation.
[9] Russ. *čeredovanie.*

(4) *The close anthropophonic* [10] *kinship of the alternating sounds.* The alternating sounds $s\|s_1$ are closely related anthropophonically; or more exactly, they constitute variants [11] of one and the same sound.

The first three of these properties are decisive for the determination that an alternation belongs to the first category; the fourth property is of less deciding value: in an alternation of the first category, i.e. $s\|s_1$, these two sounds, s and s_1 must be anthropophonically close; in alternations of the second and third categories *they may be* anthropophonically close.

One of the first three properties is *sufficient* for determination, because *all four properties are inseparable*; in other words: all four properties are at once peculiar to each alternation of the first category.

Since the sounds s and s_1 here always constitute variants of a single sound, we may call them *divergents* [12]; we may call sound s, being primary in relation to sound s_1, the *basic divergent,* and sound s_1, the *derived divergent.*

Second category, e.g. u\|o in suxoj\|soxnut' (1881a:11–12).

In the first category of alternation we designated the alternating sounds with the signs $s\|s_1$ with the object of indicating their close anthropophonic kinship. In the second category the alternating sounds are not so closely related; they are no longer variants of one and the same sound, but different sounds. We therefore designate them: $s\|z$.

Distinguishing properties of alternations in the second category:

(1) *Impossibility of the direct determination of the causes (conditions) of the alternation and the possibility of their absence in separate cases.* In an alternation of sounds $s\|z$ the causes or conditions $x\|x_1$ may be found only by means of historical investigation. Furthermore, words exhibiting the alternation of sounds $s\|z$ may not contain that which historical investigation would reveal to us as a cause.

(2) *The alternation's lack of necessity.* The appearance of the sound s under conditions x_1 and of z under conditions x is possible. (The property has been formulated approximately: strictly, under conditions x_1 not the sound s but s_1 is possible... Thus, strictly speaking, we have here not the *correlation* of sounds but their *divergence.* From this it is evident that exceptions to a *rule* of correlation are subordinate to a *law* of divergence, not allowing exceptions.)

(3) *Lack of general distribution.* The alternation of sounds $s\|z$ is partly tied to certain morphological categories (we designate these: $f\|f_1$).

(4) *More remote anthropophonic kinship of the alternating sounds.* The sounds $s\|z$ most often are in more remote anthropophonic kinship with each other.

Of these four properties, for the definition of the alternation the first two are *decisive,* the third less decisive, and the fourth still less so. The first two properties are *inseparable.*

[10] Russ. *antropofoničeskij*; read 'phonetic'.
[11] Russ. *vidoizmenenie.*
[12] Russ. *divergent*; Kruszewski notes that this term was invented by Baudouin.

Third category, e.g. o‖a in stroit' ‖(za)straivat' (1881a: 14)

This alternation has distinguishing properties *1*, *2* and *4* in common with alternations of the second category; hence, it may be identified only by its third and fifth properties, which may be thus formulated:

(3) The alternation of sounds $s‖z$ is bound with the alternation of morphological categories $f‖f_1$.

(5) The appearance of sound s in form f_1 or of sound z in form f is impossible.

We can call alternating sounds of the second and third categories *correlatives*[13]: sound s is the *basic correlative*, and sound z the *derived correlative*.

Addendum

Also see the articles by E. Stankiewicz in *Wiener slavistisches Jahrbuch* 11 (1964) and by H. Schogt in *La Linguistique* 2 (1966). The work of G. Trager and M. Swadesh fits best in a discussion of post-Bloomfieldian linguistics and therefore was not dealt with here.

[13] Russ. *korreljativ*.