

PHONOLOGICAL ASPECTS OF INTERNAL VOWEL ALTERNATION IN ENGLISH

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ABSTRACT

This paper examines Internal Vowel Alternation (IVA) in Noun Plurals (e.g. 'tooth/teeth') and Past Tense formation (e.g. 'sing/sang') according to the sign-oriented theory of the Columbia School (CS) in general and the theory of Phonology as Human Behavior (PHB) in particular. Today, these IVA forms are considered to be "irregular", and are vestiges of former prevalent and productive processes in Old English: i.e. *ablaut* gradation in verbs and *i-umlaut* in nouns, which: (a) display a fundamental morphophonemic regularity, (b) are both systematic and iconic, and (c) distinguish between nominal versus verbal vowel alternation systems, thus facilitating their identification, acquisition and retention.

Keywords: phonology, vowel alternations, irregular Noun Plurals, irregular Past Tense forms

1. INTRODUCTION

In this paper we will first analyze the system of *internal vowel alternation* (IVA) (the morphophonemic changes in both verbal and nominal forms in English) in terms of its phonetic representation. Today, these IVA forms are commonly referred to as "irregular" Past Tense verb forms or "irregular" Noun Plurals, although in Old English, IVA was a prevalent and productive process in both: *i-umlaut* in the nominal system (e.g., *goose-geese*, *mouse-mice*) and *ablaut* gradation in the verbal system (e.g., *sing-sang*, *take-took*). Secondly, we will show that, as in Old English, IVA constitutes a system that may still be classified phonologically into subsystems in Modern English. In this paper we will examine and classify the IVA system and its various subsystems according to sign-oriented linguistic theory in general (e.g., Saussure [12, 13]); and the Columbia School (CS) in particular (e.g., Diver [5, 8]; Tobin [16, 17, 18]) including the theory *Phonology as Human Behavior* (PHB) (e.g., Diver [6, 7]; Davis [3, 4]; Tobin [19, 23]), which is the phonological aspect of CS theory. The goal of this paper is to uncover the underlying phonological system of the nominal and verbal IVA forms.

2. THEORY AND METHODOLOGY

The sign-oriented or semiotic approach to language of the CS defines language in the following way:

Language: A system of systems composed of various sub-systems (revolving around the notion of the linguistic sign) which are organized internally and systematically related to each other and used by human beings to communicate. (Tobin [16], p.47)

Therefore, the linguistic sign should be the basic theoretical and methodological unit of linguistic analysis that underlies the semiotic approach as originally developed by Ferdinand de Saussure, who is the 'father' of modern linguistics. The linguistic sign, presented in Saussure [13], reflects:

... a unit where the sound (or signal) in the form of concrete morphological forms of more abstract zero morphology or word order (the *signifiant* or 'signifier') is inseparably united with a concept in the form of an invariant meaning (the *signifié* or 'signified'). (Tobin [16], p. 40-41)

Following the sign-oriented CS theory, language may be viewed as a symbolic tool which structure is shaped both by its communicative function and by the characteristics of its users (Tobin [21, 22, 23]). CS theory – including PHB – explains the behavioral and cognitive characteristics of human beings that are reflected in the creation of sound systems in language. The phonological systems of language are both complex and diverse on the one hand (the communication factor), yet sufficiently economical to fulfill the communicative needs of speakers, on the other hand (the human factor): i.e. sound systems are exploited in an efficient way and are acquired naturally.

The basic axiom underlying CS/PHB is the synergetic principle that language represents the compromise resulting from the constant struggle between the communication factor (our striving for maximal communication) and the human factor (our propensity to exert minimal effort) (Tobin [19]). The theory explains how the sound system of language allows for the creation of successful communication in an efficient way and provides as Tobin [20] puts it "an explanation for the distribution within the speech signal: i.e. it tells us why the distribution of phonemes within a language is not random but motivated"(p.64).

In this study we present a CS/PHB analysis of both the IVA nominal Plural formations and verbal Past Tense systems in Old and Modern English and demonstrate and explain why the IVA Plural nominal and Past Tense systems as opposed to other systems are called "regular" or "irregular" in Modern English. We maintain that there are two different phonological processes of IVA: (a) the *fronting process* of various degrees for vowels in nominal Plural formation and (b) the *backing process* of various degrees for vowels in verbal Past Tense formation. Therefore, it is still possible to distinguish phonologically between the IVA for nouns versus verbs in Modern English. Moreover, these opposed phonological processes not only distinguish between the nominal versus verbal vowel alternation systems but they are also polaric and iconic, thus making them easier to identify. There is an iconic *fronting process* to represent the addition of additional entities in the Plural (metaphorical 'movement forward') for nouns opposed to a *backing process* to represent the formation of Present to Past Tense (a metaphorical movement 'back in time').

3. ANALYSIS

Our analysis reveals that the morphophonemic system of the IVA in nominal Plural formation and in the verbal Past Tense formation in English is composed of two phonologically polaric and iconic processes that distinguish between the two systems:

(1) Today, the remnants of the Plural IVA declension system of nouns of Old English comprise only seven nouns in Modern English which undergo the fronting process from singular to plural declension. In this system there are three different degrees of the fronting process: *man-men, woman-women* ([æ] → [e]); *foot-feet, tooth-teeth, goose-geese* ([ʊ] → [i]); *mouse-mice, louse-lice* ([au] → [ai]). However, a diachronic study of the IVA nominal Plural formation reveals an additional corpus of nominal IVA forms that in Modern English follow the "regular" rules of adding the suffix [-s/-es], but originally followed the same *fronting process* of *i-umlaut* in Old English: e.g. *brōc-brēc* (OE)/*brēche* (ME) (breeches, trousers, pants), *bōc-bēc* (book), *hōnd-hēnd* (hand), *fēōnd-fīēnd/fynd* (foe), *frēōnd-frīēnd/frynd* (friend). Thus, our study of the IVA nominal Plural formation reveals forms in Old English and other Germanic languages as well, thus supporting the non-arbitrary character of the phonological system in nominal IVA forms.

(2) In the IVA verbal forms, as opposed to the nominal IVA forms, we find the opposite polaric iconic phonological process: namely, the morphophonemic *backing process* for Past Tense conjugation implying a metaphorical 'movement backwards' in time. The phonological *backing process* also appears in various

degrees: e.g. in verbs like: *slink, wring, swing, sting, strike, sling, cling, fling, win, hang*, the IVA is from [ɪ], [aɪ], [æ] to [ʌ]; in verbs like *find, grind, bind, wind*, we observe another kind of degree of the backing process, i.e., from [aɪ] to [aʊ]; and in the verbs: *speak, weave, steal, heave, freeze, yield*, the IVA is from [iɪ] to [əʊ]. These similar degrees of the modern IVA backing process can also be found in the IVA verbs of Old English originally called 'strong' verbs, i.e., verbs that were formed by *ablaut gradation* in Old English, as well.

It is worth noting, however, that there is also a small number of IVA verbal forms like: '*run, fall, bite, slide, come, lie, hold*', that did not preserve this *backing process* in Modern English, but these cases comprise only about 10 percent of all the contemporary IVA verbs. Moreover, it is also worth pointing out the fact that the same 10 percent of Modern English non-backing IVA forms followed the *backing process* in Old English. Furthermore, in Modern English there are some additional IVA verbs like: '*ring*'-'rang/rung', '*dig*'-'dug', '*reeve*'-'rove', '*stave*'-'stove', '*spit*'-'spat', that historically did not undergo vowel gradation (i.e. that were originally "weak—ed" verbs) but became IVA verbs over time. It should be noted, however, that these "new" IVA verbs also conform to the phonological *backing process* of IVA found both in Modern and Old English. Therefore, the vast majority (~ 90%) of IVA verbs appear to conform to a fixed phonological system just like all (100%) the IVA Noun Plurals. Thus, both the nominal and verbal IVA systems should not be viewed merely as exceptions to the so-called regular system, but rather as independent and full-fledged systems in their own right.

4. THE ENGLISH NOMINAL VERSUS VERBAL SYSTEMS FOLLOWING CS/PHB THEORY

There are at least five different parallel systems of Plural formation in nouns and Past Tense formation in verbs in Old English that still are found in Modern English as shown in Even-Simkin & Tobin [9]: 1. Suppletion: ('person/people' in nouns, 'go/went' in verbs); 2. "Regular": lexical item + apical suffix: singular-plural formation in nouns/(-s/-es) and past tense formation/(-ed); 3. -(r)en suffixation in nouns: ('ox/oxen/' child/children'); 4. Syncretism: ('fish/fish' in nouns 'put/put' in verbs); and 5. IVA.

Each of these systems can be described according to the synergetic principle underlying CS/PHB that language represents the compromise resulting from the constant struggle between the communication factor (our striving for maximal communication) and the human factor (our propensity to exert minimal effort).

1. Suppletion - two completely different lexical items for: singular/plural inflection in nouns, like in 'person' (sg.)/'people' (pl.), and in past/non-past conjugation in verbs like in 'go' (non-past)/'went' (past). Following CS/PHB, the human factor in this group is "the worst" because of *memory limitations*, since two separate lexical items have to be learned instead of one for the same entity or concept. However, as far as the lexical items are maximally distinct, the communication factor is "the best", i.e. we get two entirely different and distinct words that cannot be misunderstood and confused.

It is worth pointing out further that in Modern English there is also the plural form of 'person' (sg.) which is: 'persons' (pl.), which refers specifically to individuals in a group and not to the group itself like in 'person' (sg.)/'people' (pl.). There is also the plural form 'peoples' as in the 'peoples of Africa' referring to a plurality of groups rather than separate individuals. These examples prove the efficiency of the most commonly used subsystem of lexical item + apical suffix which is customarily called: the "regular" plural in nouns which in this case merges with the system of Suppletion to create a more refined semantic distinction in plurality.

2. Lexical Item + Apical Suffix: The adding of apical suffixes: '-s/es', in nouns like 'cat' (sg.)/'cats' (pl.) and '-d/ed' in verbs, like 'walk' (non-past)/'walked' (past). This process of lexical item + apical suffix has become "the regular rule", i.e., the dominant and most prevalent system of nominal Plural and Past Tense formation in English. The efficiency of this system may be explained by CS/PHB theory in the following way: (a) the human factor is "the best" due to the addition of an apical suffix, the apex being the easiest active articulator to control (Diver [6], Tobin [19]), and (b) the communication factor is "the best" because the lexical item appears first preceding the grammatical apical suffix. The burden of communication is the highest in initial position where the lexical item appears while the easiest to produce apical suffix appears in word final position, where the least effort is required, or as it was shown in Tobin [19] "[i]t is in final position where the burden of communication is at the lowest and the least amount of effort needs to be expended in the synergetic struggle for maximum communication with minimal effort" (p.161). Therefore, it is not by chance that the system of lexical item + apical suffix has not only survived but has become the dominant and most prevalent system. One should also note that the phonetic rendering of the apical suffixes /-s,-z/ and/or /-t,-d/ conforms to the voicing value of the final consonant it collocates with, thus facilitating fluent pronunciation, and the syllable suffixes/-ɪz/-ɪd/ occur when the final

apical consonant of the singular lexical item might be misconstrued as an apical Plural or Past Tense marker.

3. Adding of the suffix '-(r)en' in nouns like 'ox' (sg.)/'oxen' (pl.), 'child' (sg.)/'children' (pl.) and adding the suffix '-en' to mark the infinitive forms of the verbs in Old English, as in German and other Germanic languages, that has not been retained in Modern English, where we generally have 'to' or zero (Ø) as the infinitive marker. We also have a minimal pair: historical 'brethren' (used for 'spiritual brothers') versus modern 'brothers' ('used for biological brothers'). In addition, in a metaphorical anthropomorphic analogy, we can refer to stupid men as 'stupid oxes' as opposed to 'oxen', thus, once again, merging two historical systems to mark a more refined semantic distinction between figurative and literal.

4. Syncretism - the singular/plural forms in nouns, e.g. 'sheep' (sg.) = 'sheep' (pl.), 'deer' (sg.) = 'deer' (pl.), and past/non-past forms in verbs, e.g. 'fit' (non-past) = 'fit' (past), 'put' (non-past) = 'put' (past) are the same. The (+zero/Ø) suffix implies no effort, so the human factor is "the best", however, the communication factor is "the worst", because syncretism does not provide us with any discernible opposition: i.e. the least efficient way to distinguish between plural versus singular and past versus non-past forms. Here, once again, we can attest to a new opposition (like in nominal Suppletion) with the system of lexical item + apical suffix to distinguish between the mass noun 'money' versus different 'monies' (in the sense of kinds of currencies) and/or transitive versus intransitive uses of verbs to create different messages: e.g. ('my suit fit yesterday' versus 'the tailor fitted my suit yesterday').

5. The IVA system - In this system the human factor and communication factors are not optimal and are the least efficient. First, the IVA opposition occurs in vowels which provide less clear-cut oppositions than consonants (Tobin [19], Even-Simkin & Tobin [9]). Secondly, this IVA opposition appears in the least optimal word medial position as opposed to initially or finally which are more salient, readily discernible and remembered, as discussed e.g. in Diver [7], Tobin [23], Even-Simkin & Tobin [9]. However, most IVA forms are monosyllabic, thus, exploiting word structure to facilitate the perception of the least optimal IVA system of oppositions. It is worth pointing out again, that there are also certain verbs like 'shine' (non-past) → 'shone' (past) or 'shined' (past), which also have converged with the most efficient and predominant system of lexical item + apical suffix, thus, providing us once more with a similar subtle semantic distinction: e.g., 'The sun shone/shined yesterday' but only 'I shined/*shone my shoes yesterday' or 'we dove/dived in the pool yesterday but

only 'I skydived/*skydove ten years ago'. Furthermore, in addition, in a metaphorical anthropomorphic analogy, we can refer to silly girls as 'silly geese' as opposed to 'geese', or, as documented in a cartoon: 'are you men or mouses?' as opposed to 'mice', and 'they are dirty louses' as opposed to 'lice', thus, once again, merging two historical systems to mark a more refined semantic distinction between figurative versus literal.

Further support for the dominance of the system of lexical item + apical suffix comes from experimental first language acquisition data: i.e., adding the suffix -s/-es to nouns and -d/-ed to verbs in Plural nominal and Past Tense verbal formations of lexical and nonsense items by children (Berko [1] and Marchman [10]). As we have previously stated, according to CS/PHB theory, the system of lexical item + apical suffix is the most commonly used one because it is the most efficient of the five systems from the perspective of the synergetic mini-max principle representing the compromise in achieving maximal communication with minimal effort. Thus, in Modern English the IVA (and the other so-called irregular systems) "are now acquired lexically for frequently used lexical [nominal and verbal] items rather than as grammatical systems" (Tobin [20], p.73) and, thus, have remained for very important and quotidian lexical nouns and verbs, whereas, in Old English the IVA and other systems were more prevalent, productive and commonly used systems.

5. CONCLUSION

We can now answer the question: why do we view IVA as a full-fledged classification system? First, the IVA variations appear to be non-random. Even though this classification system has changed over time, it has overwhelmingly retained and maintained the polaric and iconic phonological processes of *fronting* for nominal pluralization versus *backing* for the Past Tense formation of both historical 'strong' verbs as well as for historical 'weak'—ed verbs that have entered the IVA system. Thus, both phonological processes: of opposed *fronting* versus *backing* attest to a consistent morphophonemic regularity reflecting and representing two diverse syntactic systems in English: verbal and nominal. As Stemberger [15] claims: "phonology affects syntax, both in grammar (e.g., Rice & Svenonius [11]; Broadwell [2]) and in language acquisition (Stemberger & Bernhardt [14], p.19). Therefore, it is not surprising that in Modern English as well as in Old English, the IVA process preserved its phonological features as a classification system for both lexical and grammatical nominal and verbal systems.

6. REFERENCES

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