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ABLAUT ALTERNATIONS IN ENGLISH AND SERBIAN ADJECTIVE DERIVATION

Abstract: This paper deals with ablaut in adjective derivation; it compares and contrasts English and Serbian examples with ablaut alternations. It also attempts to discover the ablaut type occurring in such examples as well as the frequency with which it appears, and also to confirm if there are certain rules according to which such vowel alternations occur. Another point to be established by this paper is to what extent there is a correlation between primary stress shift and derivational ablaut, which affixes cause the stress shift and in which circumstances. The research was conducted using a corpus of adjectives and their formative roots in both English and Serbian; the corpus was composed of at least 150 examples from both languages, collected using lexicographical studies dealing with adjective derivation from nouns and verbs and using a number of different derivational suffixes (for example, *-ous* and *-ive* (English), *-an* and *-iv* (Serbian)). Examples include the pairs *bile* > *bilious* (English) and *hramati* > *hrom* (Serbian). The results are hoped to showcase the contrast between the English and Serbian languages, as well as their deviation concerning this process as compared to their mutual ancestor, the Proto-Indo-European language.

Keywords: ablaut alternations, adjective derivation, stress shift, derivational suffixes, English, Serbian, corpus-based research.

1. Introduction

The purpose of this research paper is to provide insight into the phenomenon of ablaut from a contrastive perspective between English and Serbian. According to the Routledge Dictionary of Language and Linguistics, ablaut, which is also referred to as *apophony* and *vowel gradation*, refers to a “systematic morphophonemic alternation of certain vowels in etymologically related words in Indo-European languages” (Bussmann, 1996, p. 3). Two types of ablaut may be distinguished: ‘qualitative ablaut,’ which pertains to a change from *e* to *o*, and ‘quantitative ablaut,’ which constitutes cases whereby “an alternation of the short vowels mentioned (full grade) with the respective long vowels (lengthened grade) or an elimination of the short vowels (zero grade) occurs” (Bussmann, 1996, p. 3).

Historically speaking, ablaut, in its derivational form, usually “signaled change from one word-class to another; it also regularly accompanied paradigmatic change” in Germanic, as well as in the classical languages (Minkova & Stockwell, 2009, pp. 146-147). In practice, this meant the function of ablaut was also “to mark person, number, and tense of a large class of verbs” we recognize today as irregular verbs (Minkova & Stockwell, 2009, p. 147). In particular languages, ablaut is known to co-occur with different forms of affixation, as evidenced by the following examples (Bauer, 1988, pp. 27-28):

- 1) a. Dutch: *bijten* ‘bite’ > *beet* ‘bit’ > *gebeten* ‘bitten’
- b. Icelandic: *ber* ‘I carry’ > *bar* ‘I carried’ > *bor-inn* ‘carried’.

Aside from inflection, ablaut was to an extent also present in derivation, as attested by the subsequent example (Beekes, 2011, p. 101):

- 2) a. Greek: N. nom. sg. *πατήρ* *patér* ‘father’ > ADJ. nom. sg. *εὐπάτωρ* *eu-pátōr* ‘of a noble father.’
- b. Greek: N. acc. sg. *πατέρα* *patéra* ‘father’ > ADJ. acc. sg. *εὐπάτορα* *eurátōra* ‘by a noble father.’
- c. Greek: N. dat. pl. *πατράσι* *patrási* ‘to fathers.’

This paper attempts to dig further into the phenomenon of ablaut alternations, which occur in adjective derivation in English and Serbian. The goal of the paper is to discover what types of vowel changes appear in a corpus of examples from both English and Serbian on the synchronic level, the frequency with which these changes occur, and whether there exist particular rules according to which these alternations appear. Another goal of the paper is to establish whether there is a correlation between primary stress shift and ablaut in derivation, which affixes are prone to cause the stress shift and in which circumstances. A corpus of adjectives and their formative roots in both English and Serbian was used in the research; the corpus was composed of at least 150 examples from both languages, collected using lexicographical studies dealing with adjective derivation from nouns and verbs and using a number of different derivational suffixes. The results were meant to showcase the potential contrast between the two languages, with the initial assumption that the English language, being a West Germanic language, would have preserved considerably more types of ablaut alternations, each with significantly more conspicuous instantiations of vowel mutation for derivational purposes, than Serbian.

2. Theoretical Framework and Previous Research

The linguistic branch that has been most consistently dealing with the language phenomenon of ablaut and perhaps more systematically than any other area of linguistic research is historical linguistics (Lehmann, 1992; Lass, 1997; Hock & Joseph, 2009). As a scientific study interested in the development of language or the changes languages may undergo through time, it is considered a diachronic approach

to language meant to define the stages of development in a particular language, the types and extent of language change from one stage to another and establish any potential relatedness among languages. Thus, the present study can be said to start from the basic findings of historical linguistics, as one temporal dimension, and to proceed on by employing the methodological tenets of descriptive synchronic linguistics, as another temporal dimension (Crystal, 2008).

Ablaut belongs to those “[...] phenomena [...] which have been extremely important for the history of the Indo-European languages [...]” (Beekes, 2011, p. 100). As a linguistic feature of vowel mutation in the root, or any other part of the word, for that matter (Cf. Clarckson, 2007, p. 71), by which meaning changes may be indicated, it is more frequently present in the grammatical change domain of languages such as the Indo-European group of languages, in particular the Germanic languages (Szemerényi, 1996, p. 72). Less frequently, vowel alternation pertains to derivation, as in Arabic (Heath, 2003) and other languages. In the case of Greek, as a representative of the Indo-European family, the following has been noticed:

The Indo-European process of morpheme-internal vowel gradation (Ablaut), e.g., e/o/Ø, etc., was widely used in Greek. What began as a phonological process was morphologized already in the pre-PIE period and yielded many distinctions in both nouns and verbs in Greek, for example, the distribution seen in the following forms built on the root *pet ‘fly’: pétomai ‘fly,’ potē ‘flight,’ and pterón ‘wing’; [...] (Brown & Ogilvie, 2009, p. 463).

As opposed to grammatical meaning alteration signalled by ablaut as in Eng. *ring* and *rang*, where the difference need not be indicated in spelling (Cf. Eng. pres. t. *read* and past t. *read*) lexical meaning alteration can seldom be based on vowel mutation only, if at all. Frequently, it is a joint operation of affixation and ablaut that mark derivational change, as in *bile* and *bilious*. It may be argued that Class I suffixes (Siegel, 1974) are supposed to cause stress shift and vowel mutation due to their role in lexical category change, as is often the case with **gradation**, a closely related morphological phenomenon of stress shift and vowel change. Spencer (2002) maintains that it may be problematic to represent ablaut vowel alternations “[...] in terms of the addition of an affix to a base [...]” and later in the text refers to a study by J. McCarthy based on “the classic item-and-arrangement analysis of Semitic”. However, ablaut may occur independently of any stress pattern change, as vouched by the previous example, where there is only one syllable in the root and therefore no potential for stress shifting. Moreover, such affixes need not cause ablaut, even with monosyllabic roots, as observed in many examples, such as *space* and *spacious*.

In Latin, prefixation may induce ablaut alterations, as with Lat. *cum-* + *damnāre* > *condemno* ‘I condemn’, which again may be construed as a case of vowel lenition, as a vowel /a/ is replaced for a closer one, such as /e/. This is even more conspicuous with examples such as Lat. *de-* + *cadere* ‘fall’ > *decido* ‘I fall’.

Thus, trying to establish which bases, both formally and semantically, are appropriate for ablaut alteration is another major pursuit set before this research paper. Although Indo-European languages may have “shifted away from ablaut”

(Clarckson, 2007, p. 72), it can be of interest to the morphology of contemporary languages to investigate ablaut as a morphological means of semantic change on the synchronic level.

2.1. Ablaut Alternations in English

The literature concerning ablaut occurrences in English features Katamba (1993), Aronoff, & Fudeman (2005), Denning, Kessler, & Leben (2007), Minkova, & Stockwell (2009), and Radford, Atkinson, Britain, Clahsen, & Spencer (2009).

According to certain authors, ablaut is considered “a moribund phenomenon in English today,” as the chances of a new word susceptible to it entering the English lexicon are very small (Katamba, 1993, p. 101). In other words, it is no longer productive, although there is a notable number of English words today which are affected by it (Katamba, 1993, p. 102). This is most evident in the group of so-called strong verbs; most of them were affected by ablaut in the Old English period (450-1100 AD) (Katamba, 1993, p. 102). Such inflected forms in English appear in the past tense and/or the past participle forms of strong verbs; Katamba classifies them into seven groups, as evidenced by the following examples:¹

- 3) a. *rise - rose - risen* (/aɪ/ - /əʊ/ - /ɪ/)
- b. *freeze - froze - frozen* (/i:/ - /əʊ/ - /əʊ/)
- c. *shrink - shrank - shrunk* (/ɪ/ - /æ/ - /ʌ/)
- d. *bear - bore - born* (/eə/ - /ɔ:/ - /ɔ:/)
- e. *give - gave - given* (/ɪ/ - /ei/ - /ɪ/)
- f. *know - knew - known* (/əʊ/ - /u:/ - /əʊ/)
- g. *stand - stood - stood* (/æ/ - /ʊ/ - /ʊ/)

In certain cases, ablaut may co-occur with suffixation, as evidenced by the past participles of the following: *give - gave - given*, and *write - wrote - written* (Aronoff & Fudeman, 2005, p. 235).

In Modern English, examples of ablaut could also be found in the lexical elements imported from Greek, the vowels of which did not undergo such changes as the Latin or Germanic ones (Denning, Kessler, & Leben, 2007, p. 86). This is exemplified by the following noun sets in 4):

- 4) a. *belemnite > symbol > problem* (the central element meaning ‘throw’)
- b. *energy > organ > Ø* (the central element meaning ‘work’)

The first lexeme contains the vowel /e/ and hence represents the so-called e-grade, the second lexeme includes the vowel /o/ and as such represents the o-grade, while the final lexeme in the first set belongs to the zero grade as it includes no vowel (Minkova & Stockwell, 2009, p. 146) (in the latter set of words the third lexeme is missing; no examples of this grade were imported into English (Denning et al., 2007, p. 86)). Adequate examples of ablaut are also found among the lexical elements imported from Latin, as in the following sets:

- 5) a. *memento > admonish > Ø* (the central element meaning ‘think’)

b. *indigenous* > \emptyset > *pregnant* (the central element meaning ‘birth’)

(The third lexeme in 5) a. and the second lexeme in 5) b. are missing, i.e., these lexemes were not imported into English (Denning et al., 2007, p. 86)).

Evidence of vowel mutation can also be discovered in the processes of derivation in the English language. Although it is no longer as hugely productive in English as in some other Germanic languages, “some fossils of this pattern” remain in the language today, as proven by the following sets of nouns derived from verbs:²

- 6) a. *do* - *deed* (/u:/ > /i:/)
- b. *sing* - *song* (/ɪ/ > /ɒ/)
- c. *break* - *breach* (/ei/ > /i:/)
- d. *bind* - *bond* / *bundle* (/aɪ/ > /ɒ/ and /ʌ/)

Additionally, a slightly different type of ablaut has evolved in words such as *criss-cross*, *flim-flam* or *riff-raff*, whereby two processes tend to occur at the same time: alliteration and the alternation of the high front vowel (/i/) in the left part of the word with a “non-high, non-front vowel” in the right part (/ɒ/, /æ/) (Minkova & Stockwell, 2009, p. 147).

2.2. Ablaut Alternations in Serbian

The Serbian/Croatian/Bosnian linguistic literature, which includes any treatments of the phenomenon of ablaut (apophony) or *prevoj vokala* ‘vowel shift’, as the feature is most commonly referred to, is based on the works of Babić (2002), Klajn (2003), Stevanović (1991), Stanojčić, Popović, & Micić (1989), and Subotić (2002).

In the language, vowel alternation is much more evident for attaining grammatical meaning change, particularly in the inflection of verbs. Ablaut or apophony is rather common within the paradigm of a single lexeme, where different word-forms bear witness to a core vowel mutation through grammatical category shifting, as with the verb *p_rati* ‘to wash’, where the first person singular present tense form is *pere-m* ‘I wash’, or *z_vati* ‘to call’ and *zovete*, the second person plural present tense form, the different phonological constitution signalling a difference in grammatical meaning. The alternation is apparently brought to the initial vowel in the form of *p_rao* ‘(I) washed’ the past tense verb form (according to the terminology used by Hammond, 2005), which causes a common mistake with children at the early stages of acquisition of Serbian due to the analogical influence of the present form (Subotić, 2002, p. 49).

In this respect, Serbian would allow for the following two directions of vowel mutation, starting from the non-finite form of the infinitive. The first entails alteration of zero phoneme with /e/ and the second with /o/:

- 7) a. *bra-ti* > *ber-em*
- pick-INF > pick-PRESNT T. 1st PERS. SING.
- ‘to pick’ > ‘I pick’

b. <i>zva-ti</i>	>	<i>zov-em</i>
call-INF	>	call-PRESNT T. 1st PERS. SING.
'to call'		'I call'

The phenomenon of vowel mutation in Serbian cannot be accounted for either by assimilatory or dissimilatory processes, nor can it be attributed to the influence of positioning (Stevanović, 1991, p. 123). Stanojčić, Popović, & Micić (1989, p. 48) claim that the reason for this type of alteration lies deeply in the past of the language and may have been caused by stress movements and alterations in the vowel quantity (vowel length), while Subotić (2002, p. 16) more specifically points out that vowel shifting is a morphologically conditioned alternation within a given paradigm.

The most expressive form of apophony in the Serbian verb system could probably be registered in the domain of aspectual variation forms, as the only formal difference between the two words for varying grammatical aspect would be traceable to the vowel which carries the primary stress.

	Ablaut direction	Serbian example	Gloss	Grammatical implication
1.	/a/ > /o/	<i>rađati</i> > <i>roditi</i>	to be bearing > to bear	imperfective vs perfective
2.	/i/ > /a/	<i>micati</i> > <i>maći</i>	to be moving > to move	imperfective vs perfective
3.	/é/ > /è/	<i>legati</i> > <i>leći</i>	to lie (down) > to lie (down)	imperfective vs perfective
4.	/i/ > /i/	<i>izmišljati</i> > <i>izmisliti</i>	to fantasize > to think up	imperfective vs perfective
5.	/i/ > /e/	<i>zalitati se</i> > <i>zaleteti se</i>	to rush into > to rush into	imperfective vs perfective

Important implications may be registered with passive adjectives derived from these verbs. Although both perfective and imperfective forms would yield their own passive participle forms with corresponding meanings, such as *goreti* 'to burn' : *izgoren* 'burnt' vs *izgarati* 'to be burning' : *izgoren* 'burnt down', this need not always be the case. Regardless of the fact that none of the authoritative dictionaries (Matić, Odavić & Fekete, 1959-; Stevanović & Jonke, 1990; Vujančić et al., 2007) lists the adjectival forms for *zamoriti* 'to tire out' and *zamarati* 'to be tiring out', the speakers' intuition would seldom fail to provide the forms *zamoren* 'tired' and *zamaran* 'tired-out'. However, with certain pairs, one of the forms exerts an influence on the formation of the adjective form, particularly for specific senses. In (8a), both of the aspectual forms would produce adjectives (8b) and (8c) based on the imperfective form, which is the product of a vowel mutation from /e/ to /o/.

8) a. <i>pod-ne-ti</i>	>	<i>pod-nosi-ti</i>
PREF-stand-INF-PERF. >		stand-INF-IMPERF'
'to stand'		'to be standing'

b. *pod-noš-ljiv*

PREF-stand-INF. IMPERF-ADJ. SUFF.

‘bearable’

c. *ne-snos-an*

not-stand-INF. IMPERF-ADJ. SUFF.

‘unbearable’

There is a curious case of relatively recent origin where the contemporary Serbian slang verb *smoriti* / *smarati* ‘to nag, vex or tire someone’ should produce a derivative adjective as *smoren* with the altered core vowel. The adjective is present in communication and online, even though it is not a part of the standard lexis, except for the study by Šipka (2010). The most acceptable explanation would be that this neologism has also been analogically formed from the perfect form of the verb, whereas the imperfective-based *smaran*, although expected in theory, has not claimed its position in the language.

In the Serbian language, the base will retain its phonological constitution to a large degree before the process of derivation by means of adjective-forming suffixes. Moreover, it could be said that vowel mutation in the base core vowel is quite an infrequent phenomenon in Serbian derivation. Apparently, English as a Germanic language has preserved some of the PIE features regarding ablaut, much more than Serbian, for that matter.

When it comes to derivational change, vowel mutation may signal transition to another lexical category in the following trends:

	Ablaut Direction	Serbian Example	Gloss	Lexical Category	Affix
1.	/a/>/o/	<i>zvati</i> > <i>zov</i>	to call > calling	V > N	∅
2.	/e/>/o/	<i>pogrebati</i> > <i>grob</i>	to bury > grave	V > N	∅
3.	/i/>/o/	<i>izvirati</i> > <i>izvor</i>	to spring > a spring	V > N	∅
4.	/i/>/o/	<i>birati</i> > <i>izbor</i> <i>razdirati</i> > <i>razdor</i>	to choose > choice	V > N	Prefix /iz-/ ∅
5.	/i/>/u/	<i>sipati</i> > <i>usuti</i>	to pour > to pour -PERF	V > V	Prefix /u-/
6.	/∅/>/o/	<i>nabrati</i> > <i>nabor</i>	to pucker > crease	V > N	∅

3. Results of Corpus Analysis

3.1. English Adjective Derivation with Vowel Alternations

The corpus of English adjectives collected for this particular paper consisted of 118 adjectives and their respective roots, the latter of which were either nominal or verbal. The examples were collected by thoroughly examining the word lists found in the sources. The authors relied on the phonetic transcription found in the source dictionaries or their personal knowledge of English phonology in order to extract the lexemes undergoing ablaut, as well as the resultant adjectives. After the process of selection was completed in this manner, the adjectives were classified

in two ways. As many as 108 of these adjectives were classified into 14 groups according to the vowel change which occurs in them; within some of these groups, sub-groups were additionally created on the basis of the suffix used in the process of derivation. However, there was an additional, fifteenth, set of adjectives (ten of them) whereby no regularity pertaining to the suffixes involved was found, so they represent a single, mixed class of examples. The adjectives noted with an asterisk undergo primary stress shift, and six entire categories of adjectives succumb to this process. The adjectives are classified in alphabetical order within the sub-groups. The groups (classified by the descending number of adjectives they include) are as follows:

3.1.1. Type I alteration: /aɪ/ > /ɪ/

This type includes the cases whereby the diphthong /aɪ/, which represents the shift from a more open, back vowel phoneme to a front, close one, gets shortened into the exclusively front and close monophthong /ɪ/. The adjectives in this category were by far the most numerous, with 39 examples that fit this particular vowel change. Within the group, seven sub-groups could be differentiated on account of the suffix added to the nominal or verbal base in question. The nature of the base used in derivation leans more towards verbal in the first three sub-groups, while there is a number of nominal bases used as well, especially as featured in the sub-groups d) to g):

a) The adjective-forming suffix {-ive}

The derivatives include: *acquire* > *acquisitive*, *ascribe* > *ascriptive*, *derive* > *derivative*, *describe* > *descriptive*, *divide* > *divisive*, *inquire* > *inquisitive*, *prescribe* > *prescriptive*.

b) The adjective-forming suffix {-ant /-ent}

The derivatives include: *aspire* > *aspirant**, *benign* > *benignant*, *confide* > *confident**, *malign* > *malignant*, *reside* > *resident**, *sign* > (*signify*) > *significant**, *suffice* > *sufficient*, *virus* > *virulent*.

c) The adjective-forming suffix {-ible / -able}

The derivative adjectives listed are: *admire* > *admirable**, *circumscribe* > *circumscribable*, *deride* > *derisible*, *divide* > *divisible*, *inscribe* > *inscribable*.

d) The adjective-forming suffix {-ous}

There are only two such adjectives in this sub-group: *bile* > *bilious* and *vice* > *vicious*.

e) The adjective-forming suffix {-(i)al}

The following adjectives should be grouped here: *Bible* > *Biblical*, *confide* > *confidential**, *crime* > *criminal*, *cycle* > *cyclical*, *reside* > *residential**, *satire* > *satirical**, *sublime* > *subliminal*, *type* > *typical*.

f) The adjective-forming suffix {-ian}

Two items were registered within this pattern: *reptile* > *reptilian**, *Christ* > *Christian*.

g) Miscellaneous suffixes

The following is a group which includes complex words of varied patterns, such as: *define* > *definite**, *line* > *linear*, *oblige* > *obligatory*, *parasite* > *parasitic**, *satire* > *satiric**, *thrive* > (*thrift*) > *thrifty* (the latter achieved via an intermediate nominal stage).

3.1.2. Type II alteration: /ɪə/ or /i:/ > /e/

The second most numerous group, included the shift from the diphthong /ɪə/ (which is a close-to-central and front diphthong) or the long monophthong /i:/ (close and front) into the short vowel /e/, which is close-mid and front; this category featured 16 examples, divided into four subgroups. Most of the bases used are verbal in nature, with four nominal exceptions: *zeal*, *hysteria*, *athlete*, and *sphere*.

a) The adjective-forming suffix {-ant/-ent}

Merely two examples are featured: *cease* > *incessant*, *please* > *pleasant*.

b) The adjective-forming suffix {-ive}

This group includes the following items: *compete* > *competitive*, *concede* > *concessive*, *deceive* > *deceptive*, *perceive* > *perceptive*, *receive* > *receptive*, *repeat* > *repetitive*, *succeed* > *successive*.

c) The adjective-forming suffix {-(i)al}

The featured adjectives are: *hysteria* > *hysterical*, *perceive* > *perceptual*, *sphere* > *spherical*.

d) Miscellaneous suffixes

This group features lexemes of varied patterns, such as: *athlete* > *athletic**, *bereave* > *bereft*, *impede* > *impedible*, *zeal* > *zealous*.

3.1.3. Type III alteration: /u:/ > /ʌ/

This alteration featured quite a drastic change in the vowel position, from the close and back /u:/ to the open and central short vowel /ʌ/. The type registered 9 instantiations altogether, involving one sub-group. Only one affix was involved in the alternations (aside from the adjective *presumptuous*), and the bases used in the derivation were exclusively verbal:

a) The adjective-forming suffix {-ive}:

assume > *assumptive*, *consume* > *consumptive*, *deduce* > *deductive*, *induce* > *inductive*, *presume* > *presumptive* (also in *presumptuous*), *produce* > *productive*, *reproduce* > *reproductive*, *seduce* > *seductive*

3.1.4. Type IV alteration: /əʊ/ > /ɒ/

The diphthong /əʊ/ represents a vowel shifting from the central to the back position, and in this alteration, it is transformed into an open-mid, back short vowel /ɒ/. It is of note, however, that this resultant vowel is predominant in British English, while the American English variant of this change features the diphthong morphing

into the central, open vowel /ʌ/ (Lightner, 1983, p. 115). The type encompasses 7 examples, distributed within three sub-groups; the sub-groups a) and c) feature nominal bases, while the sub-group b) includes verbal ones. The groups identified are as follows:

- a) The adjective-forming suffix {-ic}*
This group features the following: *episode* > *episodic*, *microscope* > *microscopic*, *telescope* > *telescopic*.
- b) The adjective-forming suffix {-ive}*
Only two adjectives are included: *evoke* > *evocative*, *propose* > *propositive*.
- c) Miscellaneous suffixes
In this group, two adjectives of different patterns are found: *globe* > *globular*, *omen* > *ominous*.

3.1.5. Type V alteration: /eɪ/ > /æ/

This alteration encompasses a change from a roughly close-mid, front diphthong /eɪ/ to the /æ/ phoneme, which is also front, but open-mid. This type also encompasses 7 examples, split into two sub-groups; the derivation bases are exclusively nominal. The groups identified are as follows:

- a) The adjective-forming suffix {-al}
Three adjectives are included in this group: *nation* > *national*, *ratio* > *rational*, *grade* > *gradual*.
- b) Miscellaneous suffixes
Several items with different suffixes are featured: *flame* > *flammable*, *mania* > *manic*, *raven* > *ravenous*, *table* > *tabular*.

3.1.6. Type VI alteration: /eɪ/ > /ə/*

Within this change, the front, close-mid diphthong /eɪ/ is reduced to the close-mid, central schwa. Seven examples are featured in this type, divided among three sub-groups; the first two include verbal bases, while the third one features nominal ones:

- a) The adjective-forming suffix {-ive}
This group includes two items only: *negate* > *negative*, *relate* > *relative*.
- b) The adjective-forming suffix {-ant/-ent}
Two adjectives are featured, the latter of which is an exception that does not undergo stress shift: *prevail* > *prevalent*, *lubricate* > *lubricant*.
- c) Miscellaneous suffixes
This group features three lexemes created utilizing different suffixes: *angel* > *angelic*, *mania* > *maniacal*, *Plato* > *platonic*.

3.1.7. Type VII alteration: /i:/ > /ɪ/*

The front close phoneme /i:/ is moved toward the close-mid area, thereby

transforming into the short /ɪ/. Four instantiations are registered within this group, all of which are derived by means of different suffixes, which exclusively utilize nominal bases:

a) Miscellaneous suffixes

caprice > *capricious*, *compete* > *competent*, *sequence* > *sequential*, *theme* > *thematic*

3.1.8. Type VIII alteration: /e/ > /ʌ/

This alteration assumes the transformation of the close-mid, front vowel /e/ into the central, open /ʌ/ phoneme. Five adjectives conform to this change, all of them having been derived using verbal bases and a single suffix (with the exception of the adjective *compulsory*):

a) The adjective-forming suffix {-ive}

expel > *expulsive*, *repel* > *repulsive*, *compel* > *compulsive* (also in *compulsory*), *propel* > *propulsive*

3.1.9. Type IX alteration: /aʊ/ > /ʌ/

This vowel change refers to the open-to-close, back diphthong /aʊ/ being altered into the open, central /ʌ/ phoneme. Lightner hypothesizes that this change was preceded by the vowel /u:/ changing into the diphthong /aʊ/ during the Great Vowel Shift, followed by the shortening of the resultant glide into /ʌ/ (Lightner, 1983, p. 261). This group includes only three items, all derived by utilizing a single suffix and bases of verbal nature:

a) The adjective-forming suffix {-ant}

abound > *abundant*, *redound* > *redundant*, *renounce* > *renunciant*

3.1.10. Type X alteration: /ɪə/ or /i:/ > /ə/*

The shift from the close-to-central and front diphthong /ɪə/ or the long, close and front monophthong /i:/ into the /ə/ vowel, which is open-mid and central, is represented in this group. There are three instances of this alteration, all featuring different suffixes, as well as both a nominal and a verbal base (the latter resulting in two different adjectives):

a) Miscellaneous suffixes

scheme > *schematic*, *revere* > *reverent*, *revere* > *reverential*

3.1.11. Type XI alteration: /e/ > /ɪ/*

This change involves the open-mid, front vowel phoneme /e/ being altered into the roughly close-mid, front vowel /ɪ/. Merely two examples, derived by utilizing different suffixes, and also featuring one nominal (which is subjected to adjective derivation via an additional nominal stage) and one verbal base, are found within this group:

a) Miscellaneous suffixes

duplex > (*duplicity*) > *duplicitous*, *elect* > *eligible*

3.1.12. Type XII alteration: /ei/ > /i:/

The front, close-mid diphthong /ei/ is transformed into the close and front /i:/

phoneme. This group also features two examples, derived with a single adjective-forming suffix, utilizing two verbal bases:

- a) The adjective-forming suffix {-ent}
convey > *convenient*, *obey* > *obedient*

3.1.13. Type XIII alteration: /əʊ/ > /ə/*

This change involves the shortening of the close-mid-to-close and central-to-back diphthong /əʊ/, which thereby becomes the /ə/ phoneme (close-mid, central). Two examples with different suffixes are included in this group (derived using one nominal and one verbal base):

- a) Miscellaneous suffixes
aroma > *aromatic*, *revoke* > *revocable*

3.1.14. Type XIV alteration: /æ/ > /ə/*

The alteration in question is from the open-mid, front ash-sound into the close-mid, central schwa. This group includes two items derived utilizing two different suffixes, as well as one base each of nominal and verbal nature, respectively:

- a) Miscellaneous suffixes
fallacy > *fallacious*, *magnify* > *magnificent*

3.1.15. Miscellaneous alterations

This mixed group features both nominal (*example*, *school*, *vicar*, *pride*, *Etruria*) and verbal bases (*appear*, *retain*, *wear*, *comb*), as well as one adjective base (*dear*), in derivation. The processes feature the following changes in the nature of the vowel: the close-to-central front diphthong /ɪə/ to the open-mid, front ash vowel (example a); the open-mid, front ash-sound to the close-mid, front vowel /e/ (example b); the front, close-mid diphthong /eɪ/ transforming into the front, close-mid monophthong /e/ (example c); the back-to-central close-mid diphthong /ʊə/ to the close-mid, central *schwa* (example d); the front-to-central close-mid diphthong /eə/ to the front close monophthong /i:/ (example e); the extension of the close-mid, central schwa to the open-mid, front ash (example f); the open-to-close back-to-front diphthong /aɪ/ becoming the open-to-close, exclusively back phoneme /aʊ/ (example g); the transformation of the back-to-central close-mid /ʊə/ to the open, central /ʌ/ (example h); the conversion of the close-mid-to-close and central-to-back diphthong /əʊ/ into the close-mid, front vowel /e/ (example i); and, finally, the switch from the central-to-front close diphthong /ɪə/ to the open, back /a:/ (example j).

- a) *appear* > *apparent* (/ɪə/ > /æ/)
 b) *example* > *exemplary* (/æ/ > /e/)
 c) *retain* > *retentive* (/eɪ/ > /e/)
 d) *school* > *scholastic* (/ʊə/ > /ə/*)
 e) *wear* > *weary* (/eə/ > /i:./)
 f) *vicar* > *vicarious* (/ə/ > /æ/*)
 g) *pride* > *proud* (/aɪ/ > /aʊ/)
 h) *Etruria* > *Etruscan* (/ʊə/ > /ʌ/)

- i) *comb* > *unkempt* (/əʊ/ > /e/)

j) *dear* > *darling* (/ɪə/ > /ɑ:/)

3.2. Serbian Adjective Derivation with Vowel Alternations

When it comes to the vowels that can be formal parts of roots, the situation is comparatively uncomplicated, as the Serbian (as well as Bosnian and Croatian) vowel system consists of five short vowels: /a/, /e/, /i/, /o/ and /u/. The root morphemes of Serbian express a very high degree of stability in form within derivative processes. Adjective derivation with underlying vowel alteration as an indication of lexical category change in Serbian word-formation includes five patterns and one additional miscellaneous category, each instantiated by not more than four simple or complex adjectives. The adjectives marked by ablaut are almost equally distributed between verbs and nouns as sources or derivation origins. The dominant segment involves the mutation of open front vowels into back vowels, both open and closed.

Ablaut-based adjective derivation with respect to the root form in the verb manifests a tendency to maintain the vowel of the source and resist the assimilating power of the derivationally related noun, as is the case in the following example:

- 9) *smrznu-ti* > *mraz* > *smrznut*
 freeze-_{INF} > frost-_{NOM. SING.} > freeze-_{PAST PART.}
 'to freeze' > 'frost' > 'frozen'

Although this may appear to be the case with other adjectivised verb forms such as the past participle, the principle is not relevant with derived adjectives proper, as with *sprega* 'bond/yoke' > *supružnik* 'spouse' > *supružnički* 'marital', since they assume the core vowel from the derived noun.

- 10) *te-ći* > *tok* > *pro-toč-nī*
 flow-_{INF} > flow-_{NOM. SING.} > through-flow-_{ADJ. SUFF.}
 'to flow' > 'flow' > 'flow-through'

Two of the ablaut-based adjectives, such as *mrtav* 'dead' and *imućan* 'wealthy' are to be found in the study by Dragičević (2001, pp. 266, 268). The second is a rare case of vowel alteration in both stages of derivation:

- 11) *ima-ti* > *imet-ak* > *imuć-an*
 have-_{INF} > have-_{NOUN. SUFF.} > have-_{ADJ. SUFF.}
 'to have' > 'property' > 'wealthy'

The Serbian cases with vowel alternation in the root form, which occurs in adjective derivation but does not entail mutation of the vowel within the stressed syllable, should be mentioned here. This group of adjectives would include *ciklus* 'cycle' > *cikličan* 'cyclic', *papar* 'pepper' > *papren* 'peppery' with an alteration with the zero phoneme, as well as numerous instances of the so-called 'fleeting /a/' in derivation, such as *pirinač* 'rice' > *pirinč-ani* 'of rice', *tigar* 'tiger' > *tigrast* 'tiger-like', and others.

The types of vowel mutation with adjective derivation in Serbian that were established during the analysis are presented in the following sub-sections.

3.2.1. Type I alteration: /a/ > /o/

The first type of vowel alteration in the root form involves the open, central-positioned vowel, which mutates to a half-open, back-positioned one. These are cases of forming adjectives from verbs and nouns either through double affixation (with the prefix {*po-*} and suffix {-*an/-nī*}) or a case of Ø-derivation.

The registered examples from the corpus were: *hramati* ‘to limp’ > *hrom* ‘lame’, *stajati* ‘to stand’ > *postojan* ‘stable’ or *nehat* ‘negligence’ > *nehotičan* ‘involuntary’. Apparently, this alternation occurs when the vowel is found in the vicinity of nasals, alveolars and semi-vowels.

3.2.2. Type II alteration: /a/ > /Ø/

The dominant type of vowel change does not stand for mutation in the proper sense of the term, as the open, central-positioned /a/ alternates with a zero phoneme when there occurs a change in the lexical category of the input unit. The alteration is more prominent than other types in the number of instantiations and is generally based on noun to adjective derivation on the suffixes {-*ev-an/-nī*}, {-*ov/-ev*} and {-*en*}. In Serbian systemic descriptions, all similar phenomena are termed *nepostojano a* ‘inconsistent /a/’ (Piper & Klajn, 2014) as an all-encompassing explanation for a not-so-clear causality.

The items from the corpus include: *dan* ‘day’ > *dnevni* ‘daily’, *otac* ‘father’ > *očev* ‘paternal’, *san* ‘dream’ > *snen* ‘dreamy’, *oganj* ‘fire’ > *ognjeni* ‘fiery’, *vetar* ‘wind’ > *vetrovit* ‘windy’.

A separate group seems to be formed on the model of *lanac* ‘chain’ > *lančan* ‘chain-like/of chain’, where the vowel is found between the nasal alveolar /n/ or the labiodental fricative /v/ and the dental affricate /ts/ before its palatalisation. Other nouns are: *konac* ‘thread’, *lonac* ‘pot’, *novac* ‘money’, and the like.

3.2.3. Type III alteration: /e/ > /i/

The only type of alteration that implies a mutation from one front vowel to another is the type based predominantly on loan words. The half-open vowel changes into the close vowel /i/, as in *infekcija* ‘infection’ > *dezinfikovani* ‘disinfected’, but there are native forms such as *podozrevati* ‘distrust’ > *podozriv* ‘distrustful’, *reč* ‘word’ > *izričit* ‘explicit’, as well. Obviously, the derivation direction is from noun to adjective on the basis of the adjective-forming suffixes {-*an/-nī*} and {-*it*}. The Serbian so-called ‘sonant’ consonants³ seem to be the primary trigger for the alternation in this case as well.

3.2.4. Type IV alteration: /i/ > /o/

Another pattern of ‘vowel-backing’ entails a change of the close and front /i/

³ The Serbian phonological terminology includes the term *sonant* to refer to the nasals /m/, /n/, /nj/, liquids /l/, /lj/, /r/ and the consonants /j/ and /v/ (Petrović & Gudurić, 2010).

into the half-open back vowel /o/. The adjectives derived are based on verbs suffixed by either {-an/-nī} or {-it}, as could be deduced from the few illustrations, namely *ubiti* ‘murder’ > *ubojit* ‘potent/murderous,’ *odbiti* ‘repel’ > *odbojan* ‘repulsive’, *opiti* ‘make drunk’ > *opojan* ‘intoxicating’.

3.2.5. Type V alteration: /i/ > /Ø/

The following type is based on the alteration of the close, front vowel with the Ø phoneme, which may entail a vowel deletion process of sorts, or the so-called zero-grade mutation. The illustrations pertain to derivation of adjectives from nominal bases with the help of the suffix {-iv}: *prezir* ‘scorn’ > *prezriv* ‘scornful’, *obzir* ‘regard’ > *obazriv* ‘wary’.

3.2.6. Miscellaneous alterations:

The Serbian derivational morphology is also characterised by a number of individual instances of vowel mutation, which cannot be considered systematic, but rather remnants of earlier processes in the development of the language. When it comes to the domain of adjective derivation, the following are noteworthy: /a/ > /u/, where the vowel /a/ mutates into /u/, a rather closed and back-positioned vowel. Only one instance of this was recorded, but with the comparatively significant case of derivation from the verb *imati* ‘to have’ into the derivative based on the adjective forming suffix {-an/-nī} such as *imućan* ‘wealthy’; /e/ > /u/, from the half-open, front /e/ to the close, back vowel such as /u/. The adjective that exemplifies this alteration is *tresti* ‘to quake’ > *trusan* ‘seismic’, based on a verb, and the suffix that accompanies the mutation is {-an/-nī}; /e/ > /Ø/. Similar to the alternation of the core vowel /a/, the front vowel /e/ can be replaced by the Ø phoneme when the very productive adjective-forming suffix {-av} is appended to a verb base. The case in point is the change from the verb *umreti* ‘to die’ into *mrtav* ‘dead’; /Ø/ > /u/, a phenomenon similar to epenthesis of phonemes to the root form of the verb bases that serve as input for adjective derivation, but the case is interpreted here as a mutation of Ø into a close, back vowel /u/. There is an indication that the vowel that undergoes mutation is a semi-vowel /ə/, which is not a segment of the phonological system of modern Serbian. The pair *bdeti* ‘to sit up late/keep watch’ > *budan* ‘awake’ may be used to support this claim, which is etymologically founded in Loma et al. (2006, p. 287); /Ø/ > /o/, following the rationale of the previous instance, another derivational pair could be of interest here. Specifically, the verb *grometi* ‘to thunder’ and the related adjective *gromki* ‘thunderous’ can be said to have a derivational relation accompanied by an alteration of the phonological status of the root along with the suffixation by the suffix {-(-a)/-ki}.⁴ The central vowel alternates from /Ø/ to the half-open, back-positioned vowel /o/.

⁴ Possibly via an intermediary stage from n. *grom* ‘thunder’.

4. Discussion and Conclusion

Observing the adjectives listed in section 3, several conclusions can be drawn:

The suffixes most inclined to cause ablaut in English adjective derivation are: {-ant/-ent}, {-ive}, {-ous}, {-ible/-able}, and, to a lesser extent, {-(i)al} and {-ic}. On the other hand, {-an/-nī} and {-av} would appear to be those suffixes which are the most pertinent for the appearance of ablaut in Serbian adjective derivation.

On the subject of the English adjectives, it is the suffixes {-ive}, {-able/-ible}, and {-ant/-ent} that are exclusively attached to verbal bases (with the exception of the pair *virus* > *virulent*), while {-ous}, {-ic} and {-(i)al} are attached to nominal bases (with the exception of the pair *perceive* > *perceptual*). In Serbian, the suffix {-av} is attached to verbal bases only, while {-an} may appear with both types of bases.

Certain vowel changes in English adjective derivation are exclusively caused by particular suffixes: the changes /u:/ > /ʌ/ and /e/ > /ʌ/ are brought about by the addition of the suffix {-ive}, the switch from /aʊ/ to /ʌ/ is caused by adding the suffix {-ant} to the base in question, whereas /eɪ/ > /i/ is triggered by the suffix {-ent}. By contrast, in Serbian, the suffix {-av} seems to be responsible for the changes /e/ > /ø/, /ø/ > /u/ and /ø/ > /o/, yet all of these vowel alternations are substantiated by a single example, so the latter statement would warrant further research in order to be confirmed.

In English, six of the categories are accompanied by the primary stress shift: /i:/ > /ɪ/, /eɪ/ > /ə/, /e/ > /ɪ/, /əʊ/ > /ə/, /ɪə/ or /i:/ > /ə/ and /æ/ > /ə/. Furthermore, other groups also include certain isolated cases of the stress shift: *admire* > *admirable*, *angel* > *angelic*, *mania* > *maniacal*, *scheme* > *schematic*, *school* > *scholastic*, *fallacy* > *fallacious*. All of the aforementioned cases include a shift from a diphthong (/eɪ/, /əʊ/, /aɪ/, /oʊ/) or, in particular cases, a monophthong (/i:/, /e/, /æ/) into the short vowels /ɪ/ and /ə/. As for the Serbian examples, the stress shifts whenever a prefix is added to the root morpheme (*stajati* > *postojan*, *infekcija* > *dezinfikovani*, *reč* > *izričit*) or removed from it (*umreti* > *mrtav*). Generally speaking, Serbian root vowel mutation is marked by the alteration from more frontal or central to back vowels, vowel elimination or addition. Ablaut in English adjective derivation is slightly less systematic: the front vowels shift into central or back positions, but certain alterations point to the retention of the front position despite the vowel change. In addition to that, three changes feature an effectively opposite process - back vowels shifting into central or front positions.

Very few of the aforementioned ablaut changes in English correspond to those in Serbian; a possible reason for this occurrence might be the lack of a number of English vowels in Serbian, specifically monophthongs such as the *ash* and the *schwa*, and all diphthongs. The most notable parallel when comparing the two languages is the one between the English alteration /e/ > /ɪ/ (as exemplified by the pair *elect* > *eligible*) and the Serbian change /e/ > /i/ (as in *reč* > *izričit*), although the two [i] sounds differ slightly (the English one is rather close-mid, compared to the predominantly close one in Serbian). Another alteration in English which is comparable to the aforementioned one in Serbian is /eə/ > /i:/ (the featured example

is *wear* > *weary*); the long [i] sound is more close, being similar to the Serbian phoneme /i/, yet the diphthong /eə/ is front-towards-central and close-mid, which differs heavily from the predominantly open /e/ in Serbian. Furthermore, two similar alterations in English, /ɪə/ or /i:/ > /e/ and /ɪə/ or /i:/ > /ə/ (as evidenced by the pairs *cease* > *incessant* and *scheme* > *schematic*, respectively) bear a certain resemblance to the Serbian transformation of /i/ > /Ø/ (*prezir* > *prezriv*). Although both of these changes in English amount to vowel shortening, the Serbian alteration suggests eliminating the vowel in question altogether.

After examining the lists of adjectives in both languages, we can conclude that ablaut manifests itself much more often in English compared to Serbian. The former includes fourteen different vowel changes, some of which are represented by as many as 39 adjectives; it also features ten additional changes represented by a single example. On the other hand, Serbian features five different patterns exemplified by three or more adjectives and a mixed sixth group with one instantiation per change. The difference might stem from the different sound systems featured in both languages. Namely, English has as many as 20 different vowels (12 monophthongs and 8 diphthongs), which might account for the higher number of the possible sound changes occurring in the process of adjective derivation; conversely, the Serbian standard language description acknowledges only five vowels, which might prove a cause of the visibly lower number of vowel changes. The results of the corpus analysis in Serbian have provided a surprisingly low incidence of ablaut mutations in adjective derivation, considering the fact that Serbian is one of the Slavic languages where there is a considerable expression of ablaut in inflection. These findings would have been considerably different if an alternative approach to the Serbian phonemic system had been applied, as many instances in adjective derivation involve vowel alterations on the suprasegmental level.⁵ At present, with the five phonemes forming the system of Serbian vowels, cases such as n. *brég* ‘hill’ > adj. *brègast* ‘camshaft’ are not to be accepted as vowel mutations since the core vowels in these two are perceived as one and the same phoneme /e/.

Certain changes may be noted when comparing the nature of ablaut in Proto-Indo-European with how this sound alteration manifests itself today in English and Serbian. While Proto-Indo-European featured three grades of ablaut (/e/ - /o/ - /Ø/), all of the alterations in English and Serbian featured in this paper include only two grades. This might point to ablaut losing its power as a morpho-phonological change over time, in the process of the development of separate languages of the Indo-European family. Furthermore, the zero-grade is not present within the featured corpus of English adjectives (vowels in these alteration types tend to be shortened at most), while it can be discerned in no less than five different Serbian alterations. As for the presence of qualitative and quantitative types of ablaut in these two languages, both of them may be distinguished. However, there is a slight proclivity towards the qualitative one, as evidenced by many of the alterations in this paper (for example, /ɪə/ or /i:/ transforming into /e/ in English, or /a/ transforming into /o/ in Serbian).

⁵ An alternative approach to the phonology of Serbian, with a somewhat different treatment of the vowel system to the one in standard Serbian textbooks was proposed by Petrović and Gudurić (2010).

Despite this, quantitative ablaut is still present in both English and Serbian; it is usually represented by vowel shortening, rather than vowel lengthening (e.g., /ei/ > /ə/ in English), as well as vowel elimination or even addition (this is noticeable in Serbian alterations, such as /i/ > /Ø/ and /Ø/ > /o/).

A potential goal for future research might include discovering additional sound changes appearing in adjective derivation within both languages through further lexicographical examination. Additionally, one might delve into the potential relationship, that might exist between the sound systems of the two languages and the vowel changes, which tend to occur in the processes of word derivation in general. This way, we might get closer to the bigger picture which could shed some additional light on the manner in which these morpho-phonological processes have developed since the time of the Proto-Indo-European language.

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MUTACIJA KORENSKIH VOKALA U DERIVACIJI PRIDEVA ENGLESKOG I SRPSKOG JEZIKA

Rezime

Ovaj rad se bavi pojavom ablauta u derivaciji prideva; u njemu se porede i suprotstavljaju primeri sa prevojem vokala na engleskom i srpskom jeziku. Pored toga, ovaj rad nastoji da otkrije koji se tip ablauta javlja u navedenim primerima kao i učestalost s kojom se određeni tip ove promene javlja, a teži i da utvrdi da li postoje određena pravila po kojima se ove promene vokala javljaju. Dodatni cilj ovog rada je da ustanovi do koje mere postoji veza između pomeranja primarnog akcenta i ablauta u derivaciji, koji afiksi uzrokuju pomeranje akcenta i pod kojim uslovima. Istraživanje je obavljeno koristeći korpus prideva i njihovih korena iz engleskog i srpskog jezika; korpus je činilo minimum 150 primera iz oba jezika, prikupljenih pomoću leksikografskih studija koje se odnose na izvođenje prideva iz imenica i glagola, pritom koristeći određen broj različitih sufiksa u derivaciji (npr. *-ous* i *-ive* (engleski), *-an* i *-iv* (srpski)). Kao primer navodimo parove *bile* > *bilious* (engleski) i *hramati* > *hrom* (srpski). Pretpostavka je da će rezultati istraživanja prikazati kontrast između engleskog i srpskog jezika, kao i njihova odstupanja od ovog procesa u poređenju sa njihovim zajedničkim pretkom, proto-indo-evropskim jezikom.

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