The Common Semantic Feature of 'Irregular' Noun Plural Forms in English

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Abstract
There is only a limited number of Noun Plurals like foot-feet, goose-geese and Past Tense verb forms such as sing-sang, win-won that are produced by Internal Vowel Alternation (IVA) and today these forms are considered to be irregular in Modern English, i.e., they do not follow the rules of Past Tense /+(e)d/ and Noun Plural /+(e)s/ formation. However, historically, these IVA forms were both more numerous and even productive in Old English and those that have remained in the language largely retain the same IVA patterns in Modern English. The recent study of these IVA phonological processes in the nominal and verbal forms revealed, first, two opposed iconic and polar systems consisting of fronting (umlaut) for Plural formation for nouns versus backing (vowel gradation) for Past Tense formation in verbs (Even-Simkin 2012). Second, there are underlying systematic semantic features for these IVA forms, as well. This paper presents a semantic analysis of the IVA Noun Plurals, i.e. a common distinctive semantic feature. Unlike bi- and polysyllabic mass nouns, these IVA forms appear exclusively in monosyllabic words, thus making them ultimately efficient based on short term memory cognitive psychological studies by Ebbinghaus (1885), as well as, other more recent studies by e.g. Atkinson and Shiffrin (1968), Crano (1977), Frensch (1994), Healy et al. (2000). This morpho-phonotactic differentiation in structure and distribution of the IVA vs. mass nouns, as well as the semantic and iconic feature of these IVA forms, demonstrates the subtle systematic character of these 'irregular' IVA plural constructions.

Keywords: 'irregular' noun plurals, IVA, distinctive semantic feature, systematic character, English

If there's no meaning in it … that saves a world of trouble, you, know, as we needn't try to find any. And yet I don't know … I seem to see some meaning in them, after all. (Lewis Carroll 1961: 100)

The patterns assumed by consonant phonemes are usually rather more complicated and considerably less symmetrical than are those of vowels. (Robert A. Hall, 1964: 93)

Introduction

There is only a limited number of Noun Plurals like *foot-feet*, *goose-geese* and Past Tense verb forms, such as *sing-sang*, *win-won* that are produced by Internal Vowel Alternation (IVA) and today these forms are considered to be irregular in Modern English, i.e., they do not follow the rules of Past Tense /+(e)d/ and Noun Plural /+(e)s/ formation. However, historically, these IVA forms were both more numerous and even productive in Old English and those that have remained in the language largely retain the same IVA patterns in Modern English. The recent study of these IVA phonological processes in the nominal and verbal forms revealed, first, two opposed iconic and polar systems consisting of *fronting* (umlaut) for Plural formation for nouns versus *backing* (vowel gradation) for Past Tense formation in verbs (Even-Simkin 2012). Second, there are underlying systematic semantic features for these IVA forms, as well. This paper presents a semantic analysis of the IVA Noun Plurals, i.e. a common distinctive semantic feature. Unlike bi- and polysyllabic mass nouns, these IVA forms appear exclusively in monosyllabic words, thus making them ultimately efficient based on short term memory cognitive psychological studies by Ebbinghaus (1885), as well as other more recent studies by e.g., Atkinson & Shiffrin (1968), Crano (1977), Frensch (1994), Healy et al. (2000). The morphophonemic differentiation in structure and distribution of the IVA vs. mass nouns, as well as the semantic and iconic feature of these IVA forms, demonstrate the subtle systematic character of these 'irregular' IVA plural constructions.

Background

As Hagege (1993:x) notes concerning the contemporary linguistics "the human presence in language building deserves much more attention than it has received so far on the part of linguistics". The rules are formally described rather than explained, whereas the meaningful learning implies the explanation of the phenomena. For example, the nouns, such as: *goose /g**U**uz/ – geese /g**I**is/*; *foot /f**U**ut/ – feet /f**I**it/* are called irregular in English. But are they indeed irregular? And if yes, why did they remain in English language and did not enter the so-called regular system (*-s/es*)? The semiotic linguistic analysis of the Plural Nouns with IVA revealed that beside the phonological systematic feature of IVA, these Nominal IVA formations share a Common Semantic Feature. That is, the Noun Plural IVA forms, as diachronic analysis shows, are not just arbitrary formed, but rather phonologically and semantically systematic.

Following the diachronic studies, Modern and Old English are quite distinct from each other:

> a). morphologically - having no real gender, case and other declension systems versus having complex gender, case and other declension systems. As Baugh (1957: 59) notes, "the period from 450 to 1150 is known as Old English [and]… sometimes described as the period of full inflections";
> b). typologically: whereas "Modern English is an analytic, Old English [is] a synthetic language" (Baugh 1957: 64) as Baugh defines: "[s]ynthetic language is which indicates the relation of words in a sentence largely by means of inflections" and "[l]anguages which make extensive use of prepositions and auxiliary verbs and depend upon word order to show other relationships are known as analytic language" (ibid.).
> c). lexically - approximately 50% Latinate and Germanic versus primarily Germanic. Following Quirk & Wrenn (1955) or Baugh (1957: 63): "A … feature of Old English … is the absence of those words derived from Latin and French which form so large a part of our present[Modern English] vocabulary. Such words make up more than half of the words now in common use. The vocabulary of Old English is almost purely Teutonic [West Low Germanic]."

One might even be able to compare and contrast Old and Modern English as if they were two separate and different languages. However, in spite of these multiple distinctions between Old and Modern English, both of them share *Internal Vowel Alternation* (IVA) process, a morphophonemic process, which is found not only in Old English as well as in other Germanic languages, but also in many Indo-European, Semitic and other language families. This actually points to the historical efficiency of the IVA, as being a prevalent and productive process not only in nominal but also in verbal system.

The focus of the current study is to uncover the systematic character of the nominal IVA plural forms, which "through various processes of grammar simplification … tended to get lost… [s]o that most of the relics of umlaut that are left to us are in contexts like noun/denominal verb pairs (e.g. *food:feed, blood:bleed* or the plurals of the old monosyllabic consonant stem nouns (e.g. *foot:feet, man:men*)" (Lass & Anderson 2010: 123). The term *Umlaut* for these kinds of vowel mutation in such pairs was introduced by Jacob Grimm and the process of "i-mutation, [that is] shared in varying degrees by all Gmc [Germanic] languages except Gothic, had been completed in OE [Old English] by the time of the earliest written records" (Quirk & Wrenn 1955: 151). Thus, it is one of many reasons, why it is so important to trace the history of the IVA from Old English and even earlier, i.e., to study the etymology of the IVA forms which have still retained in Modern English, in order to understand the underlying rules of and the reasons for modification of these forms.

Sign-Oriented Theory and Methodology

Theory dictates which observations of the infinite observations that could be made, should be made. Without theory there would be no indication of what to observe and how to interpret it once observed. (Ohala & Jaeger 1986: 3)

In this study of the nominal IVA forms, I follow a sign-oriented methodological and theoretical linguistic approach to language. Ferdenand de Saussure, who "was himself a historical linguist" (Beedham 2005: 9), was the founder of the Sign Oriented theory and he studied how languages work as sign-oriented/semiotic systems. As de Saussure (1959[1916]: 113) claims:

> Language can … be compared with a sheet of paper; thought is the front and sound is the back; one cannot cut the front without cutting the back at the same time; likewise in language; one cannot divide sound from thought nor thought from sound; the division could be accomplished only abstractedly, and the result would be either pure psychology or pure phonology.

That is, he argues in favor of the indivisible nature of the "linguistic sign[, which as he further elaborates] is not a link between a thing and a name, but between a concept and a sound pattern"(Saussure 1983[1916]: 66). As Tobin (1990: 39-40) further elaborates:

> de Saussure's concept of the linguistic sign directly reflects his view of language: a unit where the sound (or signal) in the form of concrete morphological forms or 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 *signifie* or 'signified'). Thus language should be studied as a system of complex units composed of articulatory-auditory elements – signals – which are further combined with concepts – invariant meanings: i.e. *linguistic signs*. The sign then becomes the theoretical unit of linguistic analysis combining and integrating all of the fundamental physiological and psychological aspects of language within a single unit.

One of the examples of the sign-oriented linguistic theory is the Columbia School, developed by Diver 1975, 1979, 1993; Davis 1987[1984]; Tobin 1989, 1990, 1993, 1995[1994], 1997, 2009; Klein-Andrew 1983; Kirsner 1984, 1987; Reid 1991; Contini-Morava 1989, 2000; Contini-Morava and Sussman Goldberg 1995; Even-Simkin 2012 and other linguists, that includes the phonological aspect that is called the theory of Phonology as Human Behavior (PHB), which explains the behavioral and cognitive aspects of human beings in the creation of the sound systems of languages, the result of which is a linguistic system that is both rich and economical enough to carry out communication in an efficient way (Tobin 1997). The basic principles that underlie the PHB theory may be summarized as the following: language represents a compromise in the struggle to *achieve maximum communication with minimal effort* and, is based on the synergetic principle of: a). cooperation between encoders and decoders to achieve maximum communication with minimal effort; and b). the trade-off between the human and the communication factors of language (Tobin 1997). That is, whereas communication factor, in general, may be defined by communicational oppositions, the human factor is based on the principle: *Human intelligence*, i.e., human beings can draw far-reaching abstract conclusions from minimally salient concrete cues; *Human efficiency*, i.e., human beings invest minimal effort for maximal results in the semiotic communication process; *Memory limitations*, i.e., human beings have but limited memories that can be directly related to human intelligence and human efficiency (Tobin 1997). Thus, according to the sign oriented CS PHB approach, language may be viewed as a

symbolic tool whose structure is shaped both by its communicative function and by the characteristics of its users (Tobin 2007, 2009), "where *meaning* is defined as a value relationship between grammatical signals sharing a common semantic domain"(Crupi 2006: 263) and which is able "to explain the distribution of linguistic forms" as Reid (2002: ix) notes. Moreover, following Diver (1995:49), the CS sign-oriented approach allows the "discovering the motivation for the particular form", and not merely describes and states the different linguistic problems. This study proposes the answer to the earlier introduced question and explains the systematic character of the IVA Noun Plurals with IVA that is phonologically and semantically motivated and not irregular.

Analysis: Non-Irregularity Hypothesis

There are at least five parallel historical subsystems for Nominal class in English in terms of the PHB Theory and each Nominal System may be explained in terms of the communication and the human factors.

(1) *Suppletion system*, i.e., two different lexical items for the singular and plural form of the same noun, such as: “person” (sg.) → “people” (pl.). Following the Sign-Oriented theory and *PHB*, the human factor in this group is "the worst" because of *memory limitations*, since two lexical items have to be learned instead of one. But as far as the lexical items differ entirely, the communication factor is "the best", since in this way we get different words that cannot be misunderstood. It is worth pointing out that in Modern English there is the plural form of "person"(sg.) which is: "persons" (pl.), but just in this case it refers to the individuals in the groups and not to the group itself like in "person" (sg.) → "people"(pl.). This example demonstrates the efficiency of the *suffixation system* (*-(e)s*), the most commonly used subsystem, presented in group 5, which is called: a "regular" plural formation in nouns in Modern English.

(2) *IVA system,* internal vowel alternation from singular to plural formation, like in: “goose”(sg.) → “geese”(pl.), “foot”(sg.) → “feet”(pl.). In this group the compromise between the communication and human factor is achieved, albeit not in the most efficient way. That is, the slight oppositions that are easier to produce appear predominantly in the monosyllabic words, thus making the IVA more salient in the word medial position. Furthermore, as in the first group, we may witness the merging effect with the *suffixation system* in the examples such as: 'computer mouse'(sg.) – 'computer mouses'(pl.) (metaphorical meaning) versus 'mice'(pl.) (literal meaning) and once again we may point out that the choice of an alternative plural form (with the suffix /–s/) for the noun that metaphorically implies a computer device is motivated semantically.

(3) *Adding of the suffix “-(r)en"*, like in “ox”(sg.) → “oxen”(pl.), “child”(sg.) → “children”(pl.). This system has almost totally disappeared in Modern English, probably, because nasal suffix provides a less clear-cut communicative oppositions, thus making this system less efficient in terms of the human factor. It is interesting to note the merging effect with the most

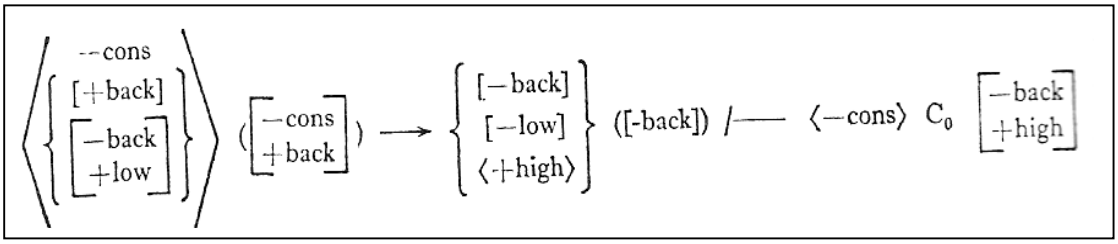
commonly used system (5) in the example like: historical 'brethren' (referring to spiritual brothers) versus 'brothers' (referring to 'biological brothers') that further supports the semantically motivated character of the particular choice of one system over the other.

(4) *Syncretism system*: the singular and plural form are identical, like in "sheep"(sg.) = "sheep"(pl.), "deer"(sg.) = "deer"(pl.). Thus, since we have the lack of any change (+zero), the human factor is "the best" because no additional effort is required, while the communication factor is "the worst", since it does not provide any communicative oppositions, consequently it is the worst way to distinguish between plural and singular form. Not surprisingly, in this group we may also see the merging examples with the *suffixation system*, like in 'different moneys' (referring to the different kinds of currency) or 'different fishes' (referring to different species of fish) versus 'different fish' (different groups of fish), thus pointing to the semantically motivated choice of one declension system over the other.

(5) *"Regular" system*: an adding of the apical suffix */–(e)s/*, like in "cat"(sg.) → "cats"(pl.). This system is the most productive in Modern English, since the use of the apical sounds, which are the optimal and "the easiest to pronounce and most communicatively salient consonants" (Even-Simkin & Tobin 2013: 27) that are added in word-final position "where … the least effort is required in the search for a compromise to achieve *maximum communication with minimal effort*"(Even-Simkin & Tobin 2013: 27, Tobin 1997, Diver 1979), reflects the "best" compromise between both: the human and the communication factors out of the five systems discussed above. Thus, it is not by chance that it is the main subgroup that has survived and is the commonly used one in Modern English, leaving outside the rest of the systems (1-4) as merely being the exceptions to this "regular" */+(e)s/* rule.

However, the non-irregularity of the nominal IVA forms may be drawn from their common historical background, i.e., *i-mutation* (umlaut) which evidently points to the systematic phonological process. Paraphrasing Quirk & Wrenn's (1955: 151) words, the IVA Noun Plural forms undergo a fronting or raising of non-front vowels to mid or high front vowels. That is, the Noun Plural IVA nuclei are uniformly fronted and, as the remnants of i-umlaut, follow the phonological rule presented in Table 1.

Table 1. Phonological Rule of Old English



(adapted from Lass & Anderson (2010[1975]: 128))

This phonological process, Lass & Anderson (2010[1975]: 119) in their study of *OE Phonology* describe as a systematic process: "[t]he basic effects of the umlaut may be summed up as follows: in a certain context, back vowels front … [and] [i]f the vowels undergoing umlaut are nonback and low, they raise". Indeed, in the examples given in Table 2, we may witness different degrees of the phonological *fronting process* of the IVA from singular to plural declension, i.e., from back vowels or diphthongs to different front vowels or diphthongs in Modern English IVA Noun Plurals as well as in their Old English forms.

Table 2. Phonological Fronting Process of IVA

OE Singular Form of Nouns with the *Vowels*: /ō, ā, a, ū, u, ēō/	**OE Plural Form of Nouns with the *Vowels*: /ē, æ, y, īē/**	**Phonetically-Phonological *Fronting Process* of IVA in OE Forms of the Nouns (+)**	**ModE Singular form with the Following Phonological Representation of the Vowels*:* [æ, ʊu, au]**	**ModE Plural form with the Following Phonological Representation of the Vowels*:* [e, Ii, aI]**	**Phonetically-Phonological *Fronting Process* of IVA in ModE Forms of the Nouns (+)**
mann	menn	**/a/** → **/ē/** = (+)	man	men	[æ] → [e] = (+)[1]
wīfmann	wīfmenn	**/a/** → **/ē/** = (+)	woman	women	[æ] → [e] = (+)
fōt	fēt	**/ō/** → **/ē/** = (+)	foot	feet	[ʊu] → [Ii] = (+)
tōð	tēð	**/ō/** → **/ē/** = (+)	tooth	teeth	[ʊu] → [Ii] = (+)
gōs	gēs	**/ō/** → **/ē/** = (+)	goose	geese	[ʊu] → [Ii] = (+)
mūs	mys	/**ū**/ → /**y**/ = (+)	mouse	mice	[au] → [aI] = (+)
lūs	lys	/**ū**/ → /**y**/ = (+)	louse	lice	[au] → [aI] = (+)
brōc	brēc(OE)/ brēche(ME)	**/ō/** → **/ē/** = (+)	breeches, trousers, pants	Without IVA in ModE	**----**
bōc	bēc	**/ō/** → **/ē/** = (+)	book	Without IVA in ModE	**----**
fēōnd	fīēnd/fynd	/**ēō**/ → **/īē/** or /**y**/ = (+)	foe	Without IVA in ModE	**---**
frēōnd	frīēnd/fryn d	/**ēō**/ → **/īē/** or /**y**/ = (+)	friend	Without IVA in ModE	**---**
hōnd	hēnd	**/ō/** → **/ē/** = (+)	hand	Without IVA in ModE	**---**
gōte	gēt	**/ō/** → **/ē/** = (+)	goat	Without IVA	**---**

[1] Although both [æ] and [e] are front vowels, the low front vowel [æ] is further back than the mid-front vowel [e]. In the current discussion I refer to any and all relative degrees of the *fronting* process.

				in ModE	
hnute	hnyte	/**u**/ → /**y**/ = (+)	nut	Without IVA in ModE	---
burg	byrg	/**u**/ → /**y**/ = (+)	fortress	Without IVA in ModE	---
ā**c**	ǣ**c**	/**ā**/ → /**ǣ**/ = (+)	oak	Without IVA in ModE	---
c**ū**	c**y**	/**ū**/ → /**y**/ = (+)	cow	Without IVA in ModE	---

Such apparent regularity and consistency in the IVA system clearly points to the non-arbitrariness of the IVA process. Indeed, this phonological *fronting process* in the Singular to Plural declension of the IVA is iconic for metaphoric 'moving forward' because it points to the fronting as a representation for the addition of plural. Furthermore, this kind of phonological consistency in the IVA process is not only iconic, but is also semantically motivated. Beedham (2005: 114) claims that "[a]ll linguistic forms must fit into the system somehow, and they all must have a meaning, it is simply a case of working out how they fit in and what the meaning is". This study depicts that the IVA Noun Plurals do not just share a phonologically iconic *fronting feature* but they are also marked by the same semantic feature of *Semantic Integrality* (SI). The term of Semantic Integrality that was originally introduced in Tobin (1990) and later developed in Tobin (1993, 1995[1994]: 71) may be summarized as:

> [t]he marked feature [that]… is based on the assumption that there are two alternative ways of perceiving entities in space, time, or existence either as discrete entities:
> (a + b = a + b) or as 'potentially discrete entities perceived as part of a continuous set: (a + b = [ab]).

In other words, the semantic analysis of these Noun Plural forms reveals that the IVA forms are marked for SI, i.e., the IVA is also both motivated and systematic not only phonologically, but semantically as well, thus, indicating that differences in form imply differences in meaning.

It is a common knowledge that there is a very small number of the IVA Noun Plurals in Modern English, for example, if to compare them to the thousands of the so-called regular singular-plural formations like: *cat-cats, bus-buses*. Moreover, not many records of the Old English forms with the IVA may be found, though following different historical studies, for example, by Quirk & Wrenn, Hulbert, Emerson, Wright, it becomes evident that the number of the IVA forms in Old English was more numerous. For instance, as Table 3 presents, the Old English IVA Plural forms of the nouns: *nut, friend* or *oak*, moved to the so-called regular singular-plural declension system, that is, are formed by the adding of the suffix *-s/es* in Modern English. However, these nouns, as well as the other IVA Noun Plurals, still are marked for the same semantic feature of SI.

Table 3. Common Semantic Denominator of IVA

No. Group	Singular OE Forms of Nouns with the Following Vowels: /ō, ā, ū, ēō/	Plural OE Forms of Nouns with the Following Vowels: /ē, æ, y, īē/	ModE forms of these Nouns	Classified Semantic Domains per Group	CSD per Nominal IVA Class
I	mann	menn	man	nouns that generally describe potentially plural two/or more units or sets, which may be either identical or complementary	*Semantic Integrality*
	womann	womenn	woman		
	fōt	fēt	foot		
	tōð	tēð	tooth		
	brōc	brēc(OE)/ brēche(ME)	breeches, trousers, pants		
	bōc	bēc	book		
	fēōnd	fīēnd/fynd	foe		
	frēōnd	frīēnd/frynd	friend		
	hōnd	hēnd	hand		
II	gōs	gēs	goose	nouns that refer to animals that live near human beings communally in groups or herds	
	gōte	gēt	goat		
	mūs	mys	mouse		
	lūs	lys	louse		
	cū	cy	cow		
III	hnute	hnyte	nut	nouns that refer to sturdy entities that usually grow together in groups or clusters	
	burg	byrg	borough or fortress		
	āc	æc	oak		

As shown in Table 3, the nouns of the first group are marked for the feature of *Semantic Integrality*, i.e., the semantics of these words entails the existence of another entity or entities that are perceived as being integral to that entity, like in: *man* vs. *woman; foe* vs. *friend; foot* (as a rule a pair), *hand* (as a rule a pair), *breeches, trousers, pants* (clothes intended as a rule for the two parts of the body), *tooth* (each tooth has a symmetric pair), *book* (consists of more than one page). That is, these nouns imply a continuous set of potentially discontinuous entities, or, in other words, these nouns generally describe the potentially two/manifold units which may be either identical or complementary. Nouns of the second group also make a claim for *Semantic Integrality.* That is, these words refer to animals that mainly live near the human beings communally in groups or herds, thus, entailing semantically the integral kind of units or entities in the existence in space or in place. The third group of Table 3, includes nouns that are marked for *Semantic Integrality* as well as in other two groups of this Table. Unsurprisingly, the semantics of these nouns implies the entity that consists of or represents extremely sturdy entities that usually grow together in groups, and have to be integrally connected in order to make available this wholeness or strong unity. That is, Table 3 presents three Common Semantic Domains of the

IVA Noun Plurals with one main Common Semantic Denominator that encompasses all three of them and which is *Semantic Integrality*.

It is interesting to point out that the fourth system (Syncretism) is also marked by the feature of *Semantic Integrality*. The efficiency of this system that mostly includes bi- and polysyllabic "mass nouns" is, indeed, due to its clearly marked feature for SI, i.e., the less optimal communicative distinctions in phonology are complemented by a more salient semantic feature. It is worth noticing that the first and the third systems also demonstrate the marked feature for SI, which is albeit less obvious than in *mass nouns* (fourth system), however, this should be the subject of the further study.

The above observations indicate the unequivocal function of the IVA as a linguistic sign that is composed of the concrete morphophonemic process in a form of the phonologically iconic *fronting process* 'signifier' that is indivisibly united with its invariant meaning, which is *Semantic Integrality* 'signified'. Another interesting observation is that the IVA systems are named as schemas: "[s]ets of words having similar patterns of semantic and phonological connections reinforce one another and create emergent generalizations describable as schemas" (Bybee 1995: 430), thus once again pointing to the non-arbitrary, i.e., the systematic character of the Noun Plural IVA forms.

Conclusion

The sign-oriented diachronic analysis of the phenomenon known as "irregular" nouns in Modern English reveals that the IVA displays the features of the linguistic sign, i.e., this study uncovers a concrete phonological IVA process: *fronting process* (significant) that functions as a linguistic signal that is inseparably united with an invariant meaning in the form of a common semantic denominator: *SI* (signifié). Such complex linguistic unit that links the linguistic signal with its invariant meaning presents an example of an essential tool in the creation of human communication. That is, the IVA functions as a "linguistic sign which does not separate form from meaning and which functions as part of systematic structure" (Tobin 1990: 35), i.e., the Noun Plural forms with the IVA share the fronting feature which is: a). metaphorically iconic, and b). is marked by the distinctive semantic feature of *Semantic Integrality*, thus emphasizing the systematic semantic feature of the IVA.

With regard to the historically important role played by the IVA forms, in teaching English it would be more accurate to mention the so-called irregular Noun Plurals as a parallel system to the suffixation system (noun + *s/es*) and to expose students to the underlying system of the so-called irregular forms in order to make the learning process more meaningful. Indeed, the so-called irregular nouns in English are shown to be systematic not only phonologically, but semantically as well, also maintaining Quirk, Greenbaum, Leech & Svartvik (1985) and Baayen & Martin's (2005: 668) statement that:

> It is clear that the Germanic irregular nouns of English, although formally and etymologically highly heterogeneous, pattern along lines of semantic similarity.

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