

TÜRKÇEDE ÜNLÜ ALMAŞMASI

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ÖZET

Bu çalışma Türkçe yansıma ikilemelerdeki ses değişimlerini araştırmakta ve bağlamdan bağımsız ses değişimlerini ifade etmek için kullanılan *almaşma* temelli bir çözümleme önermektedir. Çalışma Türkçe yansıma ikilemelerinin barındırdıkları ses değişimleri açısından bir eğilim sergileyip sergilemediklerini sorgulamaktadır. Çalışmada, bağlamdan bağımsız olarak var olan ses değişimlerinin aslında bir tür ses almaşması olduğu ve Guerssel & Lovenstamm (1996)'da önerilen Almaşık örgü'yü takip ettiği savunulmaktadır. Buna göre Türkçe yansıma ikilemelerdeki [a]-[u] ve [e]-[ü] ünlü değişimleri Almaşık örgü'deki A→U değişimine tabi olarak açıklanabilmektedir.

Anahtar Kelimeler: almaşma, yansıma ikilemeler.

APOPHONY IN TURKISH

ABSTRACT

The present work investigates the sound alternations in Turkish onomatopoeic reduplications and offers an analysis based on apophony, which is the label for context-free sound alternations. It questions whether Turkish onomatopoeic reduplication displays any regularity with respect to the vocalic changes observed in the forms. The study claims that context-free sound alternations in onomatopoeic reduplications are some form of apophony and follows the Apophonic path offered by Guerssel and Lowenstamm (1996). Turkish implements A→U alternation for both [a]-[u] and [e]-[ü] changes observed in onomatopoeic reduplications.

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Key Words: apophony, onomatopoeic reduplication.

1. Introduction

In general terms, vowel harmony is a context dependent vocalic alternation where the quality of the vowel is dependent on the quality of preceding or following vowels in terms of palatality, height, length or labiality of the vowel segment. This implies that there is a particular context which acts as a trigger for the vocalic alternation. Turkic languages have long been observed to involve two types of vowel harmony (palatal harmony and labial harmony). However, there are also vocalic alternations observed in languages which do not seem to be following a specific context, i.e. the alternation is a context-free vocalic alternation.

The context free sound alternations have been observed in the morpho-phonological systems of many languages. A more detailed investigation of these alternations revealed that they seem to follow certain patterns which have been labeled apophony in the literature. Consider the perfective-imperfective derivation in (1a-d) from Classical Arabic. The examples are slightly modified for present purposes.

(1)	a.	b.	c.	d.
	√	Gloss	Perfective	Imperfective
	<i>lbs</i>	‘dress’	<i>lab<u>i</u>s+a</i>	<i>ya+lba<u>s</u>+u</i>
	<i>ktb</i>	‘write’	<i>kat<u>a</u>b+a</i>	<i>ya+kt<u>u</u>b+u</i>
	<i>drb</i>	‘hit’	<i>dar<u>a</u>b+a</i>	<i>ya+dri<u>b</u>+u</i>
	<i>kbr</i>	‘be great’	<i>ka<u>b</u>ur+a</i>	<i>ya+kb<u>u</u>r+u</i>

Guerssel and Lowenstamm (1996:1) example (1)

The underlined sounds in (1c-d) have been analyzed as indicating different grammatical functions and involving a regular pattern of sound alternation. In this alternation a derivational process is assumed to be present between the two sounds in that one is derived from the other. This process is labeled apophony by Guerssel and Lowenstamm (1996) and assumed to be universally present in all languages.

Similar to languages where apophony is observed, Turkish has some alternations which seem to exhibit some regularity. I point

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out that the sound alternations observed in onomatopoeic reduplications are that sorts of alternations which are exemplified in (2a-c) below. We provide theoretical discussions on the availability of analyzing these alternations as following some form of apophony.

- (2) a. tak tuk b. kem küm c. takır tukur
 ‘rat tat tat’ ‘faltering’ ‘rattling’

(2a-c) present the data in which basic vocalic changes are observed.¹ As seen from the examples (2a-b), we have [a]-[u] and [e]-[ü] alternations which may also be observed in non-onomatopoeic reduplications such as *yanlıř yunluř* ‘in a wrong way’ and *tek tük* ‘one or two’. (2c) shows that the alternation is also observed in poly-syllabic onomatopoeic reduplications where vowel harmony is also observed alongside the apophony. Note that [a]-[u] and [e]-[ü] alternation is not the only option in onomatopoeic reduplications. Consider the non-alternating pairs in (3a-b) which show that the vocalic alternation is not an obligatory process and vowels may remain the same in onomatopoeic reduplications.

- (3) a. tak tak b. fel fel
 ‘knock knock’ ‘meaningless glance’

Working on the regular vocalic alternations in onomatopoeic reduplications exemplified above, I argue that the sound alternations in Turkish onomatopoeic reduplications can be analyzed as following from the Apophonic path provided by Guerssel and Lowenstamm (1996) and developed by Ségéral and Scheer (1998). Turkish implements the A→U alternations from the path for vocalic alternations. Moreover, there seems to be a relationship between vowel harmony and apophony in poly-syllabic onomatopoeic reduplications.²

The contribution of the study is twofold. First, the present study is the first theoretical study on sound alternations in onomatopoeic reduplications in Turkish. Some earlier and comprehensive works such as Tuna (1948), Hatipođlu (1971, 1981), Zülfikar (1995) and Demircan (2009) observed and described reduplications and the alternations mentioned above. However, a

¹ There are also consonantal changes observed in onomatopoeic reduplications such as *çat pat* ‘smattering’, *zirt pirt* ‘frequently’, *pat küt* ‘with biffs and bams’, *hır gür* ‘noisy squabble’. These alternations are excluded from the analysis here.

² The relationships between apophony and vowel harmony is excluded from the analysis here. See Baturay (2010) for an analysis based on the idea that apophony is a morphological operation and follows vowel harmony which is a phonological operation.

theoretical work on the issue has so far been lacking. Therefore, as the first study on apophony in Turkish, it contributes to the theoretical description of Turkish. Second, the study provides further evidence for the universality of the Apophonic path offered by Guerssel and Lowenstamm (1996). Therefore, our study also contributes to the general theory by providing discussions of more data.

The article is organized as follows: In section 2 I will provide a brief discussion on onomatopoeic reduplication. I will introduce the theoretical background of the study in Section 3. Section 4 will discuss the apophony observed in onomatopoeic reduplications. Finally, the conclusion part will summarize the work.

2. Onomatopoeic reduplication

The sound alternations I focus on are those involved in onomatopoeic reduplications in Turkish. Reduplication is a phenomenon which means the repetition of any linguistic units for various grammatical purposes such as intensifying and strengthening the meaning, enriching the concept, and deriving new words. There are different analyses on the issue of reduplication as to whether reduplication involves phonological copying (McCarthy & Prince 1995) or morphological doubling (Inkelas & Zoll 2005). I will not go into the details of these analyses here but see Baturay (in press) for a classification based on Inkelas and Zoll's (2005) system.

Reduplication in Turkish has a wide range of application, and the data displaying the phenomenon are quite diverse, making it a challenge to provide a complete analysis. Therefore, as an initial step, I distinguish between reduplication with lexical forms such as *kalem kağıt* 'pen paper', *ana baba* 'mother father' and reduplication with onomatopoeic forms such as *şapır şupur* 'smacking', *tak tuk* 'rat tat tat', and restrict the analysis here to the latter category.³ As for the onomatopoeic forms, they are considered here as reflections of sensations which can be perceived via the five senses, and not just those which are purely sound reflections.

Although onomatopoeia and reduplication are usually seen as two distinct phenomena, they are related to each other in a number of respects. That is to say, onomatopoeia can be observed in reduplication in Turkish: e.g. *şak şak* 'sound of applause', *car car* 'chatty'. Thus, reduplication seems to be a morphological device with which onomatopoeic forms are turned into usable linguistic forms

³ Note that this is only a rough generalization based on the present purposes. See Baturay (in press) for a detailed discussion on the classification of reduplication like constructions in Turkish.

with a function in the sentence. That is, an onomatopoeic form such as *şak* cannot stand alone, but reduplication which is used as a word formation process can form a new lexical item out of *şak*, namely *şak şak* ‘sound of applause’, which now can stand alone.

3. Theoretical framework: Government Phonology

The theoretical background of the present study is Government Phonology and the discussions and analyses here are based on the basic premises of the theory as proposed by Kaye, Lowenstamm & Vergnaud (KLV) (1985, 1990), Kaye (1990), Kaye (1995). The ground rules of this theory are *privativeness*, *universality* and *non-arbitrariness* (KLV, 1990:194).

In Government Phonology there is no order of phonological processes. The processes apply only when they are necessary as stated in the Minimality Hypothesis (Kaye, 1995:291). This is given in (4) below.

(4) *Minimality Hypothesis*

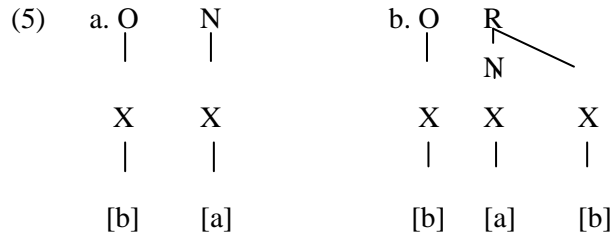
Processes apply whenever the conditions that trigger them are satisfied.

(Kaye, 1995:291) example (1)

Now, let us describe the basic tenets of GP with respect to the issues of constituent structure, empty categories and elements in phonological theory.

3.1. Constituent structure

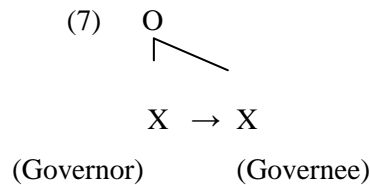
Government Phonology is a non-linear approach to phonology where words consist of sequences of onsets (O) and rimes (rhymes) (R), where the rime in turn contains the nucleus (N). O refers to consonants and N to vowels. These constituents, which can also be branching, dominate skeletal positions which can be occupied by phonological expressions, yielding individual sounds such as [k, m, a], etc. (KLV, 1990:199). Consider (5a-b) below which represent these constituents.



These three constituents are subject to three universal principles given in (Kaye, 2000:6). Consider (6a-c).

- (6) a. Every nucleus can and must license a preceding onset.
 b. Every onset must be licensed by a following nucleus.
 c. Every constituent licenser must dominate a skeletal point.

KLV (1990:203) point out that two positions which are dominated by a single constituent are in a government relationship. A government relationship is a binary, asymmetrical relationship consisting of a governor and a governee. Consider (7).



KLV (1990:199) indicate that the government relationship depends on two universal constraints which are given in (8a-b) below.

- (8) a. Strict Locality
 b. Strict Directionality

Strict locality means that the two positions in a governing relationship must be adjacent as a phonological string. Strict directionality, which universally defines how constituents are grouped together within a domain such as a word, means that the direction of government is not subject to parametric variation.

Also, the Projection Principle defines the level of government relations. Consider (9) below.

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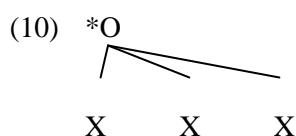
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(9) *The Projection Principle:*

Governing relations are defined at the level of lexical representation and remain constant throughout a phonological derivation.

(Kaye, 1990:221) example (60)

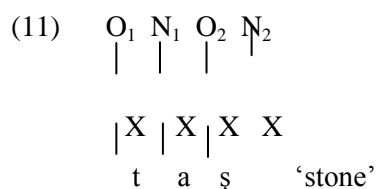
Kaye (1990:199) points out that all syllabic constituents are maximally binary, a process known as *The Binarity Theorem*. This is exemplified in (10).



According to this theorem, a constituent can dominate no more than two positions. Thus, (10) is not a correct structure. After giving the theoretical assumptions of Government Phonology on constituent structure, let us now discuss how empty categories are handled in Government Phonology.

3.2. Empty categories

Within Government Phonology, an empty category is considered as a skeletal position with no melodic material associated to it. This is exemplified in (11).



In (11) N₂ has no phonological material; thus it is an empty category. An empty category is interpreted according to the Empty Category Principle (ECP) which is given in (12) (Kaye, 2000:10).

(12) *The Phonological ECP*:⁴

A p(rosodic)-licensed (empty) category receives no phonetic interpretation.

P-licensing occurs when domain-final (empty) categories are parameterized as on / off. This means that a language can allow domain final empty categories by parameter and p-licensing occurs as in (12). Turkish is an example of such languages. Also, properly governed (empty) nuclei are p-licensed. In addition to p-licensing, there is a case called *magic licensing* by which *s+C* sequences p-license a preceding empty nucleus.⁵ Now let us see how Government Phonology approaches phonological expressions.

3.3. Elements

In Government Phonology, phonological expressions, i.e. the melody attached to skeletal positions are composed of elements such as A, I, U, H, L, ? (Kaye, 2001:252). These elements roughly represent the properties given in (13).

(13) A: represents openness in vowels, coronality in consonants.

I: represents height in vowels, palatality in consonants.

U: represents roundness in vowels, labiality in consonants.

L: represents low tone, slack vocal cords, voice consonants, nasality.

H: represents high tone, stiff vocal cords, voicelessness in consonants, friction.

?: represents stopness.

(Balçı, 2006:23) example (21)

⁴ *Proper government*: α properly governs β if

1. α and β are adjacent on the relevant projection,
2. α is not itself licensed, and
3. Neither α nor β are government licensors.

Government licensing: A nuclear position is a government licensor if its onset governs a preceding rimal complement (direct government licensing). A nuclear position is a government licensor if its onset is the head of a branching onset (indirect government licensing) (Kaye 1995:295).

⁵ See Kaye (1995) and Kaye (2000) for further discussion.

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Kaye (2000) also refers to \emptyset which is also be interpreted as a phonological expression. Elements are monovalent (KLV, 1990:202).

In a phonological expression, there may be more than one element, i.e. (A.I) or (A.U) etc. An element can be an operator or a head (Charette and Göksel, 1994, 1996). The head of an expression licenses its operators. For example, in some Scandinavian languages, there are two types of [ü]: while [ü] headed by I can be represented as (U.I), [y] headed by U can be represented as (I.U) (Charette & Göksel, 1996:3).

According to Kaye (2001:253), licensing constraints are used in order to regulate the combination of the elements into phonological expressions. In other words, licensing constraints are language specific laws on phonological expressions which reduce the elemental combinations not used in a language by determining the roles an element can assume in a phonological expression.

Kaye (2000:2) states that expressions can be headed or headless. The ones headed by the identity operator \emptyset are called headless. That is to say, they are the expressions headed by an empty head. The others are headed.

4. The Apophonic path and Turkish onomatopoeic reduplication

This section introduces the theoretical apparatus of apophony and discusses the Turkish onomatopoeic alternations in terms of the Apophonic path. We focus on [a]-[u] and [e]-[ü] alternations. Before getting into the details of these alternations, let us describe how the Apophonic path works in language.

4.1. General remarks on the Apophonic path

As stated in Guerssel and Lowenstamm (1996), apophony is the regular alternation of sounds within a word that serves some [grammatical function](#) as exemplified in (1a-d) in the introduction section. (1a-d) is repeated below as (14a-d).

(14)	a.	b.	c.	d.
	√	Gloss	Perfective	Imperfective
	<i>lbs</i>	‘dress’	<i>labis+a</i>	<i>ya+lbas+u</i>
	<i>ktb</i>	‘write’	<i>katab+a</i>	<i>ya+ktub+u</i>
	<i>drb</i>	‘hit’	<i>darab+a</i>	<i>ya+drib+u</i>
	<i>kbr</i>	‘be great’	<i>kabur+a</i>	<i>ya+kbur+u</i>

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Guerssel and Lowenstamm (1996:1) example (1)

As seen in (14a-d), the second vowel (underlined) indicates different grammatical functions, namely perfectiveness and imperfectiveness. Guerssel and Lowenstamm (1996:1) state that the vocalic change is sometimes constant and sometimes variable. That is to say, the vocalic alternation seems to be irregular since [a] changes into [u] and [i] in different cases. In *ktb* 'write', for instance, [a] in the second vocalic position of the perfective seems to turn into [u] in the imperfective: *katab+a* → *ya+ktub+u*. In *drb* 'hit', on the other hand, [a] in the second vocalic position of the perfective seems to turn into [i] in the imperfective: *darab+a* → *ya+drib+u*.

Guerssel and Lowenstamm (1996:1) claim that this presumed 'irregularity' can be reduced in that there is a very clear pattern hidden in the seeming randomness, and this clear pattern comes from apophony. Guerssel and Lowenstamm (1996:2) propose that the two vowels involved in an apophonic alternation are related to each other by a morphological derivation which follows what they call the Apophonic path. According to this analysis, the derived term of an apophonic alternation is predictable on the basis of the source term. Guerssel and Lowenstamm (1996:13) show that Classical Arabic follows the Apophonic path and furthermore suggest that the Apophonic path is not specific to Classical Arabic but a universal mechanism, which is available in the grammatical systems of all languages.

Guerssel and Lowenstamm (1996), Ségéral and Scheer (1998) and Bendjaballah (2001) argue that the Apophonic phenomena observed in Classical Arabic, New High German and Kabyle Berber, respectively, can all be explained by the Apophonic path. The goal of such a theory is to show that among the alternating vowels, only one is lexically present, the others being predictable. The derivational link that relates the lexical and the derived vowel(s) is universal. Consider (15) which represents the derivational link in apophony.

(15) $\emptyset \Rightarrow i \Rightarrow a \Rightarrow u \Rightarrow u$

The derivational link in (15) starts with [ø] and ends in [u]. Moreover, Ségéral and Scheer (1998:56) suggest that onomatopoeia makes use of reduplication and vocalic alternations of the sort found in apophony.

Both Guerssel and Lowenstamm (1996) and Ségéral and Scheer (1998) claim that the Apophonic path exists in other languages too. Ségéral and Scheer (1998) state that the Apophonic path has been argued to be operative in Ge'ez (Ségéral 1995) and Kabyle Berber

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(Bendjaballah 1995) (both cited in Ségéral and Scheer, 1998:31). In recent works Ségéral and Scheer (1994) and Ségéral (1995) (cited in Ségéral and Scheer, 1998:31) have shown that the entire system of strong verbs of Modern German, 43 different vowel patterns altogether, can be interpreted as a mere instantiation of the Apophonic path. They argue that this cross-linguistic stability of apophonic alternations indicates the universality of the Apophonic path.

Vocalic alternations in Turkish onomatopoeic reduplications have been observed by Marchand (1952), Hatipoğlu (1971, 1981), Müller (2004), Zülfikar (2005) and Karahan (2008) among others. Below, I will examine how the context-free vocalic alternations in onomatopoeic reduplication in Turkish can be explained with the Apophonic path. Let us begin with the [a] → [u] alternation.

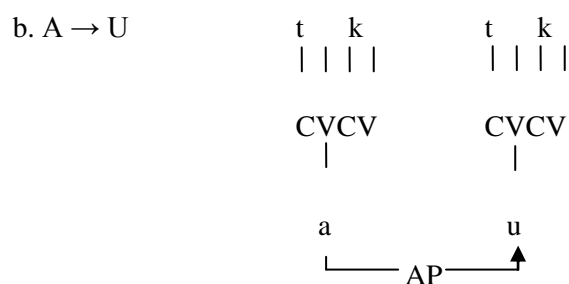
4.2. [a] → [u] alternation

In Turkish onomatopoeic reduplication we frequently observe alternations in which the first member of the pair has an [a] in the first vocalic position while the second member of the pair has an [u]. This is exemplified in (16a-b).

- (16) a. tak tuk ‘rat tat tat’
 b. fart furt ‘pretentiously’

Following Guerssel and Lowenstamm’s (1996) analysis, this change can be analyzed within Apophonic path theory in the following way. Consider (17a-b).

- (17) a. Apophonic path (AP): $\emptyset \Rightarrow i \Rightarrow a \Rightarrow u \Rightarrow u$



(17b) shows that the Turkish onomatopoeic reduplication example *tak tuk* ‘rat tat tat’ follows the Apophonic path repeated in (17a), namely the portion where [a] goes to [u].⁶ However, we also

⁶ In the analysis, I take the first member of the reduplication form as the source of the derivation. This position is supported by theory internal reasons and

observe onomatopoeic reduplications where [a] stays [a] as I have pointed out before. Consider (18a-b) where (18b) shows how the onomatopoeic reduplication in (18a) is derived.

(18) a. tak tak ‘knock knock’

b. A → A

t	k	t	k
CVCV		CVCV	
a		a	

.....NO AP.....

(18b) shows that the Apophonic path is not always applicable to onomatopoeic reduplication.

4.3 [e] → [ü] alternation

As I have stated before Apophonic path is $\emptyset \rightarrow i \rightarrow a \rightarrow u \rightarrow u$. However, some examples in Turkish show that there is not only an [a] → [u] alternation but also one with [e] → [ü]. The Apophonic path offered by Guerssel and Lowenstamm (1996) indicates the existence of [a] and [u] in the path but not [e] or [ü] sounds. In this section I try to show that the [e] → [ü] alternation, despite first appearances, is an apophonic derivation parallel to [a] → [u].

Guerssel and Lowenstamm (1996) study Classical Arabic, whose vocalic inventory includes only three vowels: [i], [a] and [u]. That is why they examine only the vocalic alternations involving those three sounds within the Apophonic path. However, languages have different sound systems, despite the presence of common properties. That is to say, while there are just three basic vowels in some languages such as Classical Arabic, some other languages such as New High German and Turkish have more than three basic vowels, as also observed in Ségéral and Scheer (1998:42): in New High German there are also mid vowels and front rounded vowels. Those vowels are called *complex vowels* since they are more marked when compared to [i, a, u]. At this point, Ségéral and Scheer (1998:42) discuss the complex vowels via the decomposition of the segments into smaller

there is empirical evidence for this position. See Baturay (2010) for a detailed analysis.

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units; *elements* in terms of Government Phonology. Let us now see what elements mean for the apophony process.

4.3.1. Elements in the Apophonic path

Ségéral and Scheer (1998:43) claim that apophony applies to phonological elements, not to entire sounds. To illustrate this, they provide an example from New High German. Consider (19), which gives the infinitive, preterite and the past participle forms of the strong verb *bergen* ‘to salvage’.

(19)	<u>Infinitive</u>	<u>PreteritePast</u>	<u>Participle</u>
	bErgen	bArg	gebOrgen

Ségéral and Scheer (1998:43)

In (19) while [e] is present in the first vocalic position of the infinitive form, there is an [a] in the preterite form. There is an [o] in the corresponding position of the past participle form. According to the Apophonic path, the derivation has to conform to the following pattern.

(20) $\emptyset \rightarrow I \rightarrow A \rightarrow U \rightarrow U$

Ségéral and Scheer (1998:43) example (27)

In (19) [e] turns into [a] and [a] to [o], but the Apophonic path given in (20) does not say anything about [e] and [o] at all. However, what we know is that [e] and [o] are complex vowels in which there is more than one element. Consider (21a-b) which represent the internal structure of these phonological expressions.

(21) a. A.I → [e] b. A.U → [o]

What Ségéral and Scheer (1998) also propose is that the Apophonic path applies to phonological elements, not to the segments. If we look at the example (19) from this point of view, we will be able to see the following pattern of alternation in (22). The example is slightly modified for present purposes.

(22)	<u>Infinitive</u>		<u>Preterite</u>		<u>Past Participle</u>
	b <u>E</u> rge <u>n</u>		b <u>A</u> r <u>g</u>		ge <u>b</u> O <u>r</u> ge <u>n</u>
	I →		A →		U
	A				A

Ségéral and Scheer (1998:43) example (25)

According to the Apophonic path, there is no change from [e] to [a] or [a] to [o]. The reason for that is two folds: (i) there is no [e] and [o] in the Apophonic path, which are not elements themselves but complex expressions, and (ii) the Apophonic path applies to phonological elements, not to complex expressions. When we follow the alternation in (22) based on phonological elements, we will see that the Apophonic path works without problems as I will discuss in the next section.

4.3.2. Complex vowels in Turkish

Similar to New High German, Turkish does not only have the vowels [i, a, u] but also other high and mid vowels. We can present the vocalic inventory of Turkish in (23) ([ɛ] and long vowels are omitted).

(23) *Table 1: Vocalic inventory of Turkish*⁷

<i>Vowels</i>	<i>A</i>	<i>e</i>	<i>ɪ</i>	<i>i</i>
elements	A	U	Ø	I
<i>Vowels</i>	<i>O</i>	<i>ö</i>	<i>u</i>	<i>ü</i>
elements	A. U	A.U. I	A. I	U.I

In Section 4.2 I looked at the [a] → [u] alternation in terms of the Apophonic path. However, the alternation in onomatopoeic reduplications not only consists of [a] → [u] alternations, but also [e] → [ü]. Consider (24a-b).

⁷ This is actually an incomplete representation of the vocalic inventory of Turkish. There are more vowels occurring in some specific contexts. However, I do not include them to the Table 1 in (23) since the study is not related to these vowels.

- (24) a. kem küm
 ‘faltering’
 b. ef(il) üf(ül)⁸
 ‘blowing not very slowly’

As seen in (24a-b), Turkish also has an [e] → [ü] alternation in onomatopoeic reduplications. Recall that according to Guerssel and Lowenstamm (1996), there is no [e] → [ü] change since they only refer to the three vowels [i, a, u]. However, Ségéral and Scheer (1998) deal with elements and state that apophony applies to elements not to complex expressions. Here, I will follow Ségéral and Scheer (1998) and analyze the vocalic alternation in the light of elemental composition. First, I will look at *kem küm* ‘faltering’. Consider (25a-d).

- (25) a. kEm c. kÜm
 b. I.A → [e] d. I.U → [ü]⁹

In (25a) we observe that [e] is a sound composed of the I and A elements and in (25b) [ü] is the result of the fusion of I and U. Note that vocalic change involves only the A and U elements given that the I elements is present in both forms. Thus, it seems to be the case that only one element is active in the apophony process. Ségéral and Scheer (1998) propose a distinction between apophonic element versus parasitic element for the similar situation in New High German. In the similar line of reasoning, I propose a distinction between apophonic versus non-apophonic elements in that the former actively participates to apophony while the latter remains the same.¹⁰

Thus, similar to New High German, we have to decide on which element is apophonic and which one is non-apophonic in order to understand apophony in complex vowels. With this aim, we can analyze *kem küm* ‘faltering’ where we have four possibilities with respect to the apophonic versus non-apophonic elements. The first one is given in (26).

⁸ At this point, we ignore the *-il* and *-ül* parts of *efil* and *üfül* respectively since we focus on the vocalic alternation in the first vowel position of the onomatopoeic forms. See Baturay (2010) for the analysis on poly-syllabic onomatopoeic reduplications.

⁹ I do not mark the head in the expressions since it is not relevant to my present discussion.

¹⁰ See Baturay (2010) for the discussion on the apophonic versus non-apophonic distinction and how it differs from Ségéral and Scheer’s (1998) original distinction.

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(26)	$k\bar{E}m$	\rightarrow	$k\bar{Ü}m$	
	\bar{I}		\bar{I}	(Apophonic Line)
	A		U	(Non-Apophonic Line)

In (26) we observe that I remains as I but we lose A instead of which we get U in *k̄im*. However, that kind of explanation fails since I does not turn into I according to the Apophonic path, i.e. I turns into A, not into I ($\emptyset \rightarrow I \rightarrow A \rightarrow U \rightarrow U$). Also, if we claim that I turns into I, we cannot explain how we lose A and get U given that the source of U remains a question. The second hypothesis is given in (27).

(27)	$k\bar{E}m$	\rightarrow	$k\bar{Ü}m$	
	\bar{I}		\bar{U}	(Apophonic Line)
	A		I	(Non-Apophonic Line)

(27) is similar to (26) in terms of the loss of A and the addition of I. If I turns into U, which is impossible according to the Apophonic path, what is the job of I Element in *k̄im*? Therefore, this option is out, too. The third hypothesis says that A turns into I as given in (28).

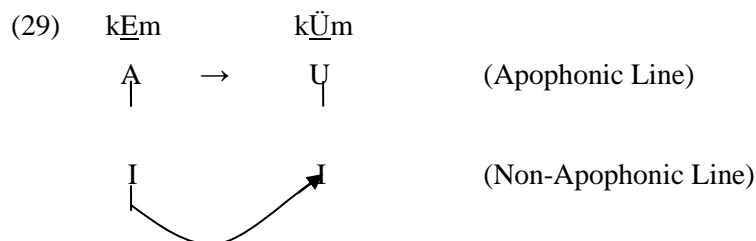
(28)	$k\bar{E}m$	\rightarrow	$k\bar{Ü}m$	
	\bar{A}		\bar{I}	(Apophonic Line)
	I		U	(Non-Apophonic Line)

In (28) the first two problems are repeated: we have an alternation ($A \rightarrow I$) that goes against the Apophonic path; also, the unexplainable loss of I and the addition of the element U without any reason. These three hypotheses show us that we are not free to change an element into another. The Apophonic path restricts our choices. For unconditioned vocalic changes, the elemental alternation depends on the Apophonic path. Also, the three hypotheses cannot explain the loss and the addition of some elements.

Thus, we eliminate all of them and focus on the fourth hypothesis given in (29).

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According to (29), A turns into U as expected by the Apophonic path. I, on the other hand, is passed on to the second form k_m as a non-apophonic element. Ségéral and Scheer (1998) do not provide a thorough discussion on the status of non-apophonic (parasitic in their terminology) elements. What they state is that if an element is non-apophonic in a language, it cannot be an apophonic element. However, they do not point out what happens to the non-apophonic element after apophony. Both in New High German and Turkish, it can be observed that the non-apophonic element sticks to the apophonic element and the apophonic element carries it to the next form, unaffected by an apophonic alternation such as $A \rightarrow U$.

So far we have shown that when $[e] \rightarrow [\bar{ü}]$ alternation occurs in onomatopoeic reduplication, the A element in the first form is the apophonic element and I is non-apophonic. Therefore, A turns into U in apophony; I is carried to the second form non-apophonically and we get $[\bar{ü}]$ as in *küm*.

The next question regarding the non-apophonic element I is if the element I goes to the second member via spreading as in Turkish vowel harmony. The answer of my analysis is no, since the members of an onomatopoeic reduplication have their own internal domains. Whether vowel harmony applies across domains or not is a controversial issue. Moreover, there are other complex vowels in which there are more than two elements such as $[o] = A.U$ in *hor hor* 'rushing water' and $[\bar{ö}] = A.U.I$ in *kös kös* 'pensively'. If we claimed that the element I spreads into the second member as in vowel harmony, we would have to say that A and I also spread into the second member. As there is no A spreading in Turkish vowel harmony (Charette and Göksel, 1994), this claim does not find support from the facts we observe. Thus, I suggest that the non-apophonic element I in *kem* does not spread into the second member as in vowel harmony but just goes there non-apophonically in a similar way the other non-apophonic elements do.

Another question is related to the independent evidence for the apophonic and non-apophonic elements in Turkish. One aspect can be Turkish vowel harmony. According to Charette and Göksel (1996),

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Turkish involves I harmony in which the I element in the vowel spreads into the next vocalic position on the right side; and U harmony in which the U element in the vowel spreads into the next vocalic position where it will be the head.¹¹ Among the three elements A, I and U, only A does not spread. Moreover, it prevents U from spreading into a position where A itself sits. Thus, the fact that A does not have an active role such as spreading in Turkish vowel harmony may be a reason for A to take an active role in apophony. However, that needs to be studied in a more detailed way in future investigations.

5. Conclusion

Languages have been observed to involve seemingly context free sound alternations in their phonological systems. Taking this fact as a departure point, in this study I investigated sound alternations in Turkish onomatopoeic reduplications and proposed an analysis based on apophony. I basically argued that the sound alternations in Turkish onomatopoeic reduplications follow from the Apophonic path ($\emptyset \rightarrow I \rightarrow A \rightarrow U \rightarrow U$) provided by Guerssel and Lowenstamm (1996) and developed by Ségéral and Scheer (1998). Particularly, I argued that Turkish implements A \rightarrow U alternation for both [a]-[u] and [e]-[ü] changes observed in our data.

In this way, the study provided further evidence for the universality of the Apophonic path. The present study contributes to the theory for providing the first theoretical discussion on sound alternations in onomatopoeic reduplication. Moreover, being the first study on apophony in Turkish, the study contributes to the theoretical description of Turkish.

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¹¹ This is a very rough description of vowel harmony in Turkish. Since I will not go into the details of the process, I present it briefly here. See Charette and Göksel (1996) for further information.

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