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Vowel Harmony in Turkish Language and Palestinian Arabic

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Abstract

The purpose of this paper is to see the differences and similarities between Turkish and Palestinian Arabic regarding the topic of vowel harmony. Vowel harmony is one of the most significant phonological processes that occur only in some languages. The process of vowel harmony in Turkish language differs from that of Palestinian Arabic. First, this paper explains the meaning of the concept of the vowel harmony in Turkish language and Palestinian Arabic. Moreover, it introduces the fundamental features of vowel harmony in Palestinian Arabic and in Turkish including vowel height, vowel backness, vowel roundness, tongue root position, and nasalization. It mentions to other related phenomena including vowel syncope and epenthesis. Syncope is the process of deletion one or more sounds from the middle of the word and epenthesis means the process of addition one or more sounds to the middle of the word. It also provides a great amount of examples which show us this meaning clearly. Also, it presents the basic phonological facts of vowel harmony of both languages. For example, Turkish has eight vowel system and it has two different kinds of vowel harmony active in the language. The first type is the palatal harmony, and the second kind is the labial harmony. Turkish also changes the word from the singular form to the plural one in order to explain the concept of vowel harmony. On the other side, vowel harmony is limited in Palestinian Arabic and it appears in the nouns which have prefixes. It looks to some important theories in phonology which help in analysis the vowel harmony in these two languages. The phonological theories and approaches which will be presented in this paper include the optimality theory and the government approach.Then, it compares and differentiates all these points between both languages

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Introduction:

In phonology, vowel harmony is one of the most interesting phonological processes which occur in specific languages. Vowel harmony happens only in certain languages and even though Turkish language and Palestinian Arabic are considered from these languages, vowel harmony is limited in Palestinian Arabic, while it occurs clearly in Turkish. Therefore, this paper will focus on the occurrence of vowel harmony just in these two languages. The first section of this paper will display the meaning of vowel harmony in general in order to get the idea of this process clearly from the beginning. The second section of this paper will present the fundamental aspects of vowel harmony with brief definition for each one of them. The third section will analyze the process of vowel harmony in Turkish language followed by various views from the Optimality theory as well as some other approaches. The fourth section will include analysis of the incident of Palestinian Arabic vowel harmony and the sight of the government approach regarding its harmony. The last part of this paper will come up with the outcomes after the comparison and contrasting between these two languages.

(1) The definition of vowel harmony:

According to Crystal (1992) , it is considered a kind of assimilation in which a vowel of a word or a phrase share its specific features with other various vowels in the same word or phrase. For instance, a back vowel in the first syllable of a word demand the presence of a back vowel in the second syllable.

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(2) The characteristics and the features of vowel harmony:

According to Rose & Walker (2011), vowel harmony has many aspect which make it unique from other phonological process in phonology. These aspects include vowel height, vowel backness, vowel roundness, tongue root position, and nasalization.

Vowel height refers to the position of the tongue when we pronounce some vowels either in the roof of the mouth or the aperture of the jaw. The high and low vowels depict the position of the tongue when it is in the roof of the mouth. The position of the high vowels is in the high roof of the mouth, whereas the position of the low vowels in the low roof of the mouth. Open and close vowels describe the position of the tongue when it is in the aperture of the jaw.

Vowel backness also refers to the position of the tongue when some vowels are articulated. For instance, when we pronounce the front vowels, the position of the tongue will be in the front of the mouth, while the position of the tongue will be in the back of the mouth when we pronounce the back vowels.

Vowel roundness refers to the rounding of the lips when the vowels are expressed. The rounded vowels make the lips form a circle, while when we utter the unrounded vowels, the lips will be lightened and relaxed. We can say that front vowels are unrounded vowels, whereas the back vowels tend to be rounded vowels.

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Tongue root position refers to the position of the root of the tongue which will take it while expressing the vowels in some languages. It is called also advanced tongue root and its abbreviation is ATR.

Nasalization refers to the air which escapes from the nose during the pronunciation of some vowels through the mouth.

(3) Facts about vowel harmony in Turkish:

According to Polgardi (1999), in Turkish, there are eight vowel system and this system consists of five basic features including the characteristics of round, front, back, high, low. The following inventory will show this system of Turkish vowel harmony clearly.

	non-round	round	non-round	round
high	i	Ü	I	u
low	e	Ö	a	o
	front		back	

From the previous inventory, we can divide Turkish vowel harmony into two fundamental types. The first kind is the palatal harmony which demands that each vowel of a word or phrase has to agree with all other vowels in the same word or phrase and with the respect to the value of the feature of "front". The second type is the labial which demands that a non-low vowel of a word or a phrase has to agree with the previous vowels in the same word or phrase and with the respect to the value of the feature "round".

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Moreover, in Turkish language, they use various kinds of suffixes in order to illustrate the process of vowel harmony. These suffixes which add to the end of the singular forms are very active to present the process of vowel harmony clearly because the vowel harmony in the root of the word is not active. The following examples contain suffix alternations in order to show the occurrence of vowel harmony with the respect to the two basic kinds of vowel harmony.

NOM SG	GEN SG	NOM PL	GEN PL	
ip	*ip-in*	*ip-ler*	*ip-ler-in*	'rope'
kız	*kız-ın*	*kız-lar*	*kız-lar-ın*	'girl'
yüz	*yüz-ün*	*yüz-ler*	*yüz-ler-in*	'face'
pul	*pul-un*	*pul-lar*	*pul-lar-ın*	'stamp'
el	*el-in*	*el-ler*	*el-ler-in*	'hand'
sap	*sap-ın*	*sap-lar*	*sap-lar-ın*	'stalk'
köy	*köy-ün*	*köy-ler*	*köy-ler-in*	'village'
son	*son-un*	*son-lar*	*son-lar-ın*	'end'

[Polgardi, 1999]

Moreover, the genitive suffix "-in" shows the effects of both kinds of vowel harmony, the palatal and labial harmonies, while the plural suffixes which are either "-lar" or "-ler" contain the feature of "low vowel" and display only the the effects of palatal harmony.

According to Yavas (1980) , the system of Turkish vowel harmony can be defined usually by the three distinctive features including high, back and round. The following table will present the vowel system with its various features.

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	a	e	o	ö	u	ü	ɨ	i
back	+	-	+	-	+	-	+	-
high	-	-	-	-	+	+	+	+
round	-	-	+	+	+	+	-	-

[Yavas, 1980]

In addition to that, there are two principal rules of vowel harmony which apply in standard Turkish. The first rule states that all vowels which are in the same word or phrase has to agree in the feature "back". The second rule applies only with high vowels and they have to agree in the feature of rounding. Sometimes, these two rules can be integrated into one rule as it will appear in the following diagram.

$$\begin{bmatrix} +\text{syl} \\ +\text{high} \end{bmatrix} \rightarrow \begin{bmatrix} \alpha\ \text{back} \\ \langle \beta\ \text{round} \rangle \end{bmatrix} \Big/ \begin{bmatrix} +\text{syl} \\ \alpha\ \text{back} \\ \langle \beta\ \text{round} \rangle \end{bmatrix} C_0 \_\_\_$$

[Yavas, 1980]

Theses rules of vowel harmony apply from the left to the right as we saw in the previous examples. In Turkish, there are a great amount of examples which present these two rules. For example:

okul - lar - ɨn - ɨz - dan school-plur.-pos.-your-from	'from your school'
gel'- e- me- miš - ti - k' come-be able-neg-perf-past-we	'we hadn't been able to come'

[Yavas, 1980]

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If we look to the first phrase, we will find that all vowels in this phrase have the same phonological feature which means that all vowels in the phrase of "from your school" share the same feature of "back". On the other hand, if we see the second example, we will observe that all vowels in the different syllables have the same feature of rounding.

In the study of Forest (1969) and Anderson (1974), they stated that in Turkish language the words which contain the back vowels determine back velars and back laterals. On the other hand, the words that have front vowels determine palatal stops and palatal laterals. In addition to that, Forest in his study argued that there are many various exceptions for the previous two rules of vowel harmonies as well as the consonant harmonies and as a result, each one of them can not create a single and unique rule. He posited many examples which prove his argument as we will see in the following two tables.

Table1:

l'akɨrdɨ	'word'	l'amba	'lamp'
l'ahana	'cabbage'	l'apa	'rice pudding'
kar	'snow'	kardan	'from the snow'
k'ar	'profit'	k'ardan	'from the profit'

Table2:

dak'ika	'minute'	harek'et	'movement'
hak'ikat	'truth'	seftal'i	'peach'

[Yavas, 1980]

If we look to the words in Table1, we will notice that all the vowels in these words follow the restrictions of the rule of the vowel harmony except the velars and laterals; however,

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we can predict the back velars and laterals depending on the foundation of the following vowels of the words in Table 2. As a result, Forest created a new rule after his observation and analysis to these words in the two previous tables. He placed this new rule for the /k/ and /l/ assimilations which appeared in the words of Table 2 and called it "the Velar and Lateral Assimilation". The following diagram will present this rule clearly.

$$\begin{Bmatrix} K \\ l \end{Bmatrix} \rightarrow [\ \alpha\ \text{back}] \quad / \quad \begin{matrix} V \\ [\ \alpha\ \text{back}] \end{matrix} \qquad \begin{matrix} \\ C \end{matrix}$$

[Yavas, 1980]

He posited also the environment regarding his rule which includes:

1. VC ___
2. ___ CV
3. V ___
4. ___ V

On the other hand, Anderson (1974) in his study about the Turkish vowel harmony argued that it is impossible to separate the two harmonies since we can not determine the directionality of the harmony (if it is from the left to the right or from the right to the left) through the examine of the roots only without the suffixes. That's why we have to consider words with suffixes if we want to examine the direction of the vowel harmony because the vowels in the roots of Turkish language do not agree with the feature "back" as it stated in the first rule of the Turkish vowel harmony. However, with adding the suffixes to these roots, we can apply the two harmonies and also we can determine the direction of the harmonies which are from the left to the right.

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According to Sasa (2009), Optimality Theory treats Turkish language as a language which is known by its vowel harmony and there are two features including the backness and roundness which make Turkish vowel harmony different. According to the Optimality Theory, the determinant of the backness and roundness in the suffix vowel relies on the vowels in the root. In Optimality Theory, there are three approaches which attest Turkish vowel harmony. These approaches are feature linking analysis, ABC analysis, and Span Theory.

First of all, the feature linking analysis stated that the two processes of harmonies in Turkish occur as a result of the enforce of two basic constraints. The first constraint is the spreading of the back which means that when the suffix vowel has the feature of the back either (-back) or (+back), all the following vowels have to have the same feature. The second constraint is the spreading of the round which means that when the suffix vowel has the feature of roundness, all the following vowels have to have this feature, so this approach states that the root is controlled by the backness and the roundness of the suffix vowel.

Second, the ABC analysis is based on two theoretical assumptions. The first one states that when the output segments of a word share specific phonetic features, they can compose a correspondence relationship. The second assumption states that there are additional faithfulness constraints where the segments which have correspondence relationships have to be identical and respect the feature.

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Third, the Span Theoretic relies on two assumptions. The first one refers to the analysis of all segments into span, while the second assumption states that each span must consist of a head and this head has to be the determiner of the authentic of the segments, so Span Theory is able to predict the authenticated patterns in Turkish not only in roundness harmony, but also in backness harmony.

(4) Facts about vowel harmony in Palestinian Arabic:

According to Yoshida (1993), vowel harmony is limited in Palestinian Arabic and before we talk about it, we have to describe the system of Palestinian Arabic briefly and mention to the syncope and epenthesis rules which relate to the process of vowel harmony.

In the study of Kenstowicz (1981), the familiar base of stress in Palestinian Arabic is that the stress always attaches to the heavy syllable of a word and in case, the word does not have a heavy syllable, then the stress goes to the initial syllable of the word. Heavy syllables in Palestinian Arabic are the words which have long vowels or end with a consonant except VC which is considered a light in word-final position. For example, the stress in the word of girls “banó͡aat” and the words of they studied it “darasó͡uu” is in the final syllable. In the word of churches “kanó͡aayis” and the words of you are scratching “bitxó͡armiʃ”, the stress is in the heavy penult syllable of the word, while the last two syllables in the word of shoe “kó͡andara” and the words of she raced “só͡abaakat” are light, so the stress goes to the third syllable from the end.

The syncope rule deletes the unstressed short high vowels in the non-final open syllables. For instance, the high vowels are deleted in the following words.

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nízil	'he descended'	*nízl-u*	'they descended'
ʔákil	'food'	*ʔákl-u*	'his food'
šúɣul	'job'	*šúɣl-i*	'my job'
fúrun	'oven'	*fúrn-i*	'my oven'

[Yoshida 1993]

The following diagram will present this rule obviously.

$$\begin{bmatrix} +\text{syll} \\ +\text{high} \\ -\text{long} \\ -\text{stress} \end{bmatrix} \rightarrow \text{ə} / \_\_\_\_ \text{CV}$$

[Kenstowicz, 1981]

On the other hand, the vast majority of Palestinian Arabic words depend on the rule of epenthesis which refers to the insertion of the vowel "i" between two consonants. The following diagram and examples will illustrate this rule clearly.

$\emptyset \rightarrow$ i / C_CC or C_C#.

šuf-t il-maktuub	'I saw the letter'
šu šufi-t	'what did you (SG MASC) see?'
šufi-t maktuub	'I saw a letter'

[Yoshida, 1993]

According to Kenstowicz (1981) and Abu-Salim (1987), vowel harmony in Palestinian Arabic is the phonological process in which the high front vowels obtain the feature of "round" beside the high rounded vowels. The following table will present many examples which illustrate the features of vowel harmony in Palestinian Arabic.

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	subjunctive		indicative	
	a.	b.	a′.	b′.
1 sg.	*ʔá-drus*	*ʔa-rúuħ*	*bá-drus*	*ba-rúuħ*
1 pl.	*nú-drus*	*n-rúuħ*	*b-nú-drus*	*bi-n-rúuħ*
2 sg.m.	*tú-drus*	*t-rúuħ*	*b-tú-drus*	*bi-t-rúuħ*
2 sg.f.	*tú-durs-i*	*t-rúuħ-i*	*b-tú-durs-i*	*bi-t-rúuħ-i*
2 pl.	*tú-durs-u*	*t-rúuħ-u*	*b-tú-durs-u*	*bi-t-rúuħ-u*
3 sg.m.	*yú-drus*	*y-rúuħ*	*bú-drus*	*bi-rúuħ*
3 sg.f.	*tú-drus*	*t-rúuħ*	*b-tú-drus*	*bi-t-rúuħ*
3 pl.	*yú-durs-u*	*y-rúuħ-u*	*bú-durs-u*	*bi-rúuħ-u*
	'study'	'go'		
	c.	d.	c′.	d′.
1 sg.	*ʔá-fham*	*ʔá-lbis*	*bá-fham*	*bá-lbis*
1 pl.	*ní-fham*	*ní-lbis*	*b-ní-fham*	*b-ní-lbis*
2 sg.m.	*tí-fham*	*tí-lbis*	*b-tí-fham*	*b-tí-lbis*
2 sg.f.	*tí-fham-i*	*tí-libs-i*	*b-tí-fham-i*	*b-tí-libs-i*
2 pl.	*tí-fham-u*	*tí-libs-u*	*b-tí-fham-u*	*b-tí-libs-u*
3 sg.m.	*yí-fham*	*yí-lbis*	*bí-fham*	*bí-lbis*
3 sg.f.	*tí-fham*	*tí-lbis*	*b-tí-fham*	*b-tí-lbis*
3 pl.	*yí-fham-u*	*yí-libs-u*	*bí-fham-u*	*bí-libs-u*
	'understand'	'wear'		

[Yoshida, 1993]

If we look to the subjunctive and indicative forms of the different verbs including "study, go , understand, wear", we will notice that these verbs contain prefixes and roots as well as different kinds of suffixes sometimes. First, we will analyze the various subjunctive verb forms in the side of the previous table including all the words in (a, b, c, and d). The suffixes which follow the roots vary among the second person singular feminine suffix "-i", second person plural suffix "-u", and the third person plural suffix "-u". The prefixes which precede the roots are variable except the first person singular prefix which is always "?a-". If we look to the verb forms in (b), we will observe that the prefixes are "t-, n-, and y-" and they do not follow by any vowels. On the other hand, the verb forms in (a, c, and d) start with the letters (n, t and y) and followed by vowels. After the analysis of these verb forms, we will

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discover that the prefix vowel will be “u-” which is a high rounded vowel when the root has the same vowel. However, if the root does not have the vowel “-u”, the prefix vowel will be “i-” As a result, the vowel “u” in any root is considered the specifier of the regressive vowel harmony.

Now, we will study all the verb forms in the right side of the table including all the words in (aó, bó, có, and dó). If we look to all the indicative verb forms which list in the right side, we will observe that all the words start with the labial stop “b”. Also, the prefixal consonant “b” in the third person singular masculine and the third person plural of the indicative forms as in (3aó) is followed by the vowel “u”. However, the labial stop “b” in their equivalents of the third person singular masculine and the third person plural of other indicative forms as in (3có and 3dó) is followed by the vowel “i”. As a result, we can observe that there are some exceptions in the previous generalizations and the same vowel harmony stays in its place in these forms. Moreover, even though the root in the indicative verb forms in (2aó) include the rounded vowel “u”, there is no vowel harmony in the prefixal vowel. In this case, we can conclude that the words of the types “CuuC and CuCC” do not apply the process of vowel harmony of the preceding vowel according to Yoshida (1993).

Vowel harmony occur not only in verbs, but also in nouns as it will appear in the following examples which explain the progressive vowel harmony.

a.	*ʔákil*	‘food’	*ʤísir*	‘bridge’	*šámiʕ*	‘wax’
b.	*fúrun*	‘oven’	*ʕúrus*	‘wedding’	*šúɣul*	‘job’

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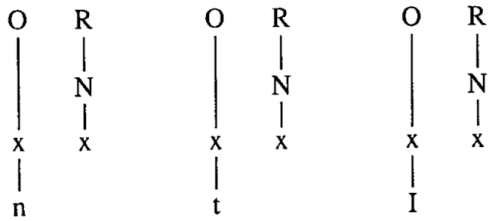
If we see these nouns, we will notice that these words are the roots which means that there are no prefixes or suffixes here. According to the previous data, we can posit another generalization which state that if the initial vowel of the noun is either "a" or "i", the following vowel of the same noun will be "u" as it appears in the words of (a) and if the initial vowel of the noun is "u", the following vowel of the same noun will be the same "u" as we see in the words of (b).

To conclude, the process of vowel harmony in Palestinian Arabic appears in the feature of "round" in which the root of the words contain high vowels as the nouns; whereas in the case of the verbs, the process of vowel harmony will occur if the root of the word is preceded by prefix.

According to the government approach in the study of Yoshida (1993), the process of vowel harmony occur when the subjunctive verb forms consist of the root as well as the prefix as we see in the previous examples of (2a, b, c, and d). From our previous analysis to these verbs, only the first person singular prefix has the vowel "?a", so the other prefixes which start with the consonants (t, n, and y) will have the following representation in which an empty nucleus preceded by an onset which is captured by a segment as we will see in the following diagrams.



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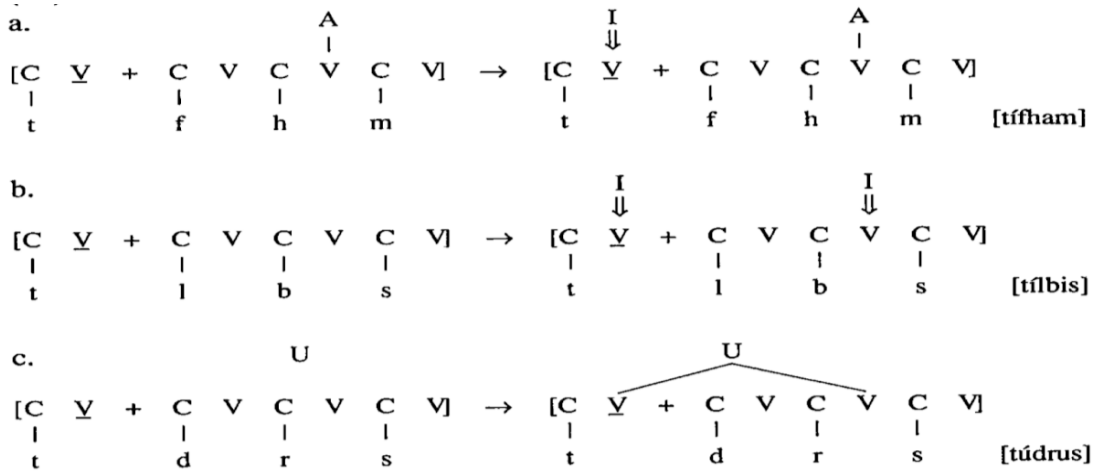
According to the Government Phonology in the study of Yoshida, S. (1993), if the word has the absence of one of the vowels which means one of the nuclei, this vowel in this case is called cold vowel. This cold vowel is attached to one of the elements I,U and A of the Government Theory which refers to the feature of palatality, roundness, and pharyngeality respectively. The following diagram will present this point apparently.



[Yoshida,1993]

If we look to the structure of these words, we will note that all these words contain four nuclei and the final nucleus in each one of them is empty. In the underlying representation of the verb "tóifham" in (a), the penultimate nucleus is attached to the element A and in this case the Empty Category Principle (ECP) will be contented. On the other hand, there is no underlying vowel in the verb "tóilbis"in (b) and because the element A does not have the feature of spreading, the initial nucleus of the verb "bóitlibs" is linked to the element I. The

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last word of the verb “tóudrus” has the element U and this element has the feature of spreading which allow it to connect to the initial nucleus and the penultimate nuclei in order to give this form of this verb “tóudrus”.

(5) Results :

After the analysis of the vowel harmony in Palestinian Arabic and in Turkish language, we can conclude that Turkish language is one of the language which have vowel harmony and we can apply the vowel harmony easily, while the vowel harmony in Palestinian Arabic is very limited and it is complicated which led to many exceptions in the generalizations of its vowel harmony. We can find that the vowel harmony of Palestinian Arabic is in the roots of the nouns and if we want to apply it in the verbs, we have to add prefix at the beginning of the verb. This means that it is necessary to add prefixes to vowels in order to observe the vowel harmony. On the other hand, Turkish vowel harmony never happen in the roots of all types of words and in order to explain the vowel harmony, we have to add a suffix at the end of any word. Without the appearance of the suffix in the Turkish words, the vowel harmony can not occur.

Conclusion

The goal of this paper is an attempt to make a small comparison and contrast between Turkish language and Palestinian Arabic to see in what ways they are different and in what ways they are similar. Before starting analysis the process of vowel harmony in these two languages, the paper starts with a brief introduction, followed by a general

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definition of the vowel harmony in order to see what is the meaning of it in general. Then, it presents the basic features of the process of vowel harmony. After that, it starts to analyze the occurrence of vowel harmony in Turkish, followed by the analysis of the Palestinian Arabic vowel harmony. In the first part of the analysis of Turkish harmony, the paper mentions to different analysis of Turkish harmony on the basis of the optimality theory and in the second part of the analysis of Palestinian harmony, there is focus on the analysis of Palestinian vowel harmony from the government approach view. The paper ends with the results of comparing and contrasting of vowel harmony in Turkish and Palestinian Arabic.

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