

Description and Analysis of Phonological Processes in Dezfuli Dialect Based on the Framework of Optimality Theory

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ABSTRACT— The present investigation is aimed to analyze the phonological processes of the Southwestern Iranian dialect, Dezfuli dialect. The theoretical framework of the research is on the basis of an optimality framework (OT, Prince & Smolensky, 1993). This model employs a notion of constraint dominance; a theory for showing the optimal output with respect to a set of constraints, and the dialectal data gathering has been via recording ten hours of speech together with the researcher's intuition as a native speaker. Accordingly, the phonological processes like assimilation, vowel harmony, dissimilation, and elision have been exemplified within the tables and analyzed in specific Tables by the use of the constraint rankings in Optimality Theory. Dezfuli dialect has 25 consonants and 6 vowels. The conclusions can be reached that deletion, dissimilation and vowel harmony are as the most active phonological processes in Dezfuli dialect, and the results also show that the usage of elision is more effort tendency as well.

KEYWORDS: Dezfuli dialect, Optimality Theory, phonological processes, constraints;

Introduction

The present study is aimed to study the phonological processes in Dezfuli using optimality theoretical (hereafter OT) approach. The authors have collected ten hours of recorded voice of Dezfuli dialect in Dezful. Phonological processes which are studied in this investigation are dissimilation and, deletion, vowel harmony. All these phonological processes have been analyzed based on optimality theory and the order of the constraints are determined as well. The collected data for this study in form of recording the age consultants range from 30-70, though the majority of them were in the age range 35 to 63. The research has been focused on the dialectal phonological processes within optimality theory languages and dialects are like cultural heritage in each nation, Iranian dialects have been classified and divided into different dialects and accents, like Eastern and Western, or, Northern, Southern within Dezfully, the dialect under consideration, is categorized within Western groups, the majority of Dezfully dialect speakers live in the North of Khuzestan in Iran. As dialect among the living of Persian, Dezfuli has approximately 570,000 native speakers and is spoken in the North of Khuzestan Provinces, Sugarcane, which has been cultivated in the Dezful region for more than a thousand years. (Moqaddasi, P.405). At the 2011 census, its population was 420,000 people in 105,000 families (Census of the Islamic Republic of Iran, 2011). Ansari believes Dezfuli is fairly similar to Shushtari, and they share a variety of lexical similarities. (Ansari, 2005). Dezfuli dialect divided naturally into quite distinct groups corresponding to the distinction of Sahrabedari, Hedarkhaneh and Siyahposhan. In the following, Sahrabedari will refer to the South of Dezful and Siyahposhan dialect as northern Dezfuli. According to Ansari, he believes that Dezful identified as "Dezful" (River and Bridge) namely, it was a historical name. Ansari and Samimi also produced useful notes but short notes on phonology, morphology and syntax: (Ansari, 2005, p. 12, Samimi 2005, p. IV). Intended purpose of Standard Persian as the language in television programs and radio network and News announcers is generally spoken. In this paper, the standard variant is considered for phonological input and standard forms as inputs are considered.

Review of literature

Scholars of linguistics mission are to be diligent in recording the languages and local dialects and with scientific study to collect and record words as well as a detailed analysis of various aspects of language data in the enrichment of the culture of the community, take positive steps. It is generally accepted that a large variety of researches have been done within the recent years. MacKinnon (1974), in his Ph.D dissertation entitled "The Phonology and Morphology of Dezfuli and Shushtari". He has worked on studying in west Persian dialectology. Most of them are on basis of phonological grounds by using different types of approaches, Samimi (2005) in his book entitled "Farhang – vazhegan Dezfuli" analyzed historical background of Dezful as well as the distribution of Dezfuli all over Dezful. In another study, Ansari and Farajollah (2005, p.8) in their work, entitled "Farhang Logat Dezfuli" analyzed grammar spots. They claimed that Dezfuli and shushtari are much closed dialect. Paknezhad (2008) in his M.A thesis entitled, "A Comparative Study of Phonological Pattern of Dezfuli Dialect with Those of Standard Persian". Studies phonetic structure of Dezfuli. He has chosen Generative Phonology as his model. Description of assimilation,

dissimilation, and harmony are the result of his research. He has also presented a chart which displays the number of Dezfuli phonemes. He claimed that Dezful has 25 consonants and 6 vowels.

Theoretical Framework: Optimality Theory (OT)

Optimality Theory (frequently abbreviated **OT**) was introduced, developed and first applied to phonology by Prince and Smolensky (1993), it is one of the constraint – based approaches and quickly attracted many researchers not only in phonology, but also in morphology and syntax, and lately also we have seen in semantics and pragmatic (Fichtner, 2012,p.2).It is also a frame work in Theoretical linguistics and it is the assumption which linguistics generalization should be marked out using a set of vialable constraints which are outranked in terms their primary importance. OT is not mixed theory (McCarthy , 2002, p. 243) Kager (1999, p. 413) also pointed out that OT abandons the principle of SPE (Chomsky and Halle 1968), namely rules and serial derivation between underlying representation (UR) and phonetic representation (PR): however ,UR and PR which are renamed as input and out respectively, are being assumed in the classical sense (Kord-e zaferanlue, 2009). According to McCarty (2002, p.39-40) who believes that the phonological rules were abandoned by generally optimality theory, because they explained language – specific phenomena. In contrast, constraints in OT are not merely solution to language-specific problem; They are claimed to be Universal Grammar (UG) seeking to explain phonological phenomena universally (Kord-e zaferanlue , 2009). In OT mechanism, not only constraints are strictly ranked and violated but also OT has input - output system.

Formal approach of OT. (Adapted from Archangeli, 1997):

1. Generator (GEN) given an input representation, generator provides set of potential output forms.
2. Evaluator is a formal format. EVAL given the candidate set created by GEN, evaluator picks up the most optimal output for given input representation.
3. CON a language –specific ranking of a universal set of constraints is used by EVAL in determining the optimal output form.

Examples: Examples of Faithfulness and Markedness constraints (McCarthy & Prince, 1995):

4. Max segment in the input must correspond to segments in the output. (No deletion)
5. DEP segments in the output most correspond to segments in the input. (No insertion)
6. IDENT [FEAT] the place, voice, and manner features of segments of the input must surface in the corresponding segments in the output.

In general, McCarthy (1988) has illustrated OT like the following graph.

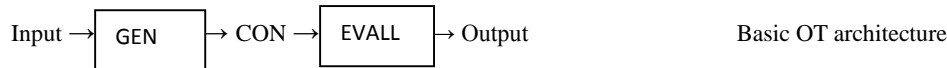


Figure 1. The box chart of Optimality Phonology Modal (Bijankhan , 2006 , p.30)

Based on this graph, evaluator receives the candidate set from Gen, and evaluates it using some constraint hierarchy, as well as selects it's most optimal member as the output of the grammar.(McCarthy, 2007, p.4).

TABLE

Optimality Theory evaluates are formulated in” Table ”, the Table top row indicates the input then the constraints, in ranked pattern from the left side to the right side. The first row shows the set of candidates, one of that is selected as the output (is marked by a index finger) they are two fundamental sorts of constraint:”Markedness” and ”Faithfulness” the main purpose of the markedness constraint might evaluate the form of the output candidate whereas the Faithfulness constraints need to pinpoint between the input and out candidate under a proper evaluation manipulating the record of input or output divergency furnished by GEN (hereby generator). In the Table below, consists of some cells in front of every candidate and under every constraint with following specification: All the above mentioned specifications are depicted in Table 1.

Table 1. The box chart of ranked constraints (Kord-e zaferanlue etal , 2009)

Input	C ₁	C ₂	C ₃
a. Cand	*!		
b. Cand		*!	
c. ∅ Cand			*

* An exclamation mark next to a star suggests that the relevant candidate has fatally violated a constraint; so it has no chance to survive and to be chosen as optimal.

*An optimal candidate is marked by index

* A blank cell in front a candidate indicates that the candidate has satisfied the constraint.

Research Questions

The main purpose of current investigation attempts to reveal answers for the following questions:

1. What types of phonological processes are engaged in Dezfuli dialect which can be described within the model of Optimality Theory?

2. Which one of these rules has the highest frequency in Dezfuli dialect?

Significance of the Study

The significance of this study form the fact very little research has been conducted on OT in Dezfuli dialect. It is hoped that the current study of this topic will significantly contribute to enhancement of phonological processes in Dezfuli dialect.

Research Method

This research uses descriptive analytic approach and the corpuses have been assembled by a field method. In gathering the data, as well as the intuition of one of the writers as a native speaker of Dezfuli , the recording of ten hours of speaker's speech, including well-educated and non-educated ,men and women , between 35 – 60 years of age , have been used , the all data were collected in two ways :1) The speech of twenty informants by simple Mechanical Method 2) The Direct Mechanical Method .

Phonemes of Dezfuli dialect:

Persian Dezfuli dialect has 25 consonants and 6 vowels. The consonants are /p/, /b/, /t/, /d/, /k/, /g/, /q/, /ʔ/, /f/, /v/, /s/, /z/, /ʃ/, /ʒ/, /x/, /ɣ/, /h/, /m/, /n/, /ŋ/, /r/, /l/, /tʃ/, /dʒ/, /y/ The inventories of its vowels includes 6 vowels /i/, /e/, /a/, /u/, /o/, /â/ and 5 diphthongs /ay/, /ey/, /ew/, /uy/, /oy/. Chart (1) Consonant Phonemes in Dezfuli dialect

Place of articulation	Bilabial		Labio-dental		Dental		Alveolar		Alveo-palatal		Palatal		Velar		Uvular		Labio-velar		Glattis	
	-v	+v	-v	+v	-v	+v	-v	+v	-v	+v	-v	+v	-v	+v	-v	+v	-v	+v	-v	+v
Stop	p	b			t	d							k	g	q					ʔ
Fricative			f	v			s	z	ʃ	ʒ					X	ɣ				h
Affricative									tʃ	dʒ										
Trill							r													
Lateral							l													
Nasal	m						n				ŋ									
Glide																				
Semivowel											y									

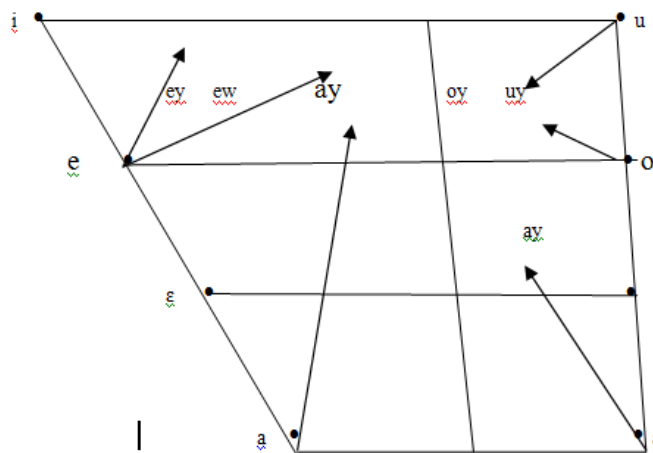


Chart 1. Vowel phonemes in Dezfuli dialect (Based on Paknezhad : 2008)

Result:

To analyze the gathered words of Dezfuli dialect, it's to be mention that their Persian dialect and English equivalents are listed, too.

A. Assimilation

A general term in phonetics which refers to the influence exercised by one sound segment upon the articulation of another, so that the sounds become more alike, or identical. (Crystal, 2008). When two different consonant come in a sequence one may assimilates to the other. There are two main categories of assimilation depend on the direction in which the features are assimilated: progressive (the sound changes because of the influence of the preceding sound) and **regressive** (or **anticipatory**) assimilation: the sound changes because of the influence of the following sound.

Dezfuli Dialect demonstrates two types of assimilation, as below:

- 1). Vowel harmony[e] with [a],
- 2).Nasal assimilation of /n/ to /m/

In the present article, the main notion is on the first kind of assimilation, namely vowel harmony

1. Vowel harmony

It is a modification (assimilation) of the pronunciation of vowels in a word so that one agrees or “harmonized “with another one. (Richard, 1992, p.404) . It occurs in some languages like, German, and English, it happens in Dezfuli dialect, too. Look at these Dezfuli words.

Table 2 . Exemplifying the vowel harmony [e] with [a]

English equivalent	Standard Persian phonemic transcription	Dezfuli phonetic transcription
seed	/ dane /	[dona]
valley	/ kuče /	[kiča]
comb	/ šâne /	[šona]

/ xâne / → [xona]

Linear representation of this phonological process is given below:

/ e / → [a] / ≠ _____

The constraint which is involved in this process in Dezfuli dialect is:

LICENCE ([+Front Mid] , CV-Root) : every change in Front Mid feature must be extended to open syllable of root .

IDENT [Front Mid]: phonologically units in input and output must be similar in front feature. The ranking of these processes:

LICENCE (+ [Front Mid], CV-Root) >> IDENT- IO [BACK]

The Dezfuli word of / xona / has been analyzed here.

Table 2

Table 3: An optimality – theoretic analysis of the harmony with[a]

Input : / xona /	License [+Front Mid] , CV-Root	IDENT -IO [back]
a. xâne ↓ [+Mid]	*!	
b. [∅] / xona/		*

As it can be seen, candidate (2b) violates IDENT -IO [back] ,but it is still optimal since satisfied the higher ranked CV-Root while (3a) violates it. The second main part of the paper, occurrence and non-occurrence date was analyzed in Dezfuli dialect. Vowel change of /u/ in place of articulation occurs in some languages and some Persian dialects. It also takes place in Dezfuli dialect, too. The following table shows the examples from our data for each conversion.

Table 4 . Exemplifying the vowel harmony [u] with [i]

English Equivalent	Standard Persian Phonemic Transcription	Dezfuli Phonetic Transcription
face	/ ru /	[ri]
far	/ dur /	[dir]
knee	/ zanu /	[zuni]

/u/→/i/

{+Back, +Round} → {-Back,-Round}

In present paper, a vowel conversion system that converts /u/ to /i/ is seen in Dezfuli dialect. The constraint which is active in this process in Persian dialect is: *[u]>>IDENT [back, round]. In Optimality Theory the first markedness constraint is free from the context which is concerning the markedness of high vowel /u/. And also it is the factor of vowel conversion /u/ to /i/.The phonological units in input and output must be similar in [-back -round] features. Thus the markedness constraint of *[u]>>IDENT [back, round] is dominated the other constraints, because this constraint prevents the appearing the vowel

conversion /u/to /i/. According to the priority of markedness constraints over faithfulness constraints in Dezfuli dialect, the ranking will be : *[u]>>IDENT [back, round].

Table 5: optimality – theoretic analysis of the harmony with[i]

The Dezfuli word of / dir / has been analyzed here by above ranking:

Input :/dur/	*[u]	IDENT [back, round]
a. i.[dur]	*!	
☞ b. ii. [dir]		*

As we seen in Table 5, choice (3a) has violated the constraint*[u]. Therefore, it can't be an optimal candidate. On the contrary, the item (3b) although has received a star of the faithfulness constraint has satisfied and becomes the optimal candidate.

B. Dissimilation

Another phonological process the speaker uses to make pronunciation easy is dissimilation. According to Spencer (2005: 59), in dissimilation two neighboring sounds which are similar become dissimilar as one or both undergo some phonological change. In Dezfuli dialect, voiceless stop / k / converts to voiced stop / g / in the context that they are bring after fricative consonant.

Table 6

English equivalent	Standard Persian phonemic transcription	Dezfuli phonetic transcription
problem	/ moʃkel /	[moʃgel]
half	/ nesfe /	[nesma]
crow	/ kalâq /	[qalâq]

Linear representation of this phonological process is given below:

2. / k / → [g] / | - voiced fricative features / _____

According to Suzuki (1998: 10 – 11), in OT and in rule - based phonology, dissimilation is explained by invoking a specific principle, "The Obligations Contour Principle" (OCP) (Leben 1973, Goldsmith 1976, McCarthy 1986).

Due to the linear representation above, it is clear that the reason of this sort of dissimilation is constraint which prevents the neighboring of two voiceless consonants. According to OCP two similar phonological units cannot be neighbors. It means that one of the units ought to be deleted or dissimilate. The Markedness constraint of [-voice] claims that neighboring of two voiceless consonant it not permitted. Moreover the Faithfulness constraint of IDENT [voice] makes optimal each change [+voice] features. According to the priority of Markedness constraints over the faithfulness constraints in Dezfuli dialect, the ranking will be - OCP *[-voice] >> IDENT – IO [voice]

Dezfuli word of “ kalâq “ has been analyzed here by above consideration :

Table 7: An optimality – theoretic analysis of dissimilation in voiced features / k /, / q /

Input : / kalâq /	*OCP*[voice]	IDENT-IO [voice]
a.i / kalâq /	*!	
☞ b.ii / qalâq /		*

Choose the item (4a) has violated the constraint (* - voice), therefore, it cannot be an optimal candidate in converse, the item(4b) even though has get one star of faithfulness constraint has satisfied the superior constraints and becomes the optimal candidate.

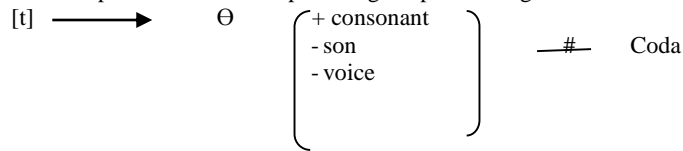
C. Elision (Deletion)

In Persian like other languages and dialects under specific circumstances a sound or sounds in speech disappear some sounds become deleted through this process. Thus friendship loses its /d / by this process. Persian students would say [*dasmal*] for *dastmal* ‘hand kerchief’(Farrakhphey , 2008 – p.77) . Dezfuli dialect includes different types of deletion but in this present paper we represented one type of these processes. Deletion of consonant / t /, / d / as a second member cluster of consonants. In Dezfuli dialect, stop – coronal consonant / t /, / d / deletion when they leave as a second member in consonant cluster / st / and / zd /.The all corpuses that we gathered represented these phonological processes in Dezfuli dialect.

Table 8

English equivalent	Standard Persian phonemic transcription	Dezfuli phonetic transcription
yogurt	/ mâst /	[mas]
hand	/ dast /	[das]
close	/ bast /	[bas]

Linear representation of this phonological process is given below:



According to Bijankhan (2005: 205), the markedness constraint *Fric Dent Plosive and Faithfulness constraint Max- IO are involved in this phonological process * Fric Dent Plosive mentions that coda is not permitted to be formed of a dental stop and a fricative cluster.

Max – IO declares that elision of per phonological unit in output is prohibited. Therefore, the ranking of this constraint is * Fric Dent Plosive >> Max – IO (Coda).

The Dezfuli term of “*das* “has been analyzed here by above ranking.

Table 9: An optimality – theoretic analysis of deletion of / t / , / d / in coda position

Input : / dast /	Fric Dent Plosive	Max – IO (Coda)
a.i [dast]	* !	
b.ii φ [das]		*

As it can be seen , Table (9) shows, choice the item (5a) has violated the constraint (Fric Dent Plosive), therefore it cannot be an optimal candidate in converse, the item(5 b) even though has get one star(*) of faithfulness constraint has satisfied the superior constraint and becomes the optimal candidate.

Table 10: In Dezfuli dialect has seen deletion of coda voiced obstruent consonant which occurs after long vowels like /a ,i ,u/.

English Equivalent	Standard Persian Phonemic Transcription	Dezfuli Phonetic Transcription
Hit	/kub/	[ku]
Yogurt Drink	/dug/	[du]
Wood	/tjub/	/tju /

Another sets of data of Dezfuli dialect studied, the data shown above, all coda voiced consonants are removed .Thus, according to available data, constraints of this process include:

NOCODA-voiced constraint do not permit voiced consonant to be a coda.

MAX- IO [segment] is also operative in current process.

The ranking is : NOCODA-voiced>> MAX- IO[segment]

The Dezfuli term of “*dug* “has been analyzed here by above ranking.

Table 11: An Optimality – Theoretic analysis of deletion of voiced consonant as coda position

Input : /dug/	NOCODA-voiced	MAX- IO[segment]
a.i [dug]	* !	
b.ii φ [du]		*

As it can be seen , Table (11) shows, choice the item (6a) has violated the constraint (NOCODA-voiced), therefore it cannot be an optimal candidate in converse, the item(6b) even though has get one star(*) of faithfulness constraint has satisfied the superior constraint and becomes the optimal candidate.

Conclusion

In this present paper, after gathering research data collection, we analyzed phonological processes which are the most frequent in Dezfuli dialect, based on the framework of Optimality Theory (OT). Then in Inconsistency, constraints of markedness in current dialect with those standard Persian to explore the relationships between them, and in order to optimize the hierarchy of constraints in the dialect used. The two substantial answers of the present investigation are as follows. The former question is describing and analyzing the sort of phonological processes in Dezfuli dialect, the research can be summarized as below.

* In Dezfuli dialect the interplay between two faithfulness IDENT [voice] and markedness constraints[- voice]

* In the phonological process of vowel harmony / e / with / a /

LICENCE [+ Front Mid], CV – Root constraint has played the most important role which licenced the deployment of front feature to the root open syllable, as well as Faithfulness constraint IDENT [BACK] .

*Deletion: according to the markedness constraint *Fric Dent Plosive and faithful constraint Max – IO are involved in deletion of /t / and / d / which one the second member of the consonant cluster.

The markedness constraint of *[u]>>IDENT [back, round] is dominated the other constraints, because this constraint prevents the appearing the vowel conversion /u/ to /i/.

The occurrence factor of this process namely deletion of coda is a type of markedness constraint which occurs right after NOCODA-voiced and faithfulness constraint MAX- IO [segment] are affected. In answer to second question showed deletion, dissimilation and vowel harmony are as the most active phonological process in Dezfuli, the results also show the usage of elision is more effort tendency as well.

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