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German Loanwords Adaptation in Persian: Optimality Approach

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Abstract

This paper aims at describing the mechanism of German loanwords adaptation with respect to constraints of Persian language and within OT framework. Consequently the adaptation of consonant clusters and diphthongs as well as the phonemes substituted in loanwords will be examined. Prince and Smolensky's (1993) Optimality Theory with its key notions of faithfulness and markedness constraints is suited to model this aspect of linguistic competence. So in this research a number of 30 German loanwords were selected as research data of which some were collected through the library method from written resources and the rest are the trade names of German Products that are collected through a field work. Descriptive analysis of the mentioned data within Optimality Theory comes into valuable linguistic conclusions such as: "In Persian, initial consonant clusters of German loanwords are broken up through vowel epenthesis which is mostly identical to the vowel of the second syllable."

Keywords: Loanword, Optimality Theory, Constraint, German, Persian.

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1. Introduction

An aspect of linguistic competence is the "Adaptation of Loanwords" which is the most common type of "Language borrowing" .Once a word is borrowed, the process of adaptation starts. The borrowed lexical item has to adapt itself first at the phonological level. During much of these centuries, the Arabic and other European languages have had a tremendous impact on Persian language. A very noticeable effect is the changes that have taken place in Persian Language particularly the adaptation of thousand of foreign loanwords (mostly from Arabic, French, Turkish and Russian languages).

In the past decade we have seen the study of loanwords evolve from a minor curiosity to a phenomenon meriting serious and sustained study. The most significant motivation has undoubtedly been the conceptual shift in our field from rules to a constraints and repair model of sound change. Loanword adaptation is constraints and repairs in "real time". In adapting a loanword, the speaker tries to remain faithful to the source word while still making the loanword conform to the native language (L1) segmental inventory, phonotactic constraints, and prosodic structures (Kenstowicz and Atiwong , 2004: 1). Language borrowing may occur as a result of social and cultural factors. It means that in the process of language development, the users of one language may fill the lexical gaps of the language through borrowing from other languages. Haugen (1950: 18) defines language borrowing as reconstruction of the patterns of one language in the other one. Arlotto (1972: 184) states that language borrowing is a process in whitch a language or dialect accepts some elements from another language or dialect. Further Hartman and Stork (1972: 29) believe that language borrowing is the use of some elements from one language or dialect to the other one through social and cultural contacts or imitation.

Prince and Smolensky's (1993) Constraint-based Optimality Theory (OT) with its key notions of faithfulness and markedness constraints is suited to model this aspect of linguistic competence. In adapting a foreign word the speaker is often faced with choices as to which feature of the source word to preserve and which to sacrifice. The speaker will tend to preserve features whose absence would be most noticeable; and when a repair must be made, like a

[DOR: 20.1001.1.25382640.2013.20.4.1.4]

good tailor he will make his alterations as unobtrusive as possible by substituting a sound that most closely resembles the original. In this paper we analyze the adaptation of German loanwords into Persian Language from this perspective.

2. **Review of Literature**

Investigation of the previous studies indicated that no researches and studies have been conducted on German loanwords adapted in Persian language, except for one MA thesis titled "Persian Loanwords in German Language "(Rahmani, 2009) in which the adaptation of Persian loanwords in German language have been identified, and not only it is not in OT framework, but also the focus of this paper is exactly vice versa. Although no researches have been conducted on the analysis of German loanwords in Persian Language, there are some studies on borrowing from German in other languages that are as follows:

- Hjaltason, Porsteinn (2011) in his paper titled "*Native German Loanwords in English*" follows two main tasks as follows: First to find out which German loanwords are truly "German". The researcher uses Pfeffer and Cannon's work as a basis and counts all loanwords which are etymologically German or are attested at least in Early High German (1350-1650). The second task in this paper is to run these about 1,300 words which are found through two large online corpora, British Natural Corpus (BNC) with 100 million words and the Corpus of Contemporary American English (COCA) with over 425 million words, to find out their frequency in modern English. All round 1,300 words are classified after their semantic fields which are taken from German loanwords.
- Gentsch, Kerstin (2004) in his paper titled "*English Borrowings in German Newspaper Language: Motivations, Frequencies, and Types*" examines three online German newspapers to investigate the frequency of English words, patterns in the types of borrowings, and motivations behind their use. The paper closes by providing some limitations to the study and suggesting possible improvements.
- Gorup, Radmila J. (2000) has a paper titled "*Lexical Borrowings from*

[DOR: 20.1001.1.25382640.2013.20.4.1.4]

German and English into Serbian and Croatian" This paper tries to point out the attitudes toward loan words in the SC speaking area. As we know, certain policies that language planners adapt can either decrease or increase linguistic differences between the groups. Non-linguistic factors can influence the process and perception of lexical enrichment, borrowing in particular. The biggest difference between Serbian and Croatian is in lexicon, the result of different sources, different derivational suffixes, some historical incidence, and of course the attitude toward borrowing. Serbs are always ready to accept loanwords that represent internationalisms. Even though they were under Ottoman domination for a long time, their language was never threatened. As a result, they developed a more permissive attitude toward borrowings. Croats, on the other hand, had a very different experience. A part of the Austrian cultural sphere, they went through periods of intense pressures.

- Stanforth A.W. (1974) in his paper titled "*Lexical borrowing from German since 1933 as Reflected in the British Press*" has two main aims: At first, to record and classify German words that have interred in British English and secondly, to attempt some assessment of the frequency of German loanwords in one weekly newspaper, the Observer, over a period of three months. But no phonological analysis has been conducted in this paper.

3. Definition of Loanword

Loanwords are words of one language, termed the source (or donor) language, that enter, often through the mediation of bilingual speakers, in a borrowing (or recipient) language. The adaptation of a loanword involves the resolution of often conflicting demands to preserve as much information from the source word as possible while still satisfying the constraints that make the lexical item sound like a word of the recipient language (Kenstowicz & Atiwong, 2004: 1). In Other word, in the process of entering the borrowing language, the phonetic, phonemic, phonotactic or prosodic characteristics of these words change in the vast majority of cases (Haunz, 2007: 3) .As an example of such changes is the sound / / and / ∴/ in German pronunciation of the word "Henkel" [

[DOR: 20.1001.1.25382640.2013.20.4.1.4]

hε |k.∴λ] (as a trademark) which is adapted as a loanword in Persian language and because of the absence of the said sounds in the sound system of Persian language, it is pronounced as [hε∝χελ].

4. Research Framework

OT is a theory which admits neither rules nor derivations and assumes that output forms are determined in the interaction of constraints. OT grammar can be schematically represented as in diagram (1). For every possible input, the generator (GEN) produces a candidate set. Inputs are in principle unconstrained linguistic objects such as lexical items in word phonology. (Prince and Smolensky, 1993: 10)

Diagram (1):

Input → → Candidate Set → → Optimal Candidate

The evaluator (EVAL) evaluates candidate sets with respect to particular rankings of the constraint inventory. In OT tableaus the top row gives the constraint ranking from left to right. In subsequent rows constraint violations are given for each output structure. Each asterisk (or 'star') represents one violation. Those structures that minimally violate rankings are optimal, and by definition grammatical. Suppose there are three constraints A, B and C, and they are ranked as follows:

Constraint A » constraint B » constraint C

This constraint hierarchy suggests that constraint A is the most important and C is the least. When Gen produces three candidates and each of them violates some of the constraints, the real

Output is determined in the following way:

Tableau 1- OT Tableau Sample

Input	***Constraint A***	***Constraint B***	***Constraint C***
a.Candidate 1	*!		
☞b.Candidate 2		*	
c. Candidate 3		**!	

Candidate 1 violates the most important constraint A, and thus loses ("!" means that this is the fatal violation. The columns right to the fatal violation is irrelevant and thus shaded). As for constraint B, candidate 2 violates it once and candidate 3 twice. The second violation of candidate 3 is fatal, and candidate 2 wins as the arrow indicates. Although candidate 2 violates constraint C, this violation is less important than the

[DOR: 20.1001.1.25382640.2013.20.4.1.4]

second violation of constraint B of candidate 3, and thus regarded as irrelevant (Prince and Smolensky, 1993: 12).

1. Methodology

This paper aims at describing the mechanism of German Loanwords adaptation with respect to constraints of Persian language and within OT framework. For this purpose, the theoretical data have been collected from the relevant books whose particulars are given at the end of this paper. Regarding German loanwords in Persian, some of them are extracted and checked out from several dictionaries, especially Persian Language Dictionary (Moshiri, 2009) and Duden (Drosdowski, 1988) and the rest are trademarks and brands of German Products in Iran that has interred into everyday language. After a brief introduction and comparison between German and Persian phonetic systems, we will analyze the changes made to the adapted loanwords in the face of the phonological constraints of the recipient language within optimality theory. Then we will examine the adaptation of consonant clusters, diphthongs and the substitution of phonemes that are absent in the phonetic system of Persian language. It should be mentioned that the pronunciation of collected data has been checked by two native speakers, as well.

5. Phoneme Inventory

6-1- Consonants

Since the consonants, vowels and the possibilities of combining them in a syllable are the main focus of this discussion for recognition of sound changes in loanwords, initially the consonant inventories and then the vowels of the two languages will be compared, as follows:

[DOR: 20.1001.1.25382640.2013.20.4.1.4]

Table 1. German Consonants (Kord Zafaranlu Kambuziya & Abdolkarimi; 2009)

	Bilabial	***Labio-dental***	***Dental***	***Alveolar***	***Palate-alveolar***	***Palatal***	***Velar***	***Uvular***	***Glottal***
Plosive	π β		τ δ				k g		
Fricative		f v		s z	ʃ	ç	x		h
Affricate		pf͡		ts͡					
Nasal	m		n				ŋ		
Trill				r					
Lateral					l				
Glide						j			

Note: In German, [ʁ] is the allophone of /r/. It means that at the beginning of a word or syllable, /r/ will be pronounced as [ʁ] and at the end of words it won't be pronounced and the preceding vowel /e/ will be pronounced as /ə/. In other places it will be pronounced as [r]. (Kambuziya & Abdolkarimi; 2009:3)

Table 2. Persian Consonants (Kord Zafaranlu Kambuziya; 2006)

	Bilabial	***Labio-dental***	***Dental***	***Alveolar***	***Palato-alveolar***	***Palatal***	***Velar***	***Uvular***	***Glottal***
Plosive	π β		τ δ			χ ɟ		□	?
Fricative		f v		s z	ʃ Z			Ξ	h
Affricate					τΣ δZ				
Nasal	m			n					
Trill				r					
Lateral				λ					
Glide						j			

[DOR: 20.1001.1.25382640.2013.20.4.1.4]

Note: In Persian phonetic system, there are two palatal plosives /χ/ ανδ /ɟ/ but before back vowels they are pronounced [k] and [g], respectively; such as [kur] "blind", [?angur] "grips". So [k] and [g] are allophones of /χ/ ανδ /ɟ/ that make no meaning distinction.

Considering tables 1 and 2, we can recognize that there are several differences between these two phonetic systems. For example the absence of German palatal fricative /□ / and velar nasal / |/, affricates / p͡f/ and / t͡s/ in the Persian phoneme inventory; and further the pronunciation of /r/ that has mostly one form in Persian which is [ρ] (trill), varies in German according to region and speaker. While older prescriptive pronunciation dictionaries allowed only [r], this pronunciation is nowadays found mainly in Switzerland, Bavaria and Austria, while in other regions the uvular pronunciation prevails with the allophones [ʁ] and [ʀ].[1]

1.(http://en.wikipedia.org/wiki/Wikipedia:IPA_for_German)

6-2- Vowels

Persian language is usually described as having a six phoneme vowel system as is shown in the following diagram.

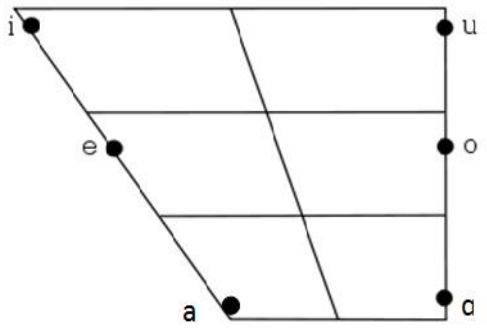

Diagram-2-Persian Vowels (Kord Zafaranlu Kambuziya; 2006)

Note: It should be mentioned that in Persian vowels [u , i , □] are [+long] and vowels [o , ε , a] are [- long]. Since the timing of long vowels is twice the timing of short vowels, so [u, i, □] are considered as long vowels in Persian.

For German language, vowel systems differ widely between varieties, which is difficult to describe them in detail but they are given in the following table:

[DOR: 20.1001.1.25382640.2013.20.4.1.4]

Table 3. German Vowels (Kord Zafaranlu Kambuziya & Abdolkarimi; 2009)

Vowel	f=	v	r=	ɛ	£	V	I	**a**
Short	bitten [bIt≅n]	füllen [fΨl≅n]	butter [bYt≅]	kästen [kɛst≅v]	elefant [elefant]	hölle [h9l≅]	kosten [kOst≅v]	**kasten [kast]** ¬z
long	bieten [bi:t≅v]	fühlen [fy:l≅v]	lugen [lu:g≅v]	lägen [lɛ:g≅v]	legen [le:g≅v]	höhle [h2:l≅]	ofen [o:f≅v]	**las [la:s]**
vowel	**i:**	·𝕎	**u:**	ɛ𝕎	£𝕎	0	**o:**	**a:**

As table 3 shows, in German there are 16 vowels in two levels of height, including short vowels and long vowels. Further the existence of round front and round back vowels has been resulted in increasing the number of vowels in that language. Also there are three diphthongs in German language including: /ai/ , /O i/ , and / aY/. In the next section we will describe the patterns of loanword adaptation in Persian within OT framework.

Table4. German loanwords (Moshiri (2009); Duden (1988); Trade Names of German Products)

German Word	***German Pronunciation***	***Persian Pronunciation***	***English Equivalent***
Autobahn	/α←τΟβav/	?οτοβ□ν	expressway
Automat	/α←τΟματ/	?οτομ□τ	automatic
Bach	/βαx /	β□ξ	Bach
Beurer	/β↵ιP∴/	βιφυρερ	Beurer (trade name)
Blumberg	/βλu:μβ∴ργ/	βυλυμβερϮ	Blumberg(trade name)
Hamster	/ηαμστ∴/	ηαμεστερ	hamster
Henkel	/ηε|κ∴λ/	hε∝χελ[1]	Henkel (trade name)
Hügel	/ηψ:γ∴λ/	ηυϮελ	Hugel (trade name)
Milliarde	/μΙλΙφaρδ∴/	μιλ.φΑρδ	billion
Müller	/μψλ∴/	μυλερ	Muller (surname)
München	/μψ:ν♣∴ν/	μυνιξ	Munich

1 . In Persian, dental nasal /n/ before palatal consonants is pronounced as palatal nasal [∝] which is the allophone of /n/ and makes no meaning distinction.

[DOR: 20.1001.1.25382640.2013.20.4.1.4]

Nazi	/va:tsɪ/	ν□ζι	nazi
Österreich	/2στ∴Paiç/	?οτρι♣	Austria
Pause	/πα←ζ∴/	π□ζ	Break
Protokoll	/πPOτOκ↵λ/	ποροτοκολ	protocol
Pudding	/πu:δ⁀/	πυδινʇ	Pudding
Pürre	/πψP∴/	πυρε	Mash
Regal	/Pεγaλ/	ρεγ□λ	Shelves
Sauna	/ζα←va/	σον□	Sauna
Schal	/Σa:λ/	ΣΑλ	Scarf
Schema	/Σε:μ□/	Σεμ□	Pattern
Schilling	/♣IλI⏐/	♣ιλινʇ	Schilling
Solingen	/ζo:λI⏐∴ν/	ζυλινʇεν	Solingen (trade name)
Umlaut	/υμλaYτ/	?υμλ□τ	Umlaut
Wanne	/ϖa:ν∴/	ϖ□ν	bathtub

1. Data Analysis

In this research, after collecting the German loanwords (some of which are given hereunder), they have been categorized based on the phonological changes in Persian language and from each group one word has been chosen as the input of the relevant tableau. The data corpus is as follows:

7-1- Phonemic Changes in Optimality Theory

When the phonotactic of the borrowing language does not allow sound combinations or sounds in certain contexts as they occur in the borrowed word, phonemes are altered, inserted or deleted to satisfy the requirements of the recipient language. Phonemic changes occur for example when the borrowing language's inventory lacks a phoneme in the loanword, for example in German word "Österreich " , Persian speakers substitute / o/ and /Σ/ for the German phonemes /2/ and /X/, respectively. Also the replacement of German diphthong /αυ/ by /o/ (such as /?οτοβ□ν/) or /□/ (such as /?υμλ□τ/) is another example in this regard. Now let see how the issue we are considering is accounted for the following examples in this theory. But first these constrains should be interpreted as follows:

CON 1: ONSET = Syllable begins with one consonant

Therefore, vowels at the beginning of syllables are forbidden.

CON 2: *BACK LAX VOWEL [⏐] = No Back Lax Vowel [⏐]

Regarding the above constraint, since Persian vowel system doesn't have back lax vowel [O] so in German loanwords this sound is be substituted with another vowel.

CON 3: * DIPHTHONG VOWEL = No Diphthong Vowel

[DOR: 20.1001.1.25382640.2013.20.4.1.4]

This constraint requires that the diphthong vowel of loanwords to be substituted with simple vowels in Persian language, otherwise this constraint is violated.

CON 4 : DEP.IO = Every Segment in the Output has a Correspondence in the Input

Among these four constrains we assume that there is a ranking as shown hereunder.

ONSET >> *BACK LAX VOWEL [ɪ] >>DIPHTHONG VOWEL >>IDENT [F]>> DEP-IO

Tableau 2

/α←τΟβαν/	ONSET	*BACK LAX VOWEL [O]	*DIPHTHONG VOWEL	IDENT[F]	DEP-IO
α←τΟβαν	*!	*	*		
οτοβ□ν	*!			***	
?α←τοβ□ν			*!	**	*
☞?οτοβ□ν				***	*

In tableau 2, the first candidate, bearing a back lax vowel [O] and also a diphthong vowel /α←/ is rejected.

Also the third candidate is rejected because of bearing the same diphthong vowel /α←/, as a fatal violation. On the other hand, the second candidate begins with a vowel not consonant, so it violates ONSET constraint which is a fatal violation. The forth candidate is selected as the optimal output, although it violates DEP.IO constraint, this violation is less serious than those of two other constraints.

Tableau 3

/0στ∴οai ç/	ONSET	*FRONT-ROUND	*DIPHTHONG VOWEL	* ALLOPHONE [P]	* PALATAL FRICATIVE	IDENT [F]	DEP-IO	MAX-IO
2στ∴Paiç	*!	*	*	*	*			
?2στεraiΣ		*!	*				*	
?οτεριX					*!	***	*	
☞?οτρι♣						****	*	**

Now considering tableau 3, we see that since Persian phonetic system has no front round vowel (such as / 2 /), diphthong vowel /ai/, allophone [P] and palatal fricative / X /, the following six constrains will be formed (of which ONSET, *DIPHTHONG VOWEL and DEP-IO constraints have been explained formerly.)

CON 2: * FRONT ROUND = No Front Round Vowel (here means / 0 /)

CON 3: *ALLOPHONE [o] = No ALLOPHONE [o]

CON 4: *PALATAL FRICATIVE = No PALATAL FRICATIVE [ç]

[DOR: 20.1001.1.25382640.2013.20.4.1.4]

We assume that the constraints hierarchy is :

ONSET >> *FRONT ROUND >> *DIPHTHONG VOWEL >> *ALLOPHONE [ɒ]>> *PALATAL FRICATIVE >> IDENT [F] >> DEP-IO >>MAX-IO

Tableau 4

/ηψ:γ∴λ/	* ROUND-FRONT	* SCHWA	*VELAR STOP	IDENT[F]
ηψ:γ∴λ	*!	*	*	
ηψ:ɟɛλ	*!			**
☞ηυɟɛλ				***

Tableau 5

Tableau 4 shows that the first and second candidates are rejected because of the fatal violation in round front constraint. Therefore, the third candidate with the least violation is the optimal output. It is mentionable that not only the front round vowel /ψ:/ changed into the round back vowel / υ/, but also a lax vowel /∴/ changed into the tense vowel /ε/.

In tableau 5, there are 5 constraints of which the last one (i.e. DEP-IO) has been interpreted and the other constraints are as follows:

CON 1: * VELAR NASAL= No Velar Nasal (i.e. / ˩/)

CON 2: * VELAR STOP= No Velar Stop (i.e. / γ/)

The assumed ranking of constraints is as follows:

*** VELAR-NASAL >> * VELAR STOP >> DEP-IO (V)**

/πu:δ˥˩/	*HIGH LAX VOWEL	* VELAR-NASAL	* VELAR STOP	IDENT[F]	DEP-IO
πu:δ˥˩	*!	*			
πu:δivγ			*!	*	*
☞πυδivɟ				**	*

Tableau 5 indicates that the first candidate will be rejected because of fatal violation of bearing high lax vowel [˥] and velar nasal [˩]. The second candidate that bears a velar stop [γ**]** and violates the third constraint is rejected too. Therefore, the third candidate is the optimal output although it has a complex coda but this violation doesn't

[DOR: 20.1001.1.25382640.2013.20.4.1.4]

result in its removal. So we can conclude that velar nasal consonant / / of German is substituted with the consonant cluster [νɟ] in Persian. It should be mentioned that /υ/ is a long vowel in Persian, as default.

7-2- Onset Clusters in Persian and German

A segmental representation for the syllable structure in Persian can be formulated as (C) V (C) (C) in underlying form (where segments between parentheses are optional). This means that Persian syllables cannot contain more than four segments, which naturally restrains the number of segments permitted in onset (i.e., syllable-initial) and coda (i.e., syllable-final) positions. Singleton (i.e., 1-segment) onsets can essentially contain any consonantal segment (i.e., those with the feature [+consonantal]) in the phoneme inventory. While Farsi permits singleton onsets – words such as [b□] 'with' (i.e., CV); [sir] 'garlic', [x□r] 'thorn', [lαb] 'lip', and [φ□r] 'companion' (i.e., CVC); and [r□st] 'right' (i.e., CVCC) – it does not allow onset clusters of any type. Therefore, this constraint can be stated as:

*** COMPLEX ONSET = No Complex Onset**

This constraint forbids two (and three or more) onset consonants. Candidate forms which violate this constraint will be weeded out in favor of candidates which have, for instance, an epenthetic vowel between the consonants and other constraints (e.g. a constraint forbidding deletion from underlying forms) will take care of further selection.

Let us examine a case in point to illustrate the interaction of this constraint with other ones. In Persian, loanwords from German with onset cluster are broken up by epenthesis. Considering tableau 6, there are 5 constraints that all have been explained in former cases and the constraints ranking as follows:

*** COMPLEX ONSET >> * SCHWA >>* VELAR STOP >>IDENT [F]>> DEP- IO (V)**

Tableau 6

/βλu:μβ∴ργ/	*** COMPLEX ONSET**	*** SCHWA**	*** VELAR STOP**	**IDENT[F]**	**DEP- IO (V)**
βλu:μβ∴ργ	*!	*!	*		
βυλυμβ∴ρɟ		*!		*	*
☞βυλυμβερɟ				**	*

Since the first candidate has a complex onset / bl/ and a schwa as well as a velar stop /γ/ that are fatal violations, it is rejected. Further the second candidate in which there is a schwa and also violates the constraint DEP- IO (V) is not accepted. Although the third candidate violates DEP-IO, this violation is not fatal because the candidate respects the three higher-ranked constraints,(i.e. * COMPLEX ONSET , * SCHWA , * VELAR STOP). So we can conclude that in Persian, initial consonant

[DOR: 20.1001.1.25382640.2013.20.4.1.4]

clusters of German loanwords are broken up through vowel epenthesis which is mostly identical to the vowel of the second syllable.

Now considering the loanword "Hamster", as tableau 7 shows there are 6 constraints of which * SCHWA, MAX- IO, DEP- IO (V) and IO-CONTIGUITY constraints have been explained in the former cases. But since in Persian the order of three consonants (3-consonant cluster) in a simple word in forbidden, so we can define the following constraint:

CON2: *SIMPLE WORD (C1C2C3) =A Simple Word Can Not Contain a 3-Consonant Cluster

Tableau 7

Also the syllable [ham-] as a prefix in Persian may occur in compound words not simple words and since German loanwords are considered as simple words in Persian, so the following constraint can be defined:

CON 3: *SIMPLE WORD(ham-) = A Simple Word Can Not Contain the Syllable [ham.-]

Now we assume that the constraints hierarchy is as follows:

*** SCHWA >>*SIMPLE WORD (-C1C2C3-) >> *SIMPLE WORD (#ham.-) >> IDENT [F]>> DEP- IO (V)**

/ηαμστ∴/	* SCHWA	*SIMPLE WORD (-C1C2C3-)	*SIMPLE WORD (#ham.-)	IDENT[F]	DEP- IO (V)
ηαμστ∴	*!	*			
ηαμ.σε.τερ			*!	*	**
ηαμστερ		*!	*	*	*
☞ηα.μεσ.τερ				*	**

Tableau 7 shows that the first candidate is rejected because of fatal violation in* SCHWA and *SIMPLE WORD (C1C2C3) with three consonants in the middle of the word constraints. Further, the second candidate that is a simple word with three syllables of which one syllable is [ham-], is rejected too. The third candidate in which there is a 3-consonant cluster has a fatal violation, as well. Therefore, the forth candidate with the least violation is the optimal output, although it violates IDENT[F] and DEP- IO (V) constraints but it does not result in its removal. So we can conclude that since in Persian simple words cannot contain sequences of three consonants in the middle of the word; therefore, we have a vowel epenthesis after

[DOR: 20.1001.1.25382640.2013.20.4.1.4]

the first or second consonant in German loanwords.

6.Conclusions

The study of the loanword phonology is of theoretical interest because speakers are required to make choices that do not violate the constraints of the sound system of target language. Clearly German loanwords, as well as English, Arabic, French, Turkish and some other languages have had a major effect on Persian language, but little has been researched and published in this regard. In this paper we have reviewed various aspects of loanwords adaptation from German into Persian within OT framework. It was found that various adjustments are made in German loanwords in order to accommodate them in Persian language. Some of these adjustments which are the findings of this research are as follows:

8-1-Regarding Vowels:

1)German diphthongs in loanwords are changed into simple vowels in Persian language (Tableaus 2 & 3).

2)Back lax vowel [O] in German loanwords will be changed into back tense vowel /o/ in Persian language (Tableau 2).

3)Front round vowels such as /ψ:/ and /2/ are changed to back round vowels; that is /u/, /o/ (Tableaus 3 & 4). So we can conclude that roundness feature overcomes the fronting feature.

4)Since there is no schwa /∴/ in Persian, it changes into /e/; therefore we can say that a central lax vowel changes into a front tense one (Tableaus 3 & 4 & 6 & 7).

8-2-Regarding consonants:

5) The velar fricative consonant /x/ in German will be substituted with the uvular fricative [Ξ] in Persian language; such as /βαx / → β□ξ.

6) In Persian there is not allophone [P] for trill consonant /r/ and it will be pronounced as [r] (Tableaus 3).

7) In German , consonant /r/ in final position is not pronounced while it is pronounced in Persian; such as :

German loanword	*German Pronunciation*	*Persian Pronounciation*
"Beurer"	/β↵ιP∴/	[βιφυρερ]
"Hamster"	/ηαμστ∴/	[ηαμεστερ]
"Müller"	/μψλ∴/	[μυλερ]

1)Palatal fricative consonant /X/ in German changes into palato-alveolar fricative [Σ] in Persian Language. (Tableaus 3)

2)Velar nasal consonant /|/ in German, is substituted with the consonant cluster [nʄ] in Persian. (Tableaus 5)

3) In Persian, initial consonant clusters of German loanwords are broken up through vowel epenthesis which is

[DOR: 20.1001.1.25382640.2013.20.4.1.4]

mostly identical to the vowel of the second syllable. (Tableaus 6)

4) Since Persian simple words cannot contain a 3-consonant cluster , so there is an epenthetic vowel between the first and second or the second and the third consonants. This vowel is mostly identical with the vowel of the next syllable. (Tableau 7)

5) In Persian, the pronunciation of German loanwords is highly under the influence of their spelling ; such as:

German loanword	***Persian Pronounciation***
"Henkel"	[hɛnχɛl]
"Nazi"	[nazi]
"Pudding"	[πυδινʇ]

Therefore we can conclude that when there are some sounds in inputs which have no identical one in the recipient language, they would be changed in such a way that do not violate any constraints of the recipient language.

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تبیین فرآیند قرض گیری واژه های آلمانی در زبان فارسی: رویکرد بهینگی

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تاریخ دریافت: ۹۱/۸/۲۰ تاریخ پذیرش:۹۲/۳/۳۱

در این مقاله که با هدف تبیین فرآیند قرض گیری واژه های آلمانی بر اساس محدودیت های زبان فارسی و در چارچوب نظریه بهینگی نگاشته شده، نحوه سازگاری خوشه های همخوانی و واکه های مرکب زبان آلمانی و همچنین واجهایی که در وام واژه های آلمانی جایگزین می شوند مورد بررسی قرار گرفته است. نظریه بهینگی که توسط پرینس و اسمولنسکی (۱۹۹۳) مطرح شد با برخورداری از مفاهیم کلیدی محدودیت های پایایی و نشانداری، در اصل مناسب ترین رویکرد برای تبیین این جنبه از توانش زبانی است. به همین منظور تعداد ۳۰ وام واژه آلمانی به عنوان پیکره داده های پژوهش انتخاب شد که برخی از آنها به روش اسنادی از منابع مکتوب استخراج شده و بقیه نام تجاری محصولات آلمانی هستند که به روش میدانی گردآوری گردیده است. با تحلیل توصیفی داده های مذکور در چارچوب نظریه بهینگی نتایج زبانشناختی ارزشمندی به دست آمد که از آن جمله می توان شکسته شدن خوشه همخوانی آغازین در وام واژه‌های آلمانی از طریق درج واکه در زبان فارسی را نام برد.

کلید واژگان: وام واژه، نظریه بهینگی، محدودیت، زبان آلمانی، زبان فارسی.

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