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Constraint Ranking, Government Licensing and the Fate of Coda Devoicing in Pilibhit Hindi-Urdu

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Abstract—*This paper contains the Phonological account of constraint ranking and government licensing with the principles of Optimality Theory. In this paper, we have revealed the process of coda devoicing that occurs in the final syllable of English loanwords adopted in Pilibhit Hindi-Urdu. The purpose of this paper is to represent an account of coda devoicing of English loanwords and their intervention in Hindi-Urdu spoken in Pilibhit (U.P.), within a framework of Optimality Theory (Prince and Smolensky, 1993). The groundwork of this study leads towards basically describes the facts and proposes a theoretical account of devoicing of phonemes in English Loanwords that are used by Pilibhit Hindi-Urdu speakers. The central idea of this paper delineated the reflection of surface forms that create conflicts between other candidates, solve only through the use of constraints of Optimality Theory. A surface form may be optimal in the sense of least serious violations of a set of violable constraints in a language hierarchy of constraints. On the other hand, Government Licensing emphasizes the property of coda devoicing and treats the proper framework of the consonant cluster rather than turning them in appropriate parametric style. We have to explain how and why Pilibhit Hindi-Urdu native speakers eliminated the voicing of a sound at the final syllable as compare to initial and medial syllables of English loanwords. We proposed that such conflicts can be resolved only with the help of Optimality Theory and find out the well-formedness of the optimal candidate. In addition to that, we also apply some better-known arguments originally adduced in support of constraint rankings and argue that adoption of loanwords.*

Keywords: *Optimality Theory; Constraint ranking; Government licensing; Coda devoicing.*

1. Introduction

The District Pilibhit is located at the sub-Himalayan region just approached to the international boundary of Nepal and state boundary to the Uttarakhand and formed the component of the Rohilkhand division. It lies between the parallels of 28-6' and 28-53' towards north latitude and the meridians of 79-57' and 80-27' towards east longitude.

Fig. 1: District Map of Pilibhit (U.P.)

Hindi and Urdu are two major official languages that are spoken in the district Pilibhit with other several languages and their dialects. Urdu is composed with the relevant phenomena of Perso-Arabic script that read and writes from right to left while Hindi is considered with the Devnagari script that reads and writes from left to right. It is investigated that native speakers of Pilibhit Hindi–Urdu borrowed the English loanwords and altered their physical mechanism with proper modification; one of them is the coda devoicing.

2. Optimality Theory

OT was first introduced by Alan Prince and Paul Smolensky (1993) and further extended by John McCarthy (1994) to organize the well-formedness syllable structure of the words, but soon spread in other areas of Linguistics too. According to Gussenhoven and Haikes (1998), Optimality Theory is a pertinent portion of the Phonology that is related to the thought of a universal set of constraints that are represented in a hierarchically ranked of language-specific facts.

According to McCarthy (2002), "Gen is universal," which means that all produced candidates by Gen for a given input are the same in all languages? These candidates are vary from language to language and the property of Gen is called "inclusive or freedom of analysis". Alan Prince and Paul Smolensky (1993) introduced that CON tells us what the substantive constraints are, from which grammars are built. The third significant key component of Universal Grammar is a precise definition of constraints, which is also referred to as EVAL that, spells out what it means to be optimal with respect to a ranking of CON.

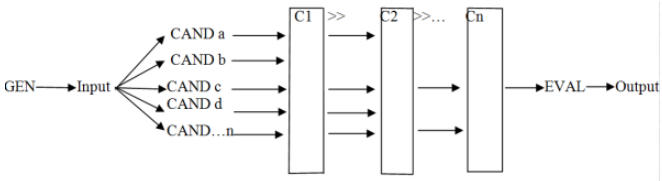

Fig. 2: Interaction between input and output candidate

In Fig. 2 we can see that there is an extreme interaction between input and output candidates and how they are demonstrated with the constraints.

3. Constraint Rankings

Optimality Theory deals with the basic issues of constraints directly and contemplated the architecture of different candidates. McCarthy (2002, 2008) discussed constraint typology by distinguishing between two major types of constraints such as;

3.1 Faithfulness Constraints

Faithfulness constraints established the efficient relationship between input and output candidates under the source of evaluation through or with the help of OT tenets. It has required exact derivation and replication of 'input' candidate along with some other structural dimensions of output candidates.

3.2 Markedness constraints

It represents the output form which should be acceptable and permissible in the syllable structure of the words and performed the language inventories. This type of constraints demanding a 'well-formedness' structure that has attention towards optimal form for a particular language. The following are different types of constraints related to the syllables and syllabifications.

a) Licensing (LINC): It restricts the word-initial and word-final consonant clusters according to phonotactic conditions of that language (Hammond, 1997).

b) No Voiced Coda (*VOI-COD): Obstruents must not be voiced in a coda position (Kager, 1999).

c) MAX-Input Output (MAX-IO): Input segments must have output correspondents that mean "No Deletion".

d) DEP-Input Output (DEP-IO): Output segments must have input correspondents that mean "No Epenthesis".

4. Government Licensing

It is examined that both Government Licensing (GL) and Optimality Theory (OT) has the same work on constraints with the systematic aspect of candidates, but they concentrate on different preliminaries and exposures of the grammar. Generally, licensing is responsible for the distribution of sub-segmental contrasts (Harris, 1994, 1997) and structural configuration (Charette, 1990). On the other hand, Government Licensing focuses on the well-formed structure of words to the approbation of constraint rankings.

The basic function of GL in our discussion is to know the complex factors of obstruent devoicing at the coda position in the syllabic pattern of words. The complexity of the optimal candidate is measured with the implementation of other candidates by the help of the hierarchy of constraint rankings. This is an arduous challenge to find out the accurate and systematic organization of coda devoicing in the final syllable of a word without using the tools of GL.

5. Coda Devoicing

The coda devoicing is a type of phonological process in which the final marginal segment of a syllable becomes voiceless. It is a theoretical virtue of a segment that elided the vibrating source of vocal folds or cords in the account of the phonetic property of speech sounds. When a consonant that is normally voiced is pronounced without vocal-fold vibration in some context, it is said to be devoiced (Gussenhoven & Jacobs, 2017, p. 20). **For example,** the researcher allocated several forms of coda devoicing in Pilibhit Hindi-Urdu such as given below;

English	Pilibhit Hindi-Urdu loanwords	Gloss
/tjuːb/	[tuːp]	'tube'
/kɑːd/	[kɑːt]	'card'
/bɔːd/	[boːt]	'board'
/rəʊd/	[roːt]	'road'
/plʌg/	[pɪləkˈ]	'plug'

The consideration of input candidate /kɑːd/ in OT model

Table 1: The Phonological devoicing of obstruent segment at the end of a particular word.

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/kɑ:d/	*VOI-CODA	IDENT-IO(VOI)	*SG	VOP
a. [kɑ:d]	*!			*
b. □ [kɑ:t]		*!		
c. [khɑ:d]	*!		*	*

*VOI-CODA>> IDENT-IO (VOI)>> *SG>> VOP

6. Literature Review

Optimality Theory (OT) has originally been developed for dealing with phonological problems, abandoning the assumption that grammatical constraints are inviolable (Prince & Smolensky 1993/2004, McCarthy & Prince 1995). According to Carr (2008), OT is a model of the Generative Grammar that is consisted with the crucial constraint rankings. There are certain types of constraints that are listed in the tableau from left (most powerful) to right (least powerful).

The tableau for the OT analysis of an input candidate /fɪlm/ with the help of constraints.

Table 2 The Consideration of constraints and candidates with the reference of input

/fɪlm/	DEP-IO	MAX-IO	*COMP-CODA
a. [fɪl]		*!	
b. □[fɪlm]			*
c. [fɪləm]	*!		

In the above tableau the candidate 'b' is the winner as an optimal candidate compared to the other output candidates because it is satisfied with highest and higher rank of constraints as DEP-IO and MAX-IO, while violated to the lowest rank of constraint *COMP-CODA.

According to Kaye, Lowenstamm, and Vergnaud (1985, 1990), Government Phonology focused on the principles and parameters and conserved to the government licensing that created many problems to the representation of coda devoicing and the peak of the syllable in the words. Gussenhoven and Jacobs (2017) stated that a coda consonant of a syllable that is generally voiced without vibration of the vocal fold in a specific environment of the words is called coda devoicing.

7. Methodology

7.1 Materials and Methods

The researcher has collected the data from the native speakers of Pilibhit Hindi-Urdu by regular contact through the interview. The nature of data is the primary and actual representation of native speakers. The researcher has used the high quality of the instrument as a tape recorder and put it just approach to the mouth of the native speakers for the data collection.

7.2 Participants

The researcher has collected data from the fifteen participants between the age group of 20 to 35. All the participants were actual inhabitants of district Pilibhit that are in regular contact with other language speakers.

8. Data Analysis

8.1 The phonological fate of coda devoicing

When a consonant that is normally voiced is pronounced without vocal-fold vibration in some context, it is said to be devoiced (Gussenhoven & Jacobs, 2017, p. 20). The coda devoicing is a type of phonological feature like others in which a voiced segment released its own voicing property and altered into the voiceless segment in a particular syllable of the words. **For example,** the researcher explored the devoicing of obstruents in the several tokens of English loanwords in Pilibhit Hindi-Urdu such as:

English	Pilibhit Hindi-Urdu loanwords	Gloss
/tju:b/	[tu:p]	'tube'
/pad/	[pat]	'pad'
/kɑ:d/	[kɑ:t]	'card'
/bɔ:d/	[bo:t]	'board'
/rəʊd/	[ro:t]	'road'

Now, we will use the principles of Optimality Theory to solve the problems of coda devoicing for input candidate /tju:b/ in Pilibhit Hindi-Urdu.

a) [tju:b] satisfied with IDENT-IO (VOI) and MAX-IO, but violated to the *VOI-CODA and VOP (VOICED OBSTRUENT PROHIBITION).

b) [tu:p] satisfied with *VOI-CODA and VOP, but violated to the IDENT-IO (VOI) and MAX-IO.

c) [tu:b] satisfied only with the VOP, while violated to the other constraints such as *VOI-CODA, MAX-IO and IDENT-IO (VOI).

Tableau for the consideration of input candidate /tju:b/ in Pilibhit Hindi-Urdu

Table 3: OT analysis of ranking features with the advantage of constraints

/tju:b/	*VOI-CODA	MAX-IO	VOP	IDENT-IO (VOI)
a) [tju:b]	*!		*	
b) □ [tu:p]		*!		*
c) [tu:b]	*!	*		*

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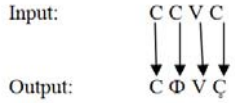
Here is the parallel composition of constraint rankings in a proper sequence of hierarchy such as:

*VOI-CODA >> MAX-IO >> VOP >> IDENT-IO (VOI)

The Correspondence diagram for the consonant and voicing deletion in Pilibhit Hindi-Urdu



We will consider the aspects of input candidate /kɑ:d/ as an English loanword in Pilibhit Hindi-Urdu and what is happening with the voicing of coda consonant:

a) [kɑ:d] satisfied with IDENT-IO(VOI) and *SG, but violated to the *VOI-CODA and VOP.
b) [kɑ:t]satisfied with all the constraints except IDENT-IO(VOI).
c) [khɑ:d] violated to all constraints except IDENT-IO(VOI).

Tableau for the representation of input candidate /kɑ:d/ in dominating features

Table 4: the OT expression of coda devoicing in Pilibhit Hindi-Urdu

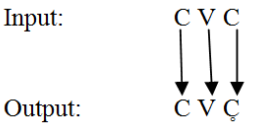
/kɑ:d/	*VOI-CODA	IDENT-IO(VOI)	*SG	VOP
a. [kɑ:d]	*!			*
b. □ [kɑ:t]		*!		
c. [khɑ:d]	*!		*	*

In this tableau, the hierarchy of constraints is organized in a proper way to know the ranking features of dominant candidates such as:

*VOI-CODA >> IDENT-IO (VOI) >> *SG >> VOP

The correspondence diagram for the elimination of coda voicing at the end of a syllable in Pilibhit Hindi-Urdu:

Input:



8.2 The phonological property of consonant clusters and coda condition

Nordquist (2017) stated that, in linguistics, a consonant cluster (*CC*) is a group of two or more consonant sounds that come before (called an onset), after (called a coda) or between (called medial) vowels. The consonant cluster is the procedure of fusion in which two or more than two consonants are adjacent to each other without an inventory of vowel segments among them in a particular language. **For example,** after the addition or insertion of a vowel segment between the two close consonants the coda voiced obstruents of the final syllable became devoiced in the Pilibhit Hindi-Urdu loanwords:

English	Pilibhit Hindi-Urdu loanwords	Gloss
/plʌg/	[pɪ.lək]	'plug'
/bleɪd/	[bɪ.le:t]	'blade'
/spi:d/	[ɪs.pi:t]	'speed'
/stand/	[ɪs.tant]	'stand'

Now, we will use the tools of Optimality Theory to find out the exact conditions of candidates with their hierarchy of constraints, especially the coda conditions and consonant clusters of input candidate /plʌg/ such as:

a) [plʌg] satisfied with DEP-IO and IDENT-IO (VOI), but violated to the *VOI-CODA and *COMP-ONS.
b) [pɪ.lək] satisfied with *VOI-CODA and *COMP-ONS, but violated to the DEP-IO and IDENT-IO (VOI).
c) [plʌk] satisfied with *VOI-CODA and DEP-IO, but violated to the *VOI-CODA and IDENT-IO (VOI).
d) [pɪ.ləg] satisfied with *COMP-ONS and IDENT-IO (VOI), but violated to the *VOI-CODA and DEP-IO.

Tableau for the OT analysis of input candidate /plʌg/ in Pilibhit Hindi-Urdu

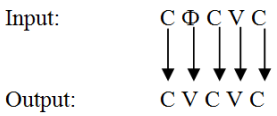
Table 5: the evaluation of consonant cluster and devoicing with the ranking features

/plʌg/	*VOI-CODA	*COMP-ONS	DEP-IO	IDENT-IO (VOI)
a. [plʌg]	*!	*		
b. □ [pɪ.lək]			*!	*
c. [plʌk]		*!		*
d. [pɪ.ləg]	*!		*	

In the above tableau, we can consider the basic formulization of the hierarchy of constraints in a proper manner such as:

*VOI-CODA >> *COMP-ONS >> DEP-IO >> IDENT-IO (VOI)

The correspondence diagram for addition and coda devoicing at the end of the syllable in Pilibhit Hindi-Urdu:



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9. Results and Discussions

In the first row of data, we have evaluated that the monosyllabic English loanwords are adopted in Pilibhit Hindi-Urdu carefully with the concept of alteration in the linguistic features of segments. **In table 3,** we have analyzed that candidate ‘a’ is satisfied with MAX-IO (no deletion) and IDENT-IO (VOI) (voicing of segments in input and output candidates must be identical), but violated to the *VOI-CODA (coda must not be voiced in the syllable) and VOP (obstruents must not be voiced), so the candidate ‘a' has the highest rank of constraints and less similar linguistic features with the input candidate. On the other hand candidate, ‘c' is satisfied only with the VOP and violated to all constraints such as MAX-IO, IDENT-IO (VOI) and *VOI-CODA, so the candidate ‘b' has the highest rank of constraints and became most loser candidate. Remaining candidate ‘b' is satisfied with the *VOI-CODA and VOP, but violated to the MAX-IO and IDENT-IO (VOI), henceforth the candidate ‘b’ has least rank of constraints including the violation (*) and fatal violation (*!). Finally, it became the best candidate as compared to others and indicated by as an ‘optimal' candidate. Sometimes the speakers have deleted the adjacent consonant at the initial syllable of the words as mentioned in the correspondence that is marked by Φ (segment deletion). The diacritic mark (̥) in the correspondence diagram stands for the coda devoicing of the obstruent segments.

In table 4, we have generalized that the candidate ‘a’ is satisfied with IDENT-IO (VOI) and *SG (no spread glottis), but violated to the *VOI-CODA and VOP. This happens because the candidate ‘a' has the highest rank of constraints and did not have analogous ranking features with the input candidate. So, in this context candidate ‘a' is the loser candidate. On another side, the candidate ‘c' is also consisted of the higher rank of constraints and did not conserve the features of the input candidate. The candidate ‘b' is satisfied with all the constraints except IDENT-IO (VOI), so it has the least rank of constraints as compared to other output candidates and having more analogous linguistic features matched with the input candidate. On the basis of these conditions it has marked the best candidate and declared an optimal candidate that is notated by .

In the row of other data we have examined that Pilibhit Hindi-Urdu native speakers did not preserve the property of consonant clusters in any position of the English loanwords. They always inserted or added a vowel between the two neighboring consonants and break the consonant cluster. **In table 5,** we have analyzed this process by the help of constraint rankings of OT. The candidate ‘a’ is satisfied with DEP-IO and IDENT-IO (VOI), but violated to the *VOI-CODA and *COMP-ONS, because it is wide apart from the company of input candidate on the basis of constraint rankings. The candidate ‘c' and‘d’ has the higher and highest rank of constraints including the representation of violations and fatal violations. They did not approach the input candidate to save the formal procedures of constraints. The candidate ‘b' is satisfied with *VOI-CODA and *COMP-ONS but violated to the DEP-IO and IDENT-IO (VOI). It has the least rank of constraints as compared to other output candidates, so it became the winner candidate and declared the optimal candidate that is marked by .

10. Conclusion

In this study, we have approached to the key factors of phonological account of coda devoicing and transgressed the consonant clusters of English loanwords in Pilibhit Hindi-Urdu by the help of OT constraints. We became cognizant that voiced coda obstruents at the final syllable of the English loanwords altered into voiceless coda obstruents in Pilibhit Hindi-Urdu. In terms of these activities coda lost its own strength and became ease to articulate with a finite source of energy. The groundwork of this paper is to reveal the coda condition and marked the voicing feature of English loanwords with voiced obstruents adopted in Pilibhit Hindi-Urdu.

This paper unveiled the concept of consonant clusters that are marginalized preserved by the Pilibhit Hindi-Urdu native speakers. It is ascertained that whenever two or more consonants come together at any location in the words, they are always separated by the insertion or addition of an extraneous segment. There is also the alteration of vowel phonemes that affected the other phonemes in the words. All these conflicts are solved by the help of constraints to find out the exact syllabic structure of English loanwords as an optimal candidate in Pilibhit Hindi-Urdu.

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