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Neutralization of Aspiration Feature in Voiced stops of Kashmiri and Testing of the Constraints (with English, Urdu and Arabic) resulting in Factorial Typology: An Optimality Approach

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Abstract

This paper explores the issue of neuralization of aspiration feature in voiced stops of Kashmiri language. This has been done with response to different constraints and their interaction with one another.

Key words: Neutralization, Aspiration, Constraints, Typology, Optimality

Introduction

Optimality Theory refers to the observed surface forms of a language which arise from the resolution of conflicts between competing constraints. A surface form is optimal if it incurs the least serious violations of a set of constraints taking into account their hierarchical ranking.

In Optimality Theory, two functions are involved in the generation of utterances. These are *Gen* (Generator) and *Eval* (Evaluation). Gen takes an input and returns a (possibly infinite) set of output candidates. Some candidates might be identical to the input, others modified somewhat and many others unrecognizable. *Eval* chooses the candidate that best satisfies a set of ranked constraints; this optimal candidate then becomes the output.

The constraints of Eval are of two types: *Markedness constraints* which enforce well formedness of the output itself, prohibiting structures that are difficult to produce or comprehend. *Faithfulness constraints* enforce similarity between input and output, for example requiring all input vowels to appear in the output or all morphophonemic features in the input to be overtly realized in the output. Markedness and Faithfulness constraints can conflict, so the constraint ranking which differs from language to language determines the outcome.

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Constraints are *strictly ranked* and *violable* in Standard Optimality theory. Strict ranking means that a candidate violating a high-ranked constraint cannot redeem itself by satisfying lower-ranked constraints (constraints are not numerically weighted, and lower ranked constraints cannot gang up on a higher-ranked constraint). Violability means that the Optimal candidate need not satisfy all constraints. Eval can be viewed as choosing the subset of candidates that best satisfy the top ranked constraint, then, of this subset, selecting candidate that best satisfies the second-ranked constraint, and so on. The constraints are minimally violated in the sense that the form that surfaces is the one which incurs the least serious violations as compared to a set of possible candidates. The seriousness of a violation is defined in terms of hierarchies of constraints which are arranged by importance. The violations of higher ranked constraints take absolute *priority* over lower ranked constraints. The winning candidate need not, satisfy all constraints, as long as for any rival candidate that does better than the rival. OT attributes major importance to the surface level in the interaction of constraints, disallowing access to intermediary levels between the input and output.

Interaction of Constraints:

Optimality Theory defines two types of constraints viz Markedness and Faithfulness. These constraints interact with each other and are ranked in a language specific hierarchy. The ranking schemata of these constraints is responsible for the various attested situations such as contrast, neutralization and allophonic variation. Whether some surface phonetic contrast (such as that between oral and nasal vowels/ between aspirated and unaspirated voiceless stops or voiced stops in Kashmiri) is allophonic or lexically distinctive in a language depends on the interaction of these constraints. When markedness dominates faithfulness, the language achieves outputs that are minimally marked at the expense of a neutralization of lexical contrasts. But when faithfulness dominates markedness, the language makes the reverse choice, realizing its input contrasts at the expense of output markedness:

a. Markedness >> Faithfulness (lexical contrasts are neutralized)
b. Faithfulness >> Markedness (lexical contrasts are expressed)

This paper focuses on the neutralization of aspiration feature in voiced stops of Kashmiri, and testing the constraints with English, Urdu and Arabic to show Factorial typology, taking into account an Optimality approach.

Aspiration Feature in Kashmiri:

Aspiration is an important feature of the consonant system of Kashmiri. One can differentiate between the voiceless glottal fricative /h/ and aspiration feature /h/ in Kashmiri. The former can occur independently at all the positions in a word while as the latter occurs only after the voiceless stops and affricates. Therefore the aspirated consonants of Kashmiri can be interpreted as the clusters of voiceless stops/affricates and the feature of aspiration. However the aspirated stop and the voiceless glottal fricative stand in a contrast e.g. /vIchhəːs/ ‘they saw me’, /vIchas/ ‘I will see’, /rəchhəːs/ ‘they brought me up’, /rəchis/ ‘we brought her up’,

etc. In terms of Optimality theory, aspiration feature in voiceless stops of Kashmiri is Preserved (Kak and Oveesa 2008). But this feature is found to be Neutralized in Voiced stops of Kashmiri.

Analysis:

In the analyses of the said feature, the following constraints are found to be relevant:

1. IDEN-IO [asp] —— Faithfulness constraint
2. *[asp] ___ Context free markedness constraint
3. IDEN-IO [asp]-Edge most —— positional faithfulness constraint

IDEN-IO[asp] is a faithfulness constraint which requires that surface values of aspiration in Voiced stops are identical to their underlying values:

* [asp] is a context free markedness constraint which requires that voiced stop must not be aspirated.

IDEN-IO [asp]-Edge most is a positional faithfulness constraint which says that aspiration is possible only at the edges.

Neutralization of Aspiration Feature in Voiced stops of Kashmiri:

Lexical borrowings are an important part of the development of Lexicon and modernization of any language. Lexical borrowings take place primarily when languages are in contact . Like other modern Indo-Aryan languages, Kashmiri has borrowed many words from Sanskrit, Persian, Arabic and Urdu. Some of the words consist of voiced aspirated stops such as /gharI /'home', /bhɔ:y/ 'brother', /ghur/ 'horse', /dhɔ̃:kI/ 'deceive' etc. All these voiced aspirated stops are deaspirated in Kashmiri because the language does not tolerate voiced aspirated stops. In terms of Optimality Theory, it can be interpreted that the aspiration feature in voiced stops is **neutralized** in Kashmiri.

The consequences of the OT assumption of the Richness of the Base, says that no constraints restrict the input, or to put it differently, that lexical representations in any language are free to contain any kind of phonological contrast. Whether some surface phonetic contrast (such as that between oral and nasal vowels) is allophonic or lexically distinctive in a language depends on interactions of two basic constraints: Markedness and Faithfulness (discussed above).

Richness of the Base implies that Kashmiri (as any other languages) is allowed the option of setting up a contrast of aspirated and unaspirated voiced stops in its underlying representations. However, this hypothetical contrast is never realized at the surface, because with respect to aspiration/unaspiration in voiced stops, Kashmiri happens to be a language of the type:

Markedness >> Faithfulness
(Lexical contrasts are neutralized)

which gives priority to markedness over faithfulness. Whatever lexical contrasts of aspiration there might be in voiced stops will be *obsecured* by effects of markedness.

In Optimality theory analysis of Neutralization of aspiration in voiced stop, the above constraints can be arranged in a language specific hierarchy to determine the optimal output:

*[asp] >> IDEN-IO [asp]-Edge most >> IDEN-IO [asp]

Context free Markedness constraint >> Faithfulness constraint

(i) Input: / gharI/ 'home'	*[asp]	IDEN-IO [asp]-Edge most	IDEN-IO [asp]
a. gharI	*!		
b. ☛ garI		*	*

(ii) Input: / garI/	*[asp]	IDEN-IO [asp]-Edge most	IDEN-IO [asp]
a. gharI	*!	*	*
b.☛ garI			

(iii)Input: / bhuay/ 'brother'	*[asp]	IDEN-IO [asp]-Edge most	IDEN-IO [asp]
a. bhuay	*!	*	
b. ☛ buay			*

(iv) Input: / buay/	*[asp]	IDEN-IO [asp]-Edge most	IDEN-IO [asp]
a. bhuay	*!	*	*
b. ☛ buay			

(v) Input: / dag/ 'pain'	*[asp]	IDEN-IO [asp]-Edge most	IDEN-IO [asp]
a. dhag	*!	*	
b. dagh	*!	*	*
c. ☛ dag			
d. dhagh	*! *!	**	

From the above tables, it is analysed that there is **neutralization** (loss of contrast) of Aspiration in favour of voiced stops. Here faithfulness constraints are over ruled by markedness constraint. However, if the constraints are applied to **Urdu**, the result is reverse and in case of **English**, the result is same as that of Kashmiri.

With the modest constraint set *[asp], IDEN-IO [asp]-Edge most and IDEN-IO [asp], it is possible and desirable to create **factorial typology** that is predicted by ranking permutation.

Identical Distribution: Urdu represents a case of identical distribution as it shows a full contrast of aspiration in voiced stops. Here a faithfulness constraint governing a feature of aspiration dominates markedness constraint (governing this feature). It can also be interpreted in other sense that the constraints are re-ranked here.

Full contrast of aspiration in voiced stops
IDEN-IO [asp] >> *[asp]

Faithfulness constraint >> Markedness constraint

(i) Input /ghar/	IDEN-IO [asp]	IDEN-IO[asp]-Edge most	*[asp]
a. ☛ghar			*
b. gar	*	*	

(ii) Input /gada:/ 'cushion'	IDEN-IO [asp]	IDEN-IO[asp]-Edge most	*[asp]
a. ghada:	*	*	*
b. ☛ gada:			

(iii) Input /gadha:/ 'donkey'	IDEN-IO [asp]	IDEN-IO[asp]-Edge most	*[asp]
a.☛gadha:			*
b. gada:	*	*	
c. ghadha:	*	*	**
d. ghada:	* *	* *	*

(iv) Input /bha:yi/ 'brother'	IDEN-IO [asp]	IDEN-IO[asp]-Edge most	*[asp]
a. ☛ bha:yi			*
b. ba:yi	*	*	

From these tables, it is concluded that **Urdu** consists of aspiration/unaspiration in voiced stops. The ranking schemata of faithfulness and markedness constraint

given above shows a full contrast of aspiration in voiced stops, assuming Urdu ranking.

Contextual Neutralization: English and **Arabic** represents a case of contextual distribution. It happens to be a language where markedness constraint dominates faithfulness constraint with respect to aspiration in voiced stops as shown by following tables:

*[asp] >> IDEN-IO (Aspiration)
Context free markedness constraint — Faithfulness constraint

English

(i) Input /beD/ 'bed'	*[asp]	IDEN-IO[asp]-Edge most	IDEN-IO [asp]
a. ☛ beD			
b. bheDh	* *	**	* *
c. beDh	*	*	*
d. bheD	*	*	*

(ii) Input /ghæp/ 'gap'	*[asp]	IDEN-IO[asp]-Edge most	IDEN-IO [asp]
a. ghæp	*		
b.☛ gæp		*	*

(iii) Input /bhug/ 'bug'	*[asp]	IDEN-IO[asp]-Edge most	IDEN-IO [asp]
a. bhug	*		
b.☛ bug		*	*
c. bhugh	* *	**	*
d. bugh	*	*	**

Arabic

(i) Input /ba:rid/ 'cold'	*[asp]	IDEN-IO[asp]-Edge most	IDEN-IO [asp]
a. ☛ ba:rid			
b. bha:ridh	* *	**	* *
c. bha:rid	*	*	*
d. ba:ridh	*	*	*

(ii) Input /guba:r/ 'dust'	*[asp]	IDEN-IO[asp]-Edge most	IDEN-IO [asp]
a. ghuba:r	*	*	*
b.☛ guba:r			
c. gubha:r	*	*	*

This ranking schemata states that the feature of unaspiration takes Priority over Preservation of [aspiration] in English and Arabic voiced stops. If one assumes that there is a contrast of aspiration in both these languages at underlying level, this contrast is neutralized at the surface level.

Conclusion

In this paper, the main focus was on *neutralization of aspiration feature in Voiced stops of Kashmiri* which resulted from the ranking of constraints. Furthermore, the constraints were also tested with English, Arabic and Urdu. At the heart of Optimality Theory is the notion that grammars of individual languages instantiate general ranking schemata of constraints of different types. The basic method of checking the typological predictions made by the theory is to construct a factorial typology by the reranking of constraints of different types. Regarding the aspiration feature in voiced stops of Kashmiri, the ranking of constraints showed that aspiration feature is neutralized in voiced stops of Kashmiri and is preserved in Urdu. The varied ranking of Constraints resulted in *factorial typology*, ranging from a situation of total neutralization on the one hand (in Kashmiri, Arabic and English), to that of preservation on the other hand (in Urdu).

This result, although apparently limited to the interaction of the two constraints, infact has broader typological implications. This work is however a preliminary study and further testing may be required.

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