A STUDY ON GLOTTAL STOPS IN URDU

SYED RAZA SHAHID

ABSTRACT

The glottal stops in Urdu language exist in every word or syllable position phonemically, but phonetics of Urdu exhibits a variable process of existence or removal of glottal stop at different word or syllable position. The study was performed to investigate and identify the rules, which brought forward the status of glottal stops in Urdu language. Furthermore the occurrence and the probability of glottal stops are dependent on the speaker's way of pronouncing.

1. INTRODUCTION

Urdu belongs to the family of New Indo-Aryan (NIA) languages, which is a sub-branch of Indo-European languages (Hussain, 1997, p.39). Urdu, like many languages is characterized into consonants and vowels. In Urdu, every syllable begins with the consonant (Bokhari, 1985, p. 3). And glottal stop is one of the consonant that phonemically exists in Urdu language.

Glottal stop is the sound that occurs with the vocal cords held tightly together and than there is a release. The symbol for it is [ʔ] according to the standard international Phonetics Alphabet (IPA). There are four characters in Urdu language that are characterized as glottal stops. These are[1]: ayn ("ع"), alif("ا"), hamza("ء"), alifmeda ("آ") .(Hussain, 2001, oral communication). In Urdu orthography, glottal stops exist in all three-syllable positions.

2. LITERATURE REVIEW

According to (Kachru, 1990, p.59), the alif ("ا") is pronounced as "ɑ" following a consonant; ayn ("ع") is either not pronounced at all or given the value of "ɑ" following a consonant. It is pronounced as a glottal stop only in high Urdu. Hussain (1997, p.158, 153, 48) has mentioned glottal stop [ʔ] in the inventory of Urdu consonants and map only two characters that are: ayn ("ع") and hamza ("ء") on to the glottal stops. Khan (1997) lists, most of all consonants and has missed two consonantal sounds and one of them is glottal stop [ʔ]. Bokhari (1985, p. 10) has mentioned in his text that out of the 36 Urdu consonants, two have special attention and need to be explained carefully; one of them is hamza ("ء"), which is an unaspirated and colorless glottal consonant. It lets the vowel give out their sounds in the absence of other so-called colored consonants. The glottal consonant function exists in speech as well as appears in transcription in Arabic script, which is employed for Urdu as well. In addition the author also agrees that there are few words in Urdu with initial and medial hamza ("ء"), the consonants of which have been dropped in the past (Bokhari, 1985, p. 11).

Bokhari and Hussain agree with the glottal stop pronounced by an Urdu character hamza ("ء"). Kachru and Hussain claimed ayn ("ع") as a glottal stop in their text. But the question arises whether the character alif ("ا") and alifmeda ("آ") lie in the category of consonant or vowel? Hussain has mentioned four glottal stops alif ("ا"), alifmeda ("آ"), ayn ("ع"), hamza ("ء") (Hussain, 2001, oral communication). So collectively ا, آ, ع and ء are the characters which exists in Urdu orthography and sounds like glottal stops; these characters are required special analysis to be performed.

[1] The symbols in the bracket are the characters of Urdu language.

3. METHODOLOGY

3.1 Subjects

For the purpose of analysis, Urdu words that include glottal stops in all possible position were collected and, a group of nine native Urdu speakers were surveyed, and consulted. The words were first consulted from established and respected/well known dictionaries of Urdu language (Qureshi, 1992, Ferozsons, Haqqi). Furthermore the subjects were first interviewed and were asked to read from the paper and were not being pronounced by the author. If the subject had any phonetic knowledge of Urdu or was familiar to the terms of Arabic phonetics that data was neglected.

3.2 Data Recording and Analysis Equipment

All acoustic analysis of the speakers was carried out on X-Waves 5.3, a collection of digital Speech-processing tools designed for Linux users. The equipment consisted of a high fidelity 600 ohms moving coil microphone, a Teac integrated stereo amplifier (power output 195 Watts per channel) and two high quality speakers with 8-ohm impedance. Another tool Praat 3.9, a speech-processing tool specially designed for windows environment was also used. The software shows little noise in the spectrogram but was sufficient and necessary for identifying glottal stops.

3.3 Design of Experiment

The subjects recorded the words gathered from the dictionaries. The words were recorded thrice a time in a single sound wave file and than also pronounced in the sentences. The words are mentioned in the result section and speakers made the sentences, with the condition that subjected words must be in the middle of a sentence. The words collected were familiar by the speakers and were easy for them to pronounce. They were asked to speak in a normal behavior or as they speak in normal life. Due to the unavailability of a sound proof room, the data thus collected was vigorously screened for noise.

4. RESULTS

4.1 Glottal Stop Location in Urdu

In Urdu orthography, glottal stops exist in syllable initial position, syllable final position and also in the middle of the syllable. There are four characters in Urdu language, which produces the sound like glottal stops. These are[2]: ayn ("ع"), alif ("ا"), hamza ("ء"), alifmeda ("آ"). The character alif ("ا") acts as a consonant when it appears at the syllable initial position of the first syllable of the word, otherwise it is considered as a vowel in all positions within the syllable or within the word. The character alifmeda ("آ") appears only at the morpheme initial position. Whereas the character hamza ("ء") appears at the morpheme final position and also in the middle of the word within the syllable and the character ayn ("ع") appears at all the positions within the syllable or within the word. Furthermore the glottal stop in Urdu language is found in the neighbor of both consonant and vowel and also between the vowels within the same syllable.

The phonemic transcription of the words has taken from the dictionaries and phonetic transcription was written by analyzing the spectrogram. The meaning of Urdu words is written in English language for the ease of the reader. The variable or symbol shown in upper case letter and not from the IPA standard are those, which shows variable trend of existing and removal of glottal stop and will be discuss later in the discussion section.

[2] The symbols in the bracket are the characters of Urdu language.

TABLE 1 RESULTS OF THE STATUS OF GLOTTAL STOP

Pattern	Urdu Character	Phonemic Transcription	Phonetic Transcription	Urdu Words	English Meaning
#**C**V…. (C = ʔ)	ع	ʔɪb′.rət̪	**X**ɪb′.rət̪	عبرت	Lesson warning
		ʔɪ.bɑ′.d̪ət̪	**X**ɪ.bɑ′.d̪ət̪	عبا دت	worship
		ʔɑ′.ʃɪq	**X**ɑ′.ʃɪq	عاشق	lover
		ʔɪ.ʃɑʔ	**X**ɪ.ʃɑ	عشاء	night prayer
	ا	ʔə.sɑt̪′.zɑ	**X**ə.sɑt̪′.zɑ	اساتذہ	teachers
		ʔə.rəb′	**X**ə.rəb′	ارب	ten billion
	آ	ʔɑb	**X**ɑb	آ ب	water
		ʔɑb′.ʃɑr	**X**ɑb′.ʃɑr	آ بشار	water fall
		ʔɑm′.d̪o.rəft̪	**X**ɑm′.d̪o.rəft̪	آ مدورفت	ingress and egress
….V**C**# (C = ʔ)	ع	ʃə′.mɑʔ	ʃə′.mɑ	شمع	candle
		qə′.t̪ɑʔ	qə′.t̪ɑ	قطع	interception
		t̪ə′.mɑʔ	t̪ə′.mɑ	طمع	greed
	ء	ʔʊm.rɑʔ′	um.rɑ′	امراء	rich people
		ʃʊr.kɑʔ′	ʃʊr.kɑ′	شرکاء	participants
		ʔɪ.ʃɑʔ	**X**ɪ.ʃɑ	عشاء	night prayer
..CV. **C**V... (C = ʔ)	ع	bæ′.ʔət̪	bæ′.t̪	بیعت	oath of allegiance
	ء	bʊlɑ′.ʔo	bʊlɑ′.o	ؤ Ý I	to call
		bɑ′.ʔis	bɑ′.is	بأیس	twenty two
..CVC.**C**V… (C = ʔ)	ع	ʔəʃ.ʔɑr′	əʃ.ɑr′	اشعار	verses
		bɪd̪′.ʔət̪	bɪd̪′.ət̪	بدعت	innovation in religion
	آ	d̪ər′.ʔɑ.məd̪	d̪ər′.ɑ.məd̪	د رآمد	import
		bər′.ʔɑ.məd̪	bər′.ɑ.məd	برآمد	export
...CV**C** .CV… (C = ʔ)	ع	t̪ɑʔ.lim′	t̪ɑ.lim′	تعلیم	education
		lɑʔ′.nət̪	lɑ′.nət̪	لعنت	curse
…CV**C** . V… (C = ʔ)	ع	t̪ɑ′.ʔɑm	t̪ɑ′.ɑm	طعام	food
...CV**C**C… (C = ʔ)	ع	mɑʔr′.fət̪	mɑr′.fət̪	معرفت	Knowledge of God
		ʃeʔr	ʃer	شعر	verse

TABLE 2 OCCURRENCE AND PROBABILITY OF THE GLOTTAL STOP IN URDU

Urdu Words	Phonemic Transcription	Phonetic Transcription	No. of speakers pronounce Glottal Stop	No. of speakers remove Glottal Stop	Probability of occurring Glottal Stop	Probability of removing Glottal Stop
عبرت	ʔɪbʹ.rəʈ	**X**ɪbʹ.rəʈ	6	3	0.67	0.34
عبا دت	ʔɪ.bɑʹ.ɖəʈ	**X**ɪ.bɑʹ.ɖəʈ	4	5	0.45	0.56
عاشق	ʔɑʹ.ʃɪq	**X**ɑʹ.ʃɪq	3	6	0.34	0.67
اساتذہ	ʔɪ.ʃɑʔ	**X**ɪ.ʃɑ	2	7	0.23	0.78
ارب	ʔə.sɑʈʹ.zɑ	**X**ə.sɑʈʹ.zɑ	1	8	0.12	0.89
آ ب	ʔə.rəbʹ	**X**ə.rəbʹ	7	2	0.78	0.23
آ بشار	ʔɑb	**X**ɑb	5	4	0.56	0.45
آ مدورفت	ʔɑbʹ.ʃɑr	**X**ɑbʹ.ʃɑr	3	6	0.34	0.67
شمع	ʔɑmʹ.ɖo.rəfʈ	**X**ɑmʹ.ɖo.rəfʈ	0	9	0.0	1.0
قطع	ʃəʹ.mɑʔ	ʃəʹ.mɑ	0	9	0.0	1.0
طمع	qəʹ.ʈɑʔ	qəʹ.ʈɑ	0	9	0.0	1.0
امراء	ʈəʹ.mɑʔ	ʈəʹ.mɑ	0	9	0.0	1.0
شرکاء	ʔʊm.rɑʔʹ	um.rɑʹ	0	9	0.0	1.0
عشاء	ʃʊr.kɑʔʹ	ʃʊr.kɑʹ	3	6	0.34	0.67
بیعت	ʔɪ.ʃɑʔ	**X**ɪ.ʃɑ	0	9	0.0	1.0
ءَاِ ؤ	bæʹ.ʔəʈ	bæʹ.ʈ	0	9	0.0	1.0
بأُیس	bʊlɑʹ.ʔo	bʊlɑʹ.o	0	9	0.0	1.0
اشعار	bɑʹ.ʔis	bɑʹ.is	0	9	0.0	1.0
بدعت	ʔəʃ.ʔɑrʹ	əʃ.ɑrʹ	0	9	0.0	1.0
د رآمد	bɪɖʹ.ʔəʈ	bɪɖʹ.əʈ	0	9	0.0	1.0
برآمد	ɖərʹ.ʔɑ.məɖ	ɖərʹ.ɑ.məɖ	0	9	0.0	1.0
تعلیم	bərʹ.ʔɑ.məɖ	bərʹ.ɑ.məd	0	9	0.0	1.0
لعنت	ʈɑʔ.limʹ	ʈɑ.limʹ	0	9	0.0	1.0
طعام	lɑʔʹ.nəʈ	lɑʹ.nəʈ	0	9	0.0	1.0
معرفت	ʈɑʹ.ʔɑm	ʈɑʹ.ɑm	0	9	0.0	1.0
شعر	mɑʔrʹ.fəʈ	mɑrʹ.fəʈ	0	9	0.0	1.0

5. DISCUSSION

This study was performed to investigate what is the status of glottal stop in Urdu language? Another motivation of this study is to identifying the rules, which causes the glottal stops to remove from the phonetic transcription of Urdu. The dictionary gives glottal stop at every possible position but phonetically the presence of glottal stop is not consistent as shown by the results.

The experiments were specially devised to tackle with glottal stops at every possible position within the word and also within the syllable. But the results in table 1 show that glottal stop is not completely removed from the phonetics of Urdu. This existence or removal of glottal stop is dependent on speaker's phonetic background and his manner of articulation. Since the selected speakers were unaware of Arabic phonetics (which contains glottal stop) and had not learned qirat (recitation of Holy Quran) but their articulator organs are trained to sound glottal stop not at every position but only at the start of the word and not always at the start of the word but some speakers sound

glottal stop and others remove. There is one important factor to consider in this regard that language always inherits from some parental language, and its influence to the child language always remains their. So the influence of parental language is difficult to prove scientifically, but the results converge to the above point. This shows that the trend of existence and removal of glottal stop is very much inconsistent.

The glottal stop is completely removed from the phonetics of Urdu when it occurs at the location other than at the start of the word or at the start of the first syllable of the word, but they are still present in the orthography of Urdu. But the existence or removal of glottal stop at the start of the word or at the first syllable of the word is the discussable issue. Now the author will discuss which characters in Urdu orthography gives glottal stops in phonetics of Urdu and their probability of occurring or removing.

The glottal stop is present in the phonetics of Urdu when ayn ("ع") occurs only at the start of the word or at the start of the first syllable of the word. Collectively the number of speaker sounds ayn ("ع") as a glottal stop is 16 out of total 36. So the probability of occurring ayn ("ع") as a glottal stop is 0.45, which is near to 0.5. So the chances of producing glottal stop when ayn ("ع") is present at the first syllable of the word are 50% in the normal speech of Urdu. Similarly 50% chance is present of not sound glottal stop in the normal speech of Urdu. On the other hand, none of the speakers produced glottal stop when it occurs other than the word initial position. So the probability of existence of glottal stop is 0.0 and that of removing is 1.0 when it appears only other than the word initial position.

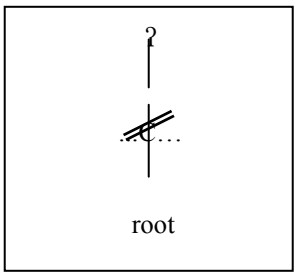
The glottal stop is also present in the phonetics of Urdu when alifmeda ("آ") occurs only at the start of the first morpheme of the word. Collectively the number of speaker produced alifmeda ("آ") as a glottal stop is 15 out of total 27. So the probability of occurring alifmeda ("آ") as a glottal stop is 0.57, which is more than 0.5. So the chances of producing glottal stop when alifmeda ("آ") is present at the first syllable of the word are nearly 60% in the normal speech of Urdu. So 40% chance is present of not producing glottal stop in the normal speech of Urdu. One important point lies in the Urdu character alifmeda ("آ"), it gives a vowel and a hidden consonant. In case of example ʔab (آب), (ب) is mapped on (b), and alifmeda ("آ") is mapped on (ʔa), where (a) is a vowel and (ʔ) is a hidden consonant. On the other hand, none of the speakers sounds glottal stop when it occurs at the morpheme medial position. So the probability of existence of glottal stop is 0.0 and that of removing is 1.0 when it appears only other than at the start of the first morpheme of the word.

The Urdu character alif ("ا") also produces the glottal stop when it occurs at the start of the word, otherwise it is considered as a vowel. Collectively the number of speaker sounds alif ("ا") as a glottal stop is 3 out of total 36. So the probability of occurring alif ("ا") as a glottal stop is 0.08, which is near to 0.0. So the chance of producing glottal stop when alif ("ا") is present at the start of the first syllable of the word is nearly 0% in the normal speech of Urdu. So 100% chance is present of not producing glottal stop in the normal speech of Urdu whatever is the position of the alif ("ا") within the syllable and within the word level.

The Urdu character hamza ("ء") do not produces the glottal stop whatever is the position of hamza ("ء") within the syllable or within the word level. So the probability of occurring glottal stop when hamza ("ء") is present in the morpheme is 0.0 and 100% chance is present of removing hamza ("ء") from the phonetics of Urdu, but it remains in the orthography of Urdu.

The result shows that glottal stops exist on stress syllable and sometimes get deleted; the same procedure also appears in the case of unstressed syllable. So the existence or removal of glottal stop does not depend on the stressed or unstressed syllable in Urdu language. The author has not discussed the above phonological rule in detail because the rule is not satisfying the whole condition every time. Furthermore

result shows that glottal stops are always deleting its timing tier from every word or syllable position.



The above discussion also converges to the point that there exists a contrast between phonetics and phonology. The phonology claims glottal stop in Urdu as a consonant but phonetics disagreed. In other words glottal stop is removed which is present in the orthography of Urdu but it is deleted from the phonetics of Urdu by leaving its influence on its adjacent vowel. This contrast is also not always true but it varies.

6. CONCLUSION

No rule exists which completely describes the existence or removal of glottal stop in Urdu language. And if such rule exists than it does not have 100% probability of applicability. So more work or analysis is required to identify the process of existing or removing glottal stop from the Urdu language.

7. REFERENCES

1. Bokhari, Sohail 1985. *Phonology of Urdu Language*. Royal Book Company, Karachi.

2. Ferozsons, *Feroz-ul-Lughat Urdu*, Ferozsons private limited, ISBN 969-000-514-6.

3. Haqqi, Shaan-ul-Haq, *Farhang-e-Talffuz,* Muqtadra Qaumi Zubaan. ISBN 969-474-153-X.

4. Hussain, Sarmad. *1997. Phonetic Correlates of Lexical Stress in Urdu,* Unpublished Ph.D. dissertation, Northwestern University, IL, USA.

5. Kachru, Yamuna 1990. *Hindi-Urdu in The Major Languages of South Asia, The Middle East and Africa*, edited by Bernard Comrie.

6. Khan, Mahboob Alam 1997. *Urdu ka Soti Nizaam,* Muqtadara Qaumi Zaban, Islamabad.

7. Qureshi, Bashir Ahmad 1992. *Standard Twentieth Century Dictionary,* Educational Publishing House Delhi.