

DELETION RULES IN URDU LANGUAGE

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ABSTRACT

Languages often exhibit removal of some phoneme(s) from the phonemic representation resulting in somewhat different phonetic representation. This is due to the application of phonological rules. Deletion rules are the type of phonological rules. A category of which are the deletion rules which deal with the deletion of a vowel or a consonant (or in terms of metrical phonology the features of the timing slots).

In Urdu words undergo certain deletions, such as deletions of /h/ at the morpheme boundary, deletion of the glottal stop /ʔ/ in certain cases, deletion of /n/ and the possible phenomenon resulting in nasalization of the corresponding vowel in some contexts, deletion of aspiration, and deletion of /ðv/ in the particular contexts. This paper discusses these deletions, their contexts and the possible reasons triggering these deletions.

1. INTRODUCTION

The goal of this paper is to present and document phonological rules of deletion in Urdu. Urdu is the national language of Pakistan. The rules presented in this paper are based on evidence elicited from Urdu speakers having Punjabi background (mother tongue).

All languages undergo the process of deletion depending upon their language structure and usage. Urdu also undergoes the process of deletion. This paper deals with what type of deletions occur in the Urdu language, and what may be the possible reasons triggering the deletions.

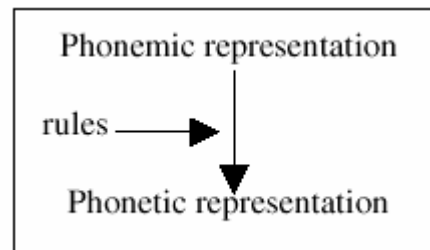
2. LITERATURE REVIEW & PROBLEM STATEMENT

Phonological rules define the phenomenon involved in various different pronunciations and forms of words. Phonological rules can delete or add entire phonemic segments.

The phonological rules can be considered as formulas which when applied on phonemic representations, result in the corresponding phonetic representations.

Phonemic representation: Includes only the non-predictable distinctive features

Phonetic representation: *Derived* from phonemic representation by applying phonological rules.



All phonological rules specify

1. The class of sounds affected by the rules
2. The context or environment in which the rule applies to
3. What phonetic changes are to occur in the format of 1 -->3/ 2 (where '1' is read as 'in the environment of') _ 1&2: structural description, 3: structural change

Rules can be written using the linear phonology notation or the metrical phonology notation. In this paper the metrical (Auto segmental phonology) notation will be used.

Deletion rules are the type of phonological rules, which deal with the deletion of a vowel or a consonant (or in terms of metrical phonology the features of the timing slots).

Deletion rules also show up as optional rules in fast speech or casual speech in languages. For example in English, they result, for example, in the common

contractions changing he is [hi iz] to he's [hiz].

Some examples of deletion rules in different languages are as follows:

In French, for example, word-final consonants are deleted when the following word begins with a consonant (oral or nasal) or a liquid, but are retained when the following word begins with a vowel or a glide. This deletion rule of French is simply stated as

[+consonantal] --- > ø / ____# [+consonantal]

This rule when "translated" into words says: "Delete a consonant before a word beginning with all consonant except glide"

Another deletion rule in English is deletion of *ə* before a stressed syllable.

2.1 Problem statement:

Deletions occur in the Urdu language. What sort of deletions occur in the Urdu language and why?

3. METHODOLOGY

I collected over 500 words from the Urdu dictionary and did their phonemic and phonetic transcriptions.

The approach I used for word selection for the purpose of analysis was that I analyzed the orthography and the pronunciation of all the words in the dictionary and selected the words that I suspected might have some deletions. However I chose 25% of the words in random order.

Once I found words of a certain category undergoing deletion, I looked for other words in the particular category to check if the deletion takes place under all cases. If not then I analyzed the cases in which deletion takes place and the factors and the features triggering the deletion.

I also found some of the deletions by listening to the speakers during their normal everyday conversation.

In order to confirm the suspected deletions I recorded the words and analyzed their spectrograms to formulate a concrete rule.

In order to record the words I chose the minimal set of words that represented the whole set of words undergoing deletions. Then I used the words in sentences with each word occurring in two sentences in different contexts and then recorded the sentences by five speakers.

All of the speakers were Urdu speakers who had Punjabi as their mother tongue, but didn't use Punjabi in everyday life. Punjabi is the language spoken in the province Punjab of Pakistan. My consultants (speakers) for this paper, had the standard Urdu accent (with some traces of their Punjabi background) used in education and in broadcasting in the capital of Punjab, Lahore. So, this paper is based on the dialect of Urdu used in Lahore.

4. RESULTS

Following are the deletions that I have come across during my analysis. Along with the data there are spectrograms for the words (along with the contexts in which they were recorded). I have shown only the portions of spectrograms undergoing deletion.

4.1 Deletion of /h/ at the morpheme boundary

The data for this category of deletions is:

/pəndrəh/	[pəndra]	"fifteen"
/rabtəh/	[rabta]	"connection"
/xəɖʃəh/	[xəɖʃa]	"doubt"
/gəroh/	[gəroh]	"gang"
/vəɖzəh/	[vəɖza]	"reason"
/t̪əʃbih/	[t̪əʃbi]	"simile"
/t̪əravih/	[t̪əravi]	"special prayer"
/t̪əsbih /	[t̪əsbi]	"string of beads"

Sentence 4.1.1

[həm pəndra d̪ɪn bad aē gē]

Word under observation

/pəndrəh/ [pəndra] "fifteen"

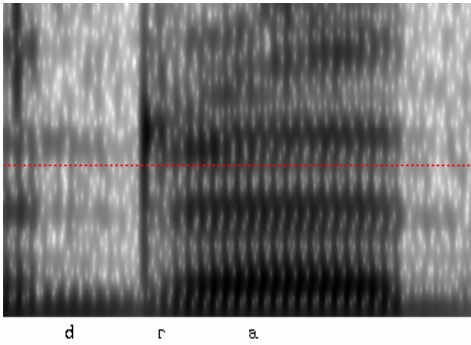


FIGURE 1 Spectrogram for [pəndra]

Sentence 4.1.2

[t̪um t̪ravi mē t̪sbi k̪rte hō]

Word under observation

/t̪ɔravɪh/ [t̪ɔravɪ]
 “special prayer”

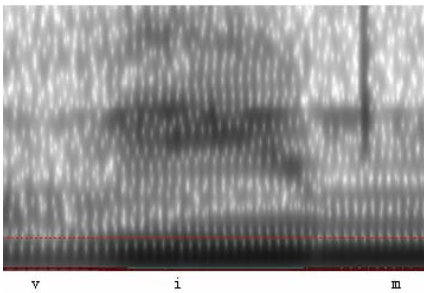


FIGURE 2: Spectrogram for [t̪ɔravɪ]

Sentence 4.1.3:

[us g̪ɔroh se rab̪ta k̪rna hæ]

Word under observation

/g̪ɔroh/ [g̪ɔroh] “gang”

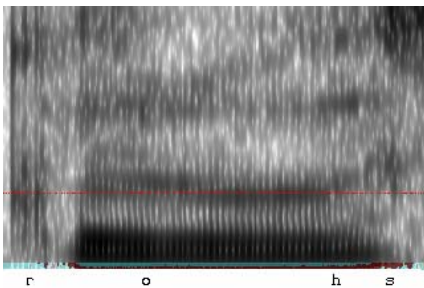


FIGURE 3 Spectrogram for [g̪ɔroh]

In the spectrogram in figure 3, no deletion of /h/ has occurred.

Putting all these observations together, I propose the following phonological rule in auto-segmental form:

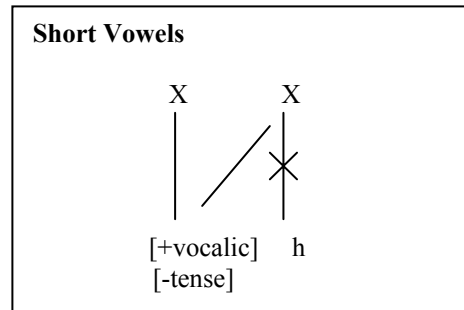


FIGURE 4A Rule for deletion of /h/ for short vowels

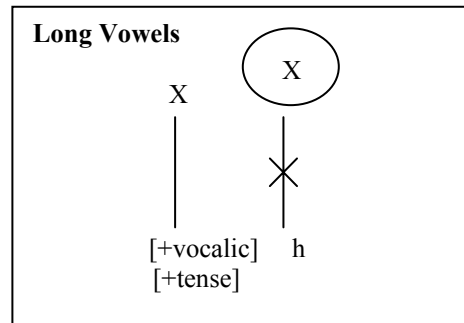


FIGURE 4B Rule for deletion of /h/ for long vowels

X in the rules specifies the timing slot. When /h/ occurs at the morpheme boundary after a long vowel, /h/ gets deleted along with its timing slot whereas in the case of a short vowel the timing slot remains and short vowel lengthens by occupying that timing slot resulting in the corresponding long vowel.

4.2. Deletion of the glottal stop /ʔ/

The representative data for words involving deletion of the glottal stop /ʔ/ is as follows:

/ɪt̪əlaʔ/	[ɪt̪əla]	“report”
/t̪ərdziʔ/	[t̪ərdzi]	“preference”
/dʒamɪʔ/	[dʒame]	“concise”
/rukuʔ/	[ruku]	“prostration”
/ʃəməʔ/	[ʃəmə]	“light”
/bɪd̪ʔət̪/	[bɪd̪ət̪]	“addition in Islam”
/bəɾʔəks/	[bəɾəks]	“apart from”
/t̪ʔavun/	[t̪avun]	“cooperation”
/vad̪əh/	[vad̪ə]	“promise”
/d̪uʔa/	[d̪ua]	“prayer”
/ʔad̪ət̪/	[ad̪ət̪]	“habit”
/ʔədzib/	[əd̪zib]	“strange”
/ʔuzr/	[uzr]	“excuse”
/ʔərsa/	[ərsa]	“period”
/ʔid̪/	[id̪]	“Islamic religious festival”

The cases in which the deletion of /ʔ/ occurs are:

4.2.1 /ʔ/ at end

Sentence 4.2.1 (a)

[dʒame ɪt̪əla dɪə kəro]

Words under observation

- (I) /ɪt̪əlaʔ/ [ɪt̪əla] “report”
- (II) /dʒamɪʔ/ [dʒame] “concise”

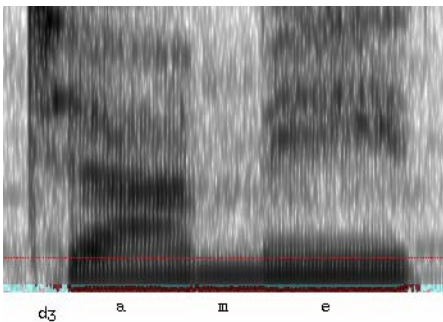


FIGURE 5 Spectrogram for [ɪt̪əla], /ʔ/ at the end

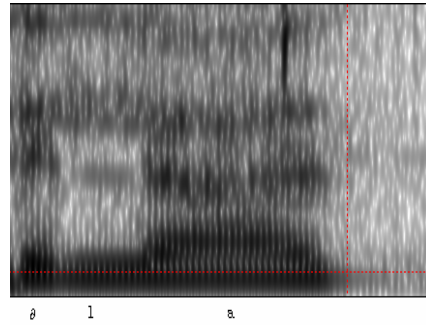


FIGURE 6 Spectrogram for [dʒame], /ʔ/ at the end

4.2.2 /ʔ/ in middle

Sentence 4.2.2 (a)

[dʒame t̪avun d̪ərkəɾ hæ]

Sentence 4.2.2 (b)

[ruku me d̪ua maŋgə]

Words under observation

- (a) /t̪ʔavun/ [t̪avun] “cooperate”
- (b) /d̪uʔa/ [d̪ua] “pray”

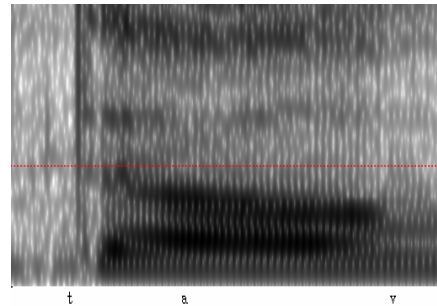


FIGURE 7 Spectrogram for [t̪avun], /ʔ/ in the middle

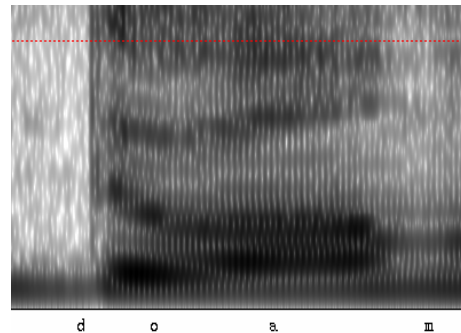


FIGURE 8 Spectrogram for [d̪ua], /ʔ/ in the middle

4.2.3 /ʔ/ at start

Sentence 4.2.3

[kɪɾ̩ne ɔrse baɖ̩ iɖ̩ ai hæ]

Word under observation

/ʔiɖ̩/ [iɖ̩] “Islamic religious festival”

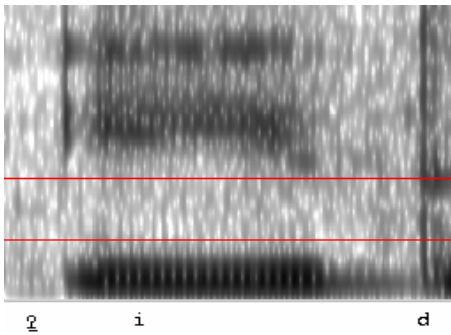


FIGURE 9 Spectrogram for iɖ̩], /ʔ/ at the start of morpheme

From Figure 9, we can see that /ʔ/ acts as a glottal stop if it occurs at the start of a phoneme exhibiting consonantal behavior.

The deletions involving the glottal stop /ʔ/ can be formulated in a rule as

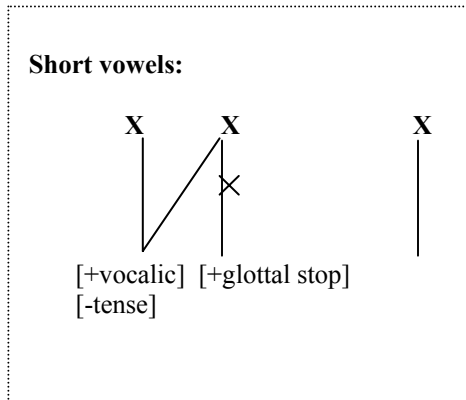


FIGURE 10A: Rule for deletion of /ʔ/ for short vowels

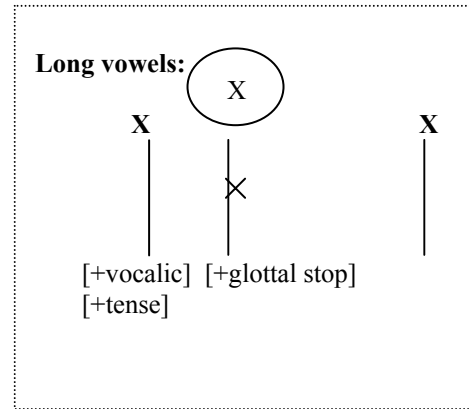


FIGURE 10B Rule for deletion of /ʔ/ for long vowels

4.2.3 Deletion of /n/ and nasalization of vowel

The data given below undergoes deletion of /n/ and nasalization of the vowel in the listed contexts.

4.2.3 (a)

Data for the /Nnv/ context

Undergo deletion

- /kʊnvā/ [kūā] “well”
- /kɔnvɔl/ [kāvɔl] “water lily”
- /kʊnvɔr/ [kūvɔr] “prince”
- /sanvɔla/ [sāvɔla] “wheatish complexion”
- /gɔnvar/ [gāvar] “uneducated”

Don't undergo deletion

- /kanvɔr/ [kan.vɔr] “a type of animal”
- /dʒanvɔr/ [dʒan.vɔr] “animal”
- /gɪnvana/ [gɪn.vana] “to count”
- /mɔnvana/ [mɔn.vana] “to make other agree”

Putting all these observations together, I propose the following phonological rule in auto-segmental form:

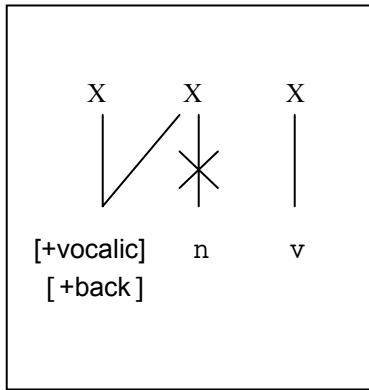


FIGURE 11 Rule for deletion of /n/ and nasalization of vowel in /Vn/ context

According to the rule in figure 11, /n/ gets deleted and nasal feature spreads onto the corresponding vowel.

4.2.3 (b)

Data for the /Vns/ context

/k ^h ans/	[k ^h ās]	"cough"
/k ^h ansi/	[k ^h āsi]	"cough"
/p ^h ansi/	[p ^h āsi]	"gallows"
/sans/	[sās]	"breath"
/bans/	[bās]	"cane"
/t ^h ons/	[t ^h ōs]	"insert to fullest"
/t ^h ans/	[t ^h ās]	"insert to fullest"
/p ^h uns/	[p ^h us]	"dry grass"
/p ^h əns/	[p ^h əs]	"entanglement"
/həns/	[həs]	"laugh"

Don't undergo deletion

/dʒɪns/	[dʒɪns]	"gender"
/mʊnsɪf/	[mʊn.sɪf]	"justice maker"
/mɔ̃nsʊb/	[mɔ̃n.sʊb]	"dedicated"
/sə̃nskrə̃t̪/	[sə̃n.skrə̃t̪]	"a language"
/sə̃nsə̃ni/	[sə̃n.sə̃.ni]	"eerie"
/ɪnsən/	[ɪn.sən]	"human"

Sentence 4.2.3b (I)

[usə k^hāsi ʃru ho gai]

Word under observation

/k^hansi/ [k^hāsi] "cough"

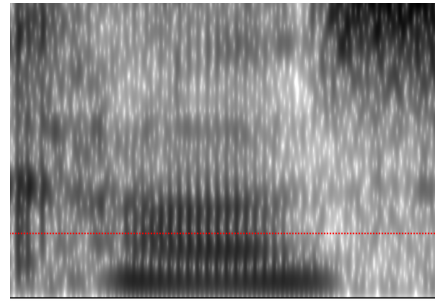


FIGURE 12 Spectrogram of [k^hāsi] showing nasalization of vowel

Sentence 4.2.3b (I)

[hə̃m p^həs gae t̪^he]

Word under observation

/p^həns/ [p^həs] "entanglement"

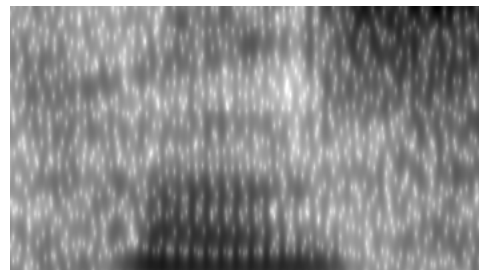


FIGURE 13 Spectrogram of [p^həs]

Putting all these observations together in a auto-segmental phonological rule

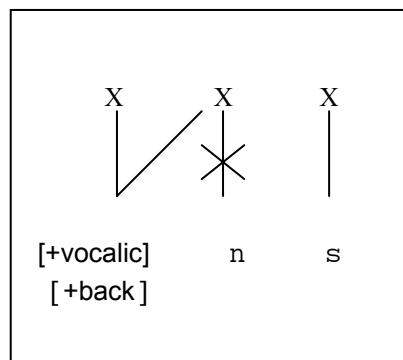


FIGURE 14 Rule for deletion of /n/ and nasalization of vowel in /Vns/ context

4.2.4 Deletion of aspiration

4.2.4(a)

The representative data involving deletion of aspiration is as under:

/pəṭ ^h na/	[pəṭna]	“to study”
/tʃəṭ ^h na/	[tʃəṭna]	“to step on”
/daṭ ^h i/	[daṭi]	“beard”
/t̤eṭ ^h a/	[t̤eṭa]	“crooked”
/siṭ ^h i/	[siṭi]	“ladder”
/saṭ ^h e/	[saṭe]	“half”
/gaṭ ^h a/	[gaṭa]	“thick”
/buṭ ^h a/	[buṭa]	“old man”
/kaṭ ^h na/	[kaṭna]	“to do embroidery”
/t̤er ^h vā/	[t̤ervā]	“thirteenth”
/gəḍjar ^h vā/	[gəḍjarvā]	“eleventh”
/sol ^h vā/	[solvā]	“sixteenth”
/tʃul ^h a/	[tʃula]	“burner”
/ḍul ^h a/	[ḍula]	“groom”
/gundḍ ^h na/	[gundḍna]	“dough”
/ḍuḍ ^h /	[ḍuḍ]	“milk”

These deletions can be combined to form the following auto segmental rule:

4.2.5 Deletion of /ðv/

Data set 1

/xəḍvab/	[xab]	
	[xoab]	“dream”
/xəḍvadʒa/	[xadʒa]	
	[xadʒa]	“a man of distinction”
/xəḍvar/	[xar]	
	[xoar]	“distressed”
/xəḍvastgar/	[xast̤gar]	
	[xast̤gar]	“applicant”
/xəḍvanḍa/	[xaṅḍa]	
	[xoṅḍa]	“educated”
/xəḍvah/	[xah]	
	[xoah]	“wishing”
/xəḍvahir/	[xahir]	
	[xoahir]	“sister”

/xəḍvahiʃ/	[xahiʃ]	
	[xoahiʃ]	“wish”

Data set 2

/xəḍvaṭin/	[xoavaṭin]	
	[xəḍvaṭin]	“women”
/xəḍvaridʒ/	[xoavaridʒ]	
	[xəḍvaridʒ]	“schismatic”
/xəḍvaɪq/	[xoavaɪk]	
	[xəḍvaɪk]	“miracles”
/xəḍvas/	[xoavas]	
	[xəḍvas]	“peculiarities”
/xəḍvanin/	[xoavanin]	
	[xəḍvanin]	“nobles”
/nəḍvab/	[noab]	
	[nəḍvab]	“wealthy”
/dʒəḍvab/	[dʒoab]	
	[dʒəḍvab]	“answer”

5. DISCUSSION

In Urdu the phoneme /q/ exist in the phonemic inventory but it is always mapped onto /k/ by the Urdu speakers. The conversion of /q/ to /k/ is not considered as deletion during the data analysis for this paper. The Urdu language is the amalgamation of different languages, and the phoneme /q/ has been inherited from the Arabic language, where it is pronounced as it is, but the Urdu speakers map it on /k/.

In Urdu /n/ occurs in two forms that are /n/ and “/n/ ghuna” which is represented by the nasalization of vowel as /ā/ in [kūā] and it mostly occurs at the phoneme boundary.

5.1. Deletion of /h/ at the morpheme boundary

As the data in 4.1 shows, /h/ gets deleted if it occurs at the morpheme boundary after a vowel. The timing slot associated with /h/ doesn't get deleted in case of short vowels and as a result the short vowel lengthens resulting in the corresponding long vowel. Whereas in the case of a long vowel before /h/, the timing slot gets deleted along with /h/. This is because in Urdu allows short vowels /V/ and long vowels /VV/ but any

sequence like / VVV / producing an extra long vowel doesn't exist.

The words presented in 4.1 are a subset of the data that undergoes this type of deletion. I have not found any exception except for the words, which are not very frequently used.

A general observation was that speakers tend to concentrate on words which are not very frequently used and pronounced the word as it is written and as a result no deletion occurred, e.g. in figure 3, in the spectrogram for the word [gəroh], as can be seen from the spectrogram that /h/ deletion has not taken place. All five speakers pronounced [gəroh] with extra care and didn't delete the /h/.

5.2. Deletion of the glottal stop /ʔ/

Any phoneme can occur at three possible places in a word unless there is some phonotactic constraint in the language restricting its' occurrence at a particular place(s). The glottal stop /ʔ/ in Urdu can also occur at three possible locations in a word, which are, start, end and anywhere between the end and the start.

The characteristics of the glottal stop /ʔ/, i.e. whether it acts as a glottal stop or not in Urdu is not yet clear and study on its characteristics is also being done. In this paper I am going to argue on its deletion on the basis of the absence of the features of a stop, whose presence is obvious in the spectrogram in figure 9.

The glottal stop /ʔ/ gets deleted in words when it occurs at the end or in the beginning. The deletion of /ʔ/ is obvious from the spectrograms. However in spectrogram in figure 5, a small burst can be seen in the higher formants which we can easily ignore as not being related to the glottal stop /ʔ/ on the basis that

1. No closure is involved
2. It may be due noise in the background, or a change in intensity, But in any case it can't be suspected for /ʔ/.

Analyzing the data it can be seen that

1. The glottal stop /ʔ/ is deleted, except when it occurs at the beginning of a morpheme (where it shows consonantal behavior).
2. When the glottal stop /ʔ/ occurs after a short vowel, the glottal stop feature of that timing slot is deleted, whereas the timing slot remains and the vocalic feature of the short vowel spreads over to occupy that timing slot and the corresponding long vowel results.

Examples

/dʒamɪʔ/ [dʒame] "concise"
/t̪əʔavun/ [t̪avun] "cooperate"

3. When it occurs before a short vowel or with a long vowel, the timing slot of the glottal stop is deleted. The long vowel case has the same reasoning as in 4.1. i.e. Urdu doesn't allow /V V V/.

Examples

/bərʔəks/ [bərəks] "apart from"
/ɪt̪əʔlə/ [ɪt̪lə] "report"

In the last data set, i.e. words starting with /ʔ/, until I had relied on my ears and had not seen the spectrograms, I observed deletion of /ʔ/ but the study of spectrograms negated this observation.

As is obvious from the spectrogram in figure 9 that at the start there is a burst for a stop followed by the corresponding vowel. This burst was not there in the above two cases when /ʔ/ occurred in the middle and at the end.

5.3 Deletion of /n/ and nasalization of vowel

Analyzing the data in 4.2.3(a), it can be observed that /n/ is getting deleted and the nasal feature is spreading onto the corresponding vowel as can be seen in spectrogram in figure 15 for [kāvɪ].

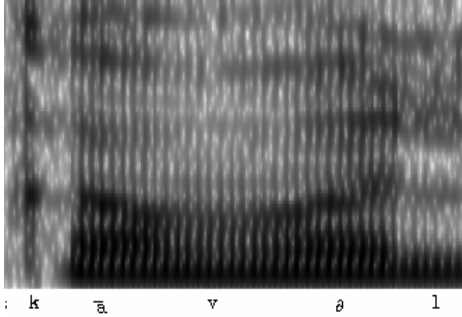


FIGURE 15 Spectrogram of [kāv̄ɖl]

The underlying phenomenon involved can be explained as following:

/kʊnvā/ [kūā] "well"

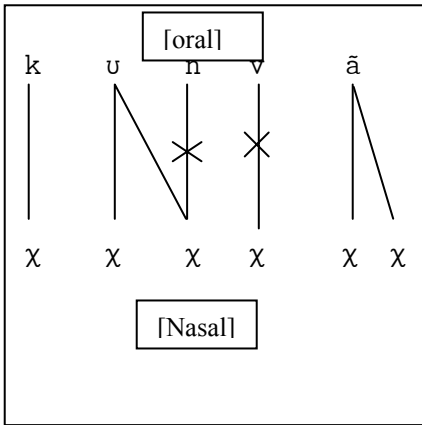


FIGURE 16 phenomena involved for [kūā]

/kʌnvɖl/ [kāv̄ɖl] "water lily"

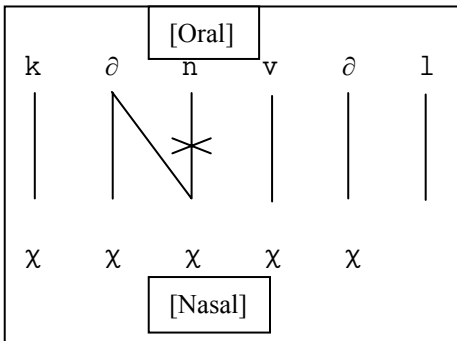


FIGURE 17 phenomena involved for [kāv̄ɖl]

Since short vowels are not nasalized, the /ɖ/ in /kʌnvɖl/ changes to /ā/ as a result of nasalization, as is obvious from the spectrogram in figure 15.

Analyzing the data in 4.2.3(b) I have observed that /n/ undergoes deletion in the /Vns/ context if

1. /Vns/ is at the morpheme boundary (I have not analyzed whether this phenomenon pertains itself in the morphological changes of the words, however it does in case of the data words given). For example

/k^hans/ [k^hās] "cough"
 /k^hansi/ [k^hāsi] "cough"
 /p^hɖns/ [p^hɖs] "entanglement"
 /p^hɖnsna/ [p^hɖsna] "to get entangled"

The spectrogram in figure 12 illustrates the fact of deletion of /n/. The higher formants of /a/ are dampened indicating nasalization of the vowel /a/ in [k^hāsi].

2. /Vns/ are in the same syllable.

The words that do not undergo deletion /Vns/ are not in the same syllable. For instance

/sʌnsʌni/ [sʌn.sʌ.ni] "eerie"
 /ɪnsan/ [ɪn.san] "human"

In cases of

/hʌns/ [hʌs] "laugh"
 /p^hɖns/ [p^hɖs] "entanglement"

the vowel is not nasalized because short vowels are not nasalized, however /n/ does get deleted. The spectrogram in figure 13 of /p^hɖns/ illustrates this fact.

In case of /dʒɪns/, /ɪ/ is a front vowel, so /n/ is not deleted.

5.4 Deletion of aspiration or breathiness

Analyzing the data given in 4.2.4. we observe that aspiration is being deleted, and the phonemes whose aspiration is being

deleted (/ɽ/, /l/, /r/) are the ones which are not in the phonemic inventory of the Urdu language.

However in cases like,

/gund^hna/ [gundna] “dough”
/dud^h/ [dud] “milk”

the aspiration is deleted even though /d^h/ is in the phonemic inventory of Urdu. A possible reason for this deletion of aspiration can be that in both words before the occurs of /d^h/ the voicing feature is there, and at the timing slot of /d^h/, voicing as well as aspiration (breathiness) are there. It becomes difficult to maintain voicing as well as aspiration, so the aspiration is deleted.

5.5 Deletion of /ðv/

This case of deletion is the most interesting one. The words given the two data sets have two acceptable pronunciations.

The words in the data set 1 are the ones which involve deletion of /ðv/ in the context /ðva/. The words given in the data set 2 have the general pronunciation that all the words have in the context /ðva/. The words in data set 1 exhibit a phonotactic constraint of the Urdu language which results in the deletion of /ðv/ for the words presented in data set 1.

This phonotactic constraint results in the deletion of /ðv/ only for the words in /xðva/ context.

/xðvab/ [xab]
[xoab] “dream”
/xðvadʒa/ [xadʒa]
[xadʒa] “a man of distinction”

But not all the words in /xðva/ context undergo this deletion as the words in data set 2 show. All other words in Urdu in /ðva/ context have the general pronunciation elicited in data set 2.

/xðvaʈin/ [xoavaʈin]
[xðvaʈin] “women”

/xðvarɪdʒ/ [xoavarɪdʒ]
[xðvarɪdʒ] “schismatic”

Urdu has resulted from the amalgamation of different languages. This deletion in some words in /xðva/ context may be due to some rules in their parent languages, a possible reason could be different roots for these words.

6. REFERENCES

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