

ASSIMILATION AND DISSIMILATION RULES IN URDU

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ABSTRACT

The speakers of different languages all over the world show the characteristics of Assimilation and Dissimilation in their speech. Sometimes this Assimilation and Dissimilation is according to a specific rule and they occur in a certain context but sometimes they are quite random in nature. This paper is aimed to uncover these Assimilation and Dissimilation Rule, which are spoken by the speakers of Urdu.

1. INTRODUCTION

When speakers blur distinctiveness in favor of articulatory ease, they are usually making sounds more alike. So speakers choose to make the easiest sound, which most resembles the next sound. That way, they only have to make one oral constriction for two sounds. The sound is assimilated in its place of articulation to the following consonant. This is called assimilation. On the other hand making one sound more like another is one way of pandering to the speaker. Similar sounds require less articulatory effort to make than dissimilar sounds. However, sometimes the second factor, distinctiveness, comes into play, and the speaker is required to make two sounds less similar to one another. So dissimilation is a process by which one segment systematically avoids taking on a feature (or a set of features) of a neighboring segment.

The input of dissimilation can in many cases be compared with the output of assimilation, where two dissimilar segments become more alike. A study done on the relationship of assimilation and dissimilation, Ohala (1981, 1993) proposes that dissimilation implies an inversion of an assimilatory process presupposed by the listener. Concretely, the listener may assume that the occurrence of two similar segments is the result of assimilation and correct this assumed form by modifying one of the segments. The Rule Inversion theory therefore predicts that dissimilation should

involve inversion of an attested assimilation process, which appears to be true for only a subset of the dissimilation processes. (Alderete, 1997)

2. PROBLEM STATEMENT & LITERATURE REVIEW

This assimilation and dissimilation are quite common in languages all over the world and most of the rules are shared by a lot of different languages. They all follow certain rules but they are also affected by particular phonotactic constraints of that language.

Although the phonological rules vary from language to language, and are thus somewhat arbitrary, it is nevertheless true that there are striking and simple regularities in what many phonological rules do. This paper is aimed to find such assimilation and dissimilation rules in Urdu.

2.1 Assimilation

One common type of phonological rule is an assimilation rule: this is a rule that makes two or more neighboring segments more similar by making the segments share some feature.

When two consonants occur in a sequence one may be assimilated to the other. That is, one may adopt certain features of the other. In other words it assimilates one segment to another by "copying" or "spreading" a feature of a sequential phoneme on to its neighboring segment, thus making the two phones more similar.

Assimilation rules are very common. Occasionally, children will show what appear to be interactions between consonants and vowels, which seem to indicate some kind of feature assimilation or dissimilation. Between-word inconsistency in pronunciation can reflect constraints on sequences of speech sounds, particularly by place of articulation. For example, a child

may say 'two' [tu] and 'dude' [dud] with alveolar stops, but show evidence of assimilation in words like 'top' [pap] or 'dog' [gag] because of difficulty producing alveolar-labial or alveolar-velar sequences.

2.2 Types of Assimilation

There are two major categories of assimilation based on the direction in which the features are assimilated. They are:

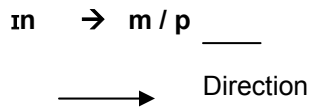
- Progressive Assimilation
- Regressive Assimilation

2.3 Progressive assimilation

Sometimes, a sound becomes more like the following sound. This is called progressive assimilation. Some prefer to use the term anticipatory assimilation, as the sound which

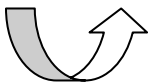
sevan	sevnŋ	“seven”
aupan	aupm	“open”

changes anticipates the following sound in some way. In English for example:



Here the one sound is more like the following sound so it is progressive or anticipatory assimilation. Pictorially we can represent this as:

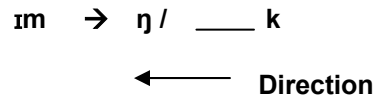
X X (Progressive Assimilation)



2.4 Regressive assimilation

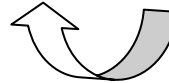
If a sound becomes more like the preceding sound, we call the process regressive assimilation. In English for example:

aɪm kʰʌmɪŋ	aɪŋ kʰʌmɪŋ	“I’m coming”
aɪm nat	aɪn nat	“I’m not”



In this example the sound is becoming more like the preceding sound, which is regressive assimilation. Pictorially we can say:

X X (Regressive Assimilation)



The assimilation can sometimes be bi-directional. It is called fusional assimilation but it is not very common. (Jun J. 1995)

The fusional assimilation occurs in Urdu as well. E.g the word [hankna] becomes [h̃ɒŋkna] due to bi-directional assimilation. The vowel is nasalized due to following nasal consonant and [n] becomes [ŋ] due to following [k].

Assimilation can be of manner of articulation, place of articulation or phonation.

2.5 Place and Manner of Articulation

A very common phenomenon in the world's languages is Nasal Place Assimilation. The place of articulation of a nasal consonant depends on the place of articulation of the following stop. There are three nasal phonemes [m, n, ŋ] in English that are all subject to this process. It involves taking the [+nasal] feature on the segment following the vowel and “adding” or “copying” or “spreading” it to the vowel, making the value of [nasal] identical for the two segments. This can be seen from the data given below: [3]

[bɔ̃n]	'bone'	[bɔ]	'bow'
[b̃ɪn]	'bean'	[bi]	'bee'
[l̃ɪjɪn]	'line'	[ləj]	'lie'
[h̃æɪnd]	'hand'	[hæt]	'hat'

v → ṽ / ___ [+nasal]

"bean"

/b/	/ɪ/	/n/
[+bilabial]	[+high]	[+alveolar]
[+voiced]	[+front]	[+stop]
[+stop]	[+vowel]	[+nasal]

This is an example of regressive assimilation.

A very common *Palatalization* Rule also falls in this category. (Padgett, 1997)

For Example:

In Brazilian Portuguese [Napoli, 1996, pg: 74-75]

Noun	Adjective	Noun	Adjective
Angle	Angular	Culture	Cultural
Module	Modular	Electric	Electrical
Single	Singular	Person	Personal
Table	Tabular	Region	Regional

[tenu]	"I have"	[tʃiri]	"I had"
[tal]	"such"	[partʃi]	"party"
[kwaɪru]	"four"		

The rule that represents the data given above is:

t → [+high] / _____ V
 |
 [+high]

Some other places of assimilation are:

- Labial nasal: [limp] <limp>
- Dental nasal: [tenp] > [ten,,p] <tenth>
- Alveolar nasal: [lint] <lint>
- Velar nasal: [link] <link>

All these come in the heading of coronal assimilation. [1]

2.6 Phonation

Over different languages, voicing assimilation is very common.

For example in English past tense of different word follow this rule:

[læpt] 'lapped'	"lap"
[lækt] 'lacked'	"lack"
[pa:st] 'passed'	"pass"

C → C₀ / C _____
 |
 [-voiced]

The consonant becomes voiceless when preceding consonant is voiceless. Some other devoicing rules also exists in German and Japanese. (Fukuoka, 1993)

The liquid devoicing rule in English is also an assimilation rule; it involves the transfer of a feature, in this case [-voice], from a preceding segment onto a liquid segment.

2.7 Dissimilation

Dissimilation is rules that change feature values to make two phonemes in a string more dissimilar. A classic example of dissimilation occurs in Latin, and the results of this process show up in modern day English. Example of this in English is Noun and Adjective pairs:

The two sets of noun adjective pair are immediately obvious. If the noun ends in the phoneme /l/, we use the non-/l/ form -ar. Otherwise use -al. The base form of this morpheme is -al, but if this sound could be lost if it were appended to a noun ending in a similar sound, and so a dissimilation process applies to select the non-l-like words. [2]

This process came into English from Latin, and it is only reliable for words derived from Latin. Contemporary English has many more ways of making adjectives from nouns. [2]

Similar sounds require less articulatory effort to make than dissimilar sounds. However, sometimes the second factor, distinctiveness, comes into play, and the speaker is required to make two sounds less similar to one another. (Alderete, 1997)

If two consonants are very similar, sharing the same place and manner of articulation, for example, they are prone to dissimilate. Thus, in English two adjacent sibilants

(s,z,ʃ,ʒ,tʃ,dʒ) will dissimilate - a short vowel is inserted between them. [3]

For example:

Bridge	Bridges
Bus	Buses
Nurse	Nurses
Match	Matches

The assimilation rule is much more common than the dissimilation rule.

3. METHODOLOGY

The rules of assimilation and dissimilation in any language are governed by certain factors. Phonotactic rules play an important role in this respect. This is true for Urdu as well.

In order to explore the rules of assimilation and dissimilation for Urdu, the course of action that is followed is that around 525 words of Urdu are selected from “*Feroz ul loghat Urdu Jadeed New Edition*” according to a format mentioned in the references. The words are picked up in a way that the words starting with an alphabet which has more occurrences in the dictionary forms a larger portion of the data than the one which occur in less number. For example 20 to 25 words starting with

م س ب ا

etc were selected in contrast to

چ ز

etc that contributed only 3 to 4 words to the data because latter has lesser number of words in the dictionary than the former. Some letters do not come in the word beginning obviously do not contribute anything in the data. E.g.

ط

After that the words were selected on the basis of second alphabet of the word. That

is the words with a common or frequent second alphabets were selected in a larger number than the one with less common alphabets.

For example:

با

etc. have large number of words than

برط

etc.

The further selection of words from each of these groups of alphabets is randomly. Those words are preferred that are used in everyday language by the majority speakers of Urdu so that the confusion in the pronunciation may not arise.

In this way around 525 words are collected for analysis. This should be mentioned here that all the words that are collected from the particular edition of the dictionary mentioned above are further compared with another dictionary “*Ferozul loghat Urdu Jamai*” [6] in order to avoid any conflicts.

The collected words are then phonetically transcribed as well as phonemically transcribed in order to search for any assimilation and dissimilation that may occur. The words that have different phonetic and phonemic transcription are separated for further analysis.

These separated words are classified on the basis of the change in the phonemic and phonetic transcriptions. The neighboring consonants and vowels that may produce a change are analyzed. The same neighboring consonants or vowels having similar features are categorized.

Five speakers of Urdu record the data that is following the same kind of change due to neighboring consonants and vowels and their spectrograms are studied to look for the assimilation and dissimilation. Each of these words is recorded within a context in a

sentence as well as separate words by each of the speaker.

4. RESULTS

After the study of the collected data and its analysis, different rules are derived. The spectrograms that are collected of different speakers directed in finding the rules for assimilation and dissimilation.

The data that are classified according to the same difference in the phonetic and phonemic transcription are grouped together and are given and explained below.

4.1 Assimilation

Nasalization of Vowel:

First of all the nasalization of vowel is observed by the neighboring nasal consonants. The data that shows this nasalization are given below.

In this set of data, the nasal consonant is in the end of the word and there is a vowel

چھین	نمین	خنداں	زعفران
فیضان	گرہن	سخن	
گریبان	گمان	زندان	
fīzan			
gıraban			
ʁaban			
græhan			
guman			
xandā			
suxan			
zandan			
zafran			

In the next set of data the vowel is being in the middle of the word followed by the nasal consonant. For Example:

بسنٹ	نقیمت	کنور	رنجیدگی
گناہ	گنجان	قتاعت	شطنج
گھونٹ	حنیف	رعنائی	صنف

g^hunt

basant
gunah
g^hunt
ʁanimat
gundʒan
hanif
kanvar
kanat
ranai
randʒidgɪ
ʃatrandʒ
sɪnf

Similarly in the beginning the vowel is followed by the nasal consonant also show nasalized effect. As in:

آنکھوں	انجان
اینٹ	انگلی
انداز	انتظار
عنوان	انتہا

ānk^hō
ent
andaz
unvan
andʒan
unglɪ
ɪntizar
ɪntɪɦa

After the analysis of this data and their spectrograms, it is found that the short vowel doesn't become nasal due to the following nasal consonant. Only long vowel is nasalized. This is also true in English where only long vowels are only nasalized. [1]

This nasalization is found in the spectrogram in Fig. 1. The vowel is in the middle of the word. The highlighted vowel is nasalized in word [g^hunt]. Same results are obtained by vowels in the beginning e.g. [ʌŋkho] as well as in the end of a word e.g. [guman].

Labialization of Nasal Consonant [n]:

Second category of data that is separated from the data analyzed is words that have nasal consonant followed by a labial consonant. It is observed that the nasal consonant [n] becomes bilabial when it is followed by a bilabial consonant.

as well. Two labial consonants undergo this change, one is [b] which is voiced and the other is [p] which is voiceless. Whenever the nasal consonant is followed by a labial then it becomes [m]. The words show change of consonant place of articulation from alveolar to labials. The spectrogram in Fig. 2 verifies

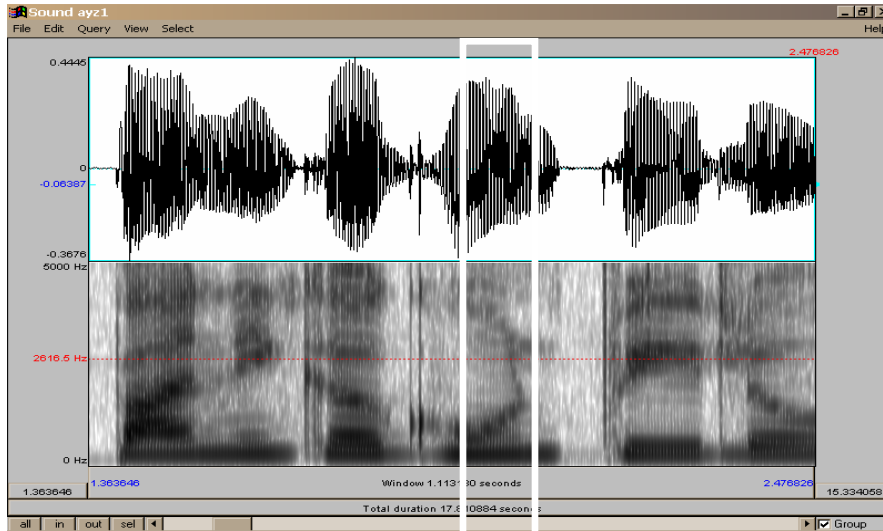


FIGURE 1 The Spectrogram of “g^hunt”

The set of words and their transcriptions are:

سانب	زنبور	انبساط	سنبل
سمبل	ذنب	زنبیل	انبیا
منبہ	جنیش	انبار	انباه

phonatic

phonemic

sumbal	sunbal
ambia	anbia
amba	anba
ambisat	anbisat
zambil	zanbil
ambar	anbar
zambur	zanbur
zamb	zanb
dʒumbish	dʒunbish
samp	sanp
samb ^h al	sanb ^h al
mumba	munba

Whenever nasal consonant is followed by a consonant that is at the labial place, the particular nasal consonant becomes bilabial

this change of place due to preceding consonant. It is the word “ambar”, whose spectrogram is shown. The highlighted portion forms the consonant that is undergoing change due to following vowel.

Velarization of Nasal Consonant [ŋ]:

The third subset of data that has different phonetic and phonemic transcriptions is:

سنگارخ	سنگار	سنگالی
چنگھاڑنا	رنگ	چنگھاڑنا

phonatic

phonemic

sanglax	sanglax
tʃaŋg ^h arna	tʃaŋg ^h arna
batangar	batangar
darang	darang
ãŋk ^h o	ãnk ^h o
sarangı	sarangı
bangalı	bangalı
tangna	tangna
tʃoŋknatʃoŋkna	
kaŋkar	kankar

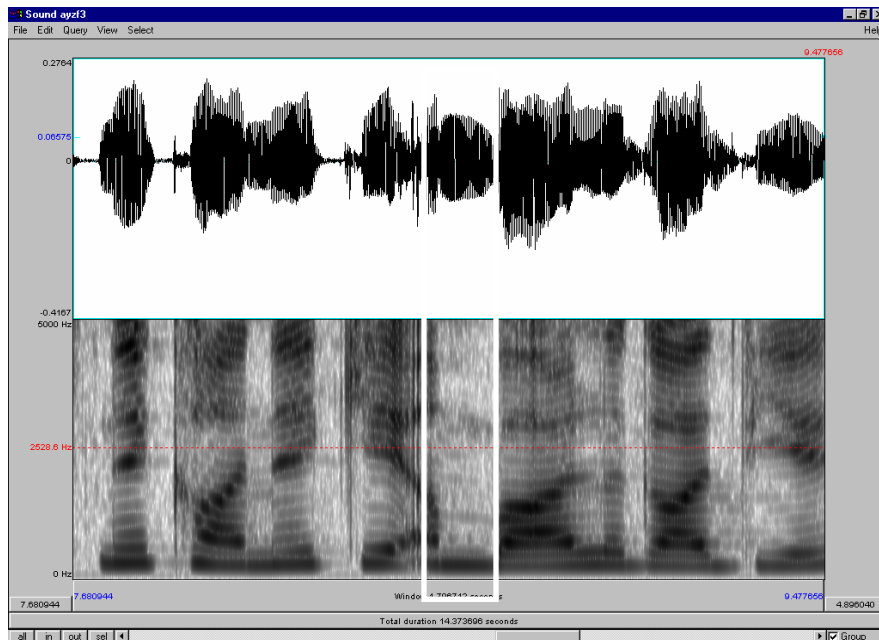


FIGURE 2 The spectrogram of “ambar”

All the word in the data has a velar consonant after a nasal consonant. It is observed by that the nasal consonant undergoes change in the place of articulation due to the proceeding velar consonant and becomes [ŋ] known as engma. The spectrograms of these words also show the change in the place of articulation of the vowel. The spectrogram of the word “rang” is shown in Fig.3. The highlighted portion shows the particular consonant. There are two velar consonant in the data, one is [k] which is voiceless and the other is [g] which is voiced.

The spectrograms of these words also show the change in the place of articulation of the vowel. The spectrogram of the word “rang” is shown in Fig.3. The highlighted portion shows the particular consonant. There are two velar consonant in the data, one is [k] which is voiceless and the other is [g] which is voiced.

Lateral Liquid [l] Breathy Phonation:

Another set of data shows the change in phonation of lateral liquid [l] due to the phonation of previous consonant. Although

Urdu has four phonation types i.e. voiced, voiceless, aspirated and breathy, but only

change due to breathy is observed. The words that undergo this change are given below:

b^hal

p^hal

The lateral liquid with a breathy consonant become breathy. This change in phonation is shown in Fig.4 and Fig. 5.

4.2 Dissimilation

There are some words examined in the data that shows some different kind of changes due to neighboring consonants and vowels. Unlike above-mentioned words some words tend to become dissimilar.

For example:

g^hatrɪ

In this word the sound of flap “[r]” becomes “[r̥]”.

In the word

pant^h

the sound “[t]” becomes “[t^h]” aspirated in the word end. Another word also undergoes similar change.

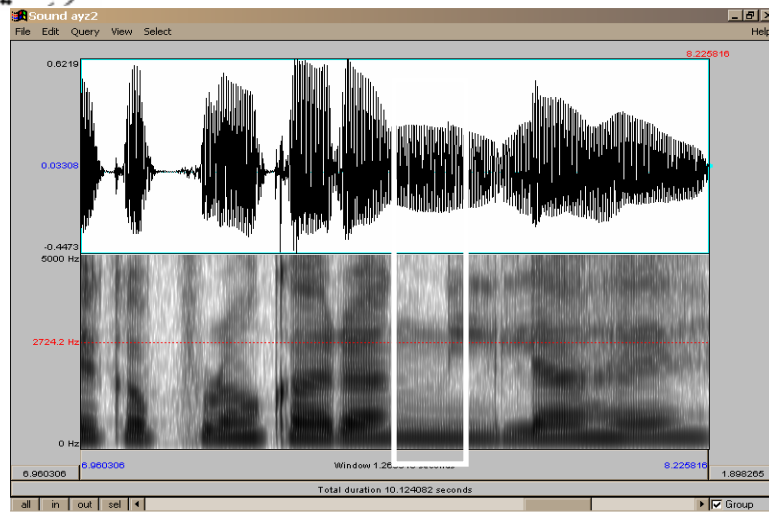


FIGURE 3 The Spectrogram of [rang]

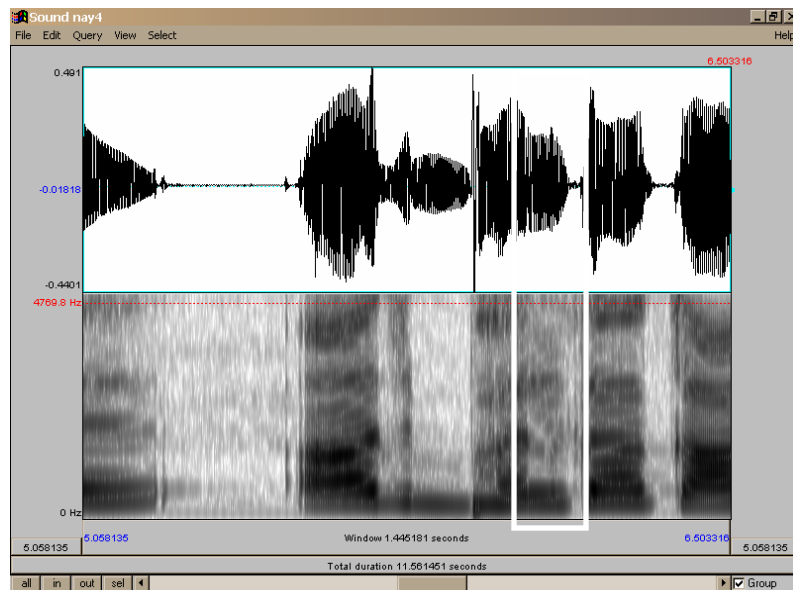


FIGURE 4 The Spectrogram of [b^hal]

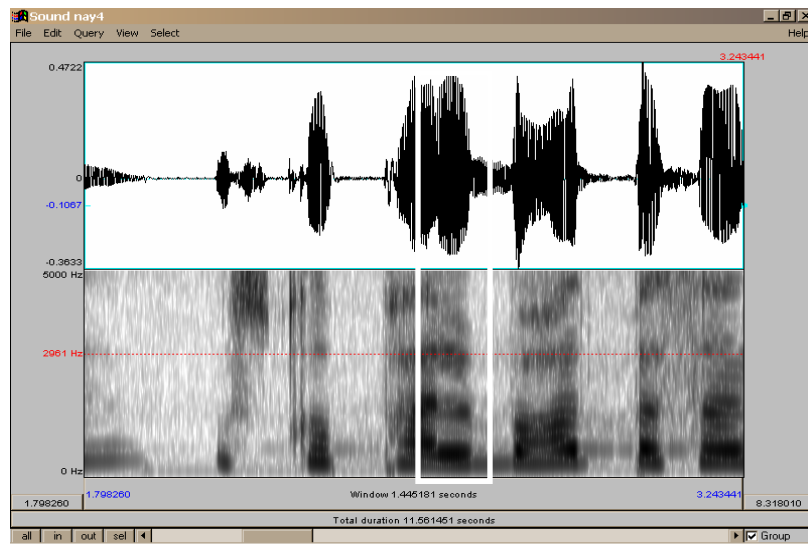


FIGURE 5 The Spectrogram of [p^hal]

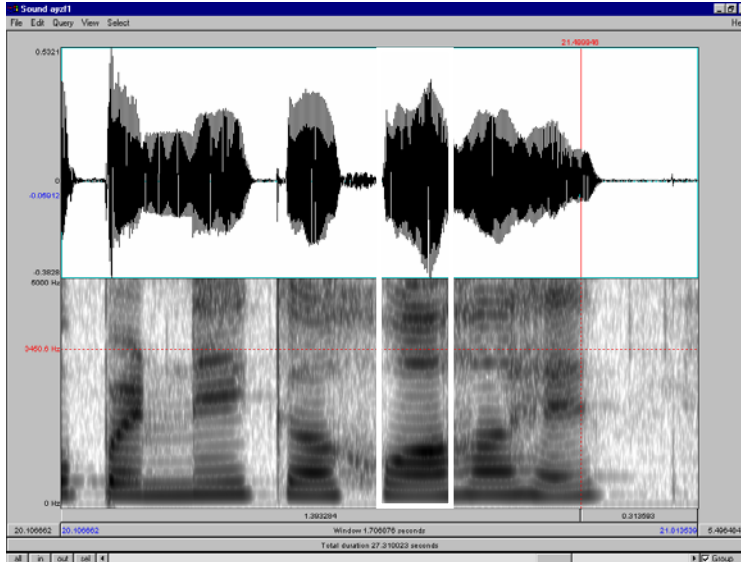
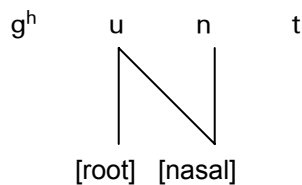


FIGURE 6 The Spectrogram of [χahan]



The vowel [u] is becoming nasal as well. In some cases the nasal consonant also gets deleted as in [ãnsu]. [ãnsu] due to nasalization assimilation becomes [ãsu]. This is one of the extreme cases of vowel nasality in which the timing slot of the nasal consonant is also deleted. Also there is a word [kãvar] that becomes [kãvar] due to nasalization of previous vowel but here the timing slot of the nasal consonant does not get deleted but the vowel takes that timing slot and becomes long from [a] to [ɑ].

5.3 Labialisation of Nasal Consonant [n]

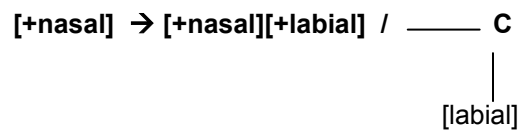
The nasal consonant [n] goes through another type of change due to assimilation that is the change in the place of articulation due to the preceding consonant.

Whenever the nasal [n] is followed by a labial consonant, it changes its place of articulation to labial as well. The nasal [n] is articulated at alveolar region but due to assimilation it moves to the labial place. It is

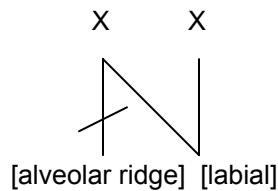
observed that the nasal feature of [n] does not change during this only place is assimilated. The nasal consonant in Urdu at

labials is [m]. So due to assimilation [n] becomes [m] due to the next labial consonant.

The rule for this labialisation of nasal can be written as:



We can also represent it as:



Here [n] is leaving its alveolar place and attaching itself to labial place of articulation which is the place of the following consonant. This is called regressive assimilation as the direction of assimilation is in the forward direction. The nasal feature of the consonant is not changed. E.g.

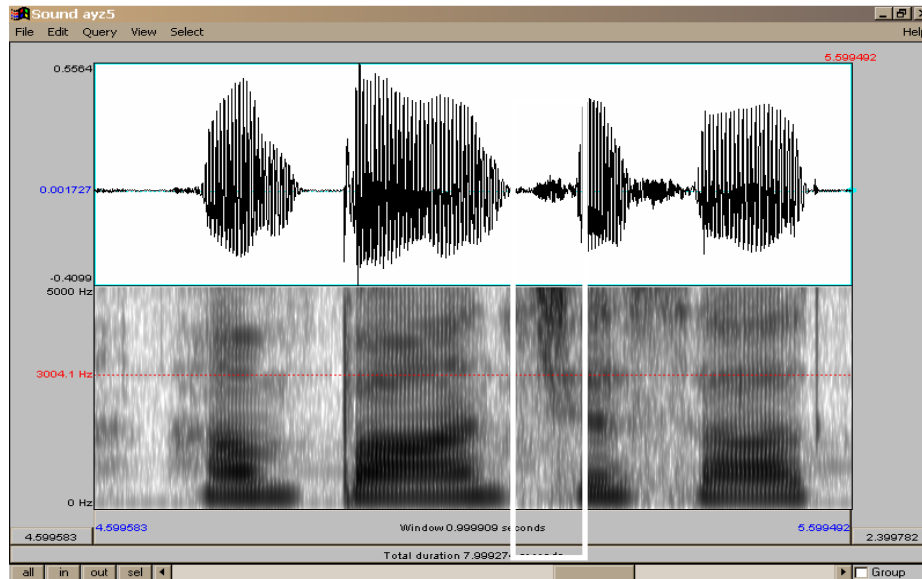
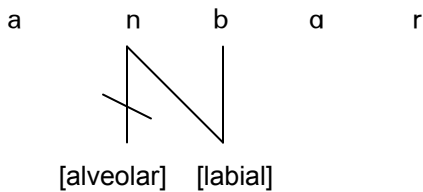
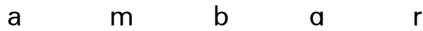


FIGURE 7 The spectrogram of [pantʰ]



becomes



The recorded words by the speakers show clear changing of consonant from alveolar to labials as in Fig. 2. The formants lower when it goes into the nasal consonant and on coming out they rise, which clearly indicates the labial place in highlighted portion of Fig.2. In alveolar place consonants the formants rise into the consonant and lowers on coming out. [Pickett, 1999, pg: 114-117] An exception is also observed for this assimilation. For the word “kampta”, the consonant [p] sometimes gets deleted for some of the speakers. It is then pronounced as “kamta”. In this case there is so much assimilation that a deletion of a consonant [p] has occurred.

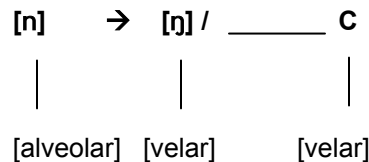
5.4 Velarization of Nasal Consonant [ŋ]

In this type of assimilation the nasal consonant [n] changes its place of articulation from alveolar to velar. The two

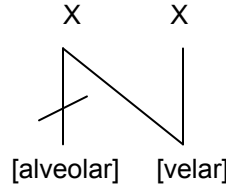
velar consonants are involved in this, one is [g] (voiced) and the other is [k] (voiceless). This is again the example of regressive assimilation.

The consonant [n] gets the place of the following consonant, which is velar place. So [n] at alveolar place becomes [ŋ] (engma) at the velar place.

The rule for this can be written as:



We can also depict this as:

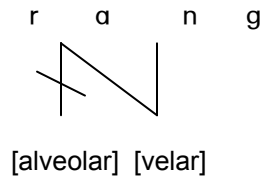


The consonant [n] changes its place of articulation from alveolar region to velar place.

The Fig. 3 shows this assimilation. The format do not shows an alveolar nasal rather it shows the nasal at velar place. The

recorded sound of the speakers show clear sound of [ŋ] engma.

For example:



becomes

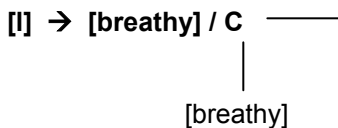
r a ŋ g

5.5 Lateral Liquid [l] Breathy Phonation

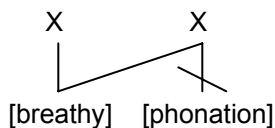
This rule is very common in languages all across the globe. This change was observed in very few recorded sounds of the speakers.

The consonant [l] becomes little breathy due to the previous consonants' phonation. Since the lateral liquid [l] changes due to the previous consonant it is called the progressive assimilation.

The rule can be written as:



This can be represented as:



This shows the progressive assimilation since the previous feature of the consonant is progressed forward.

In Fig. 5 (the spectrogram of [b^hal]) the formants are quite clear but they are little noisy in case of Fig. 4, which shows breathiness.

5.6 Dissimilation

The dissimilation rules in Urdu don't follow specific rules, they seem quite random.

Some speakers show dissimilation while some do not. The words that show dissimilation are:

g^hat^hri

The trill sound [r] in the word is dissimilated as [r]. The place of previous consonant [t^h] is palatal and the place of trill is also palatal so two similar words in dissimilation changes to the closest dissimilar sound, which in this case is [r].

unt^h / pant^h

The two words fall in same category of dissimilation, which is added aspiration in the end of the word. In case of first word, unt^h, the sound of [n] and [t] are both alveolar so in order to become dissimilar according to the rule of dissimilation, the aspiration is added to the last sound for distinction from the previous sound of [n].

In second word, pant^h, the last sound of [t] is aspirated to become [t^h]. Although the place of [n] is alveolar and [t] is more like palatal but most of the speakers show this dissimilation. This is shown in Fig.7. The recorded sound clearly shows the aspiration in the end.

b^hab₁ / g^hang^hor

The second aspiration of word [b^hab₁] is changed un aspirated sound, which is [b] in this case in order to be dissimilar. The similar two aspirations in a row are changes and last aspirated consonant is converted to un aspiration according to dissimilation rules.

6. CONCLUSION

It should be noted here all these assimilation rules are not independent, they may occur in conjunction as well. For example word [dʒanbaz] become [dʒā̃baz]. First of all the assimilation of nasalization of vowel takes place. The vowel is nasalized and the nasal consonant [n] gets deleted. So there is no assimilation due to labialization assimilation

since the nasal consonant [n] no longer exists.

[3]<http://www.ling.udel.edu/idsardi/101/notes/phonology.html>

7. REFERENCES

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[2]<http://cspeech.ucd.ie/~fred/courses/phonetics/rules1.html>