# CHAPTER III

## PRESENTATION AND ANALYSIS OF THE DATA

As mentioned in earlier chapter, the science of *Tajwid* covers a wide range of topics. We have learned topic on *Al-Shifatul Ashliyah* ( الصفات الأصلية ), denoting mainly the characteristics of letters, or the so-called phonetic features in Linguistics. In this section, we will focus our discussion on *Al-Shifatul 'Arodliyah* ( الصفات العرضية ), or characteristics that are present in a letter in some cases and are not present in the letter in other cases (Online Qur'an Reciter, 2002). In other words, we may also define *Al-Shifatul 'Arodliyah* in terms of processes which occur when certain letters meet in certain environment. As compiled in *Tajwid* books, we may find principles which explain the meeting of certain letters, such as principles of *Idgham, Idhar, Madd* (lengthening of vowels), principles of *Ra'*, etc. However, we do not use all principles of *Tajwid* as our data. The data presented in this chapter are principles of *Tajwid* which are explained in terms of nasal assimilation accompanied by lengthening processes.

The data gathered is then analyzed by using phonological theories applicable to the processes in question. Finally, the writer tries to formulate the most appropriate phonological rules underlying the processes. The steps of analysis mentioned are given consecutively per data presented as to allow the readers to focus and to get easier understanding on the discussion.

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### III.1  *Iqlab* ( اقلاب )

The word *Iqlab* literally means 'to turn the face of something' or is simply

defined as 'turning' (Wehr, 1979). In *Tajwid, Iqlab* means changing non-vowelled

noon/*noon sukoon* ( نْ ) or nunnation/*tanwin* ( ـً ) into *meem* ( م ) when the

*noon sukoon* or nunnation occurs before the letter *Baa'* ( ب ) (Zarkasyi, 1989: 7).

In other words, *Iqlab* explains the replacement of a sound with another while

maintaining *ghunnah*/nasal twang (Alwi, 1997). By the time the *ghunnah* is

maintained, it is lengthened as well. The following instances show the occurrence:

(1.a)  مَنْ بَلَغَ  /man/ + /balaɡɔ/ → [mam̃ balaɡɔ]

When *noon sukoon* ( نْ ) meets *Baa'* ( ب ), the *noon* is changed into *meem*

and lengthened, so the phrase above is read as [mam̃ balaɡɔ].

(1.b)  قَوْمًا بُوْرٍ  /qɔwman/ + /buːrɔn/ → [qɔwmam̃ buːrɔn]

When *fathah tanwin* ( ـً ) meets *Baa'* ( ب ), the nunnation is changed into

*meem* and lengthened, so the phrase above is read as [qɔwmam̃ buːrɔn].

(1.c)  مُؤَذِّنٌ بَيْنَهُمْ  /muʔaððinun/ + /bajnahum/ → [muʔaððinum̃ bajnahum]

When *dhammah tanwin* ( ـٌ ) meets *Baa'* ( ب ), the nunnation is changed

into *meem* and lengthened, so the phrase above is read as [muʔaððinum̃

bajnahum].

(1.d)  أَنْبِئْهُمْ  /ʔanbiʔhum/ → [ʔam̃biʔhum]

When *noon sukoon* ( نْ ) meets *Baa'* ( ب ), the *noon* is changed into *meem*

and lengthened, so the phrase above is read as [ʔam̃biʔhum].

(1.e)  فَأَنْبَتْنَا /fa?anbaṭna:/ → [fa?ambaṭna:]

When *noon sukoon* ( نْ ) meets *Baa'* ( ب ), the *noon* is changed into *meem*

and lengthened, so the phrase above is read as [fa?ambaṭna:].

In all examples shown above, we may find two processes happen:

(1)     phoneme /n/ becomes [m] before [b]

(2)     the phone [m] is lengthened before [b]

In the first occurrence, we may call this process **regressive homorganic**

**nasal assimilation**, where a consonant (in this case is /n/) becomes more similar

to a consonant which shares the same place of articulation (= homorganic) with

the consonant following it (i.e. [b]). In this respect, the assimilation seems to

occur generally, without any restriction from word boundary. This can be seen

from all examples, where /n/ evidently becomes [m] before [b]—although in (1.a),

(1.b), and (1.c) the target of assimilation (i.e. /n/) and the trigger (i.e. [b]) are

separated by a word boundary. Therefore, we may say that word boundary in this

case is not an influential environment for the phonetic change to occur. Let us

further identify the pattern:

• The phoneme /n/, which is [+nasal, +coronal], becomes [m] or [+nasal,

+bilabial] when it is followed by [b], which is [+cons, +voice, +bilabial].

From the above occurrence, we get the following information:

- the segment that changes is /n/ or a coronal nasal

- the change that occurs is regressive homorganic nasal assimilation (change

from [+nasal, -bilabial] to [+nasal, +bilabial])

- the phonemic environment is before voiced bilabial consonant.

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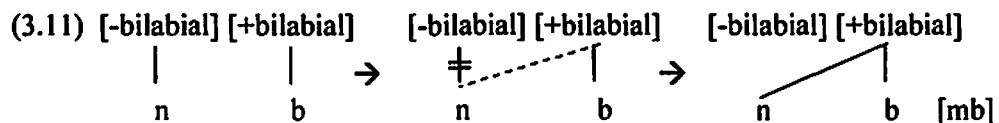Relying on the information available, let us devise the formal notations:

(3.1)  /n/ → [m] /__ [b], or

$$\begin{bmatrix} +\text{nasal} \\ +\text{coronal} \end{bmatrix} \rightarrow \begin{bmatrix} +\text{nasal} \\ +\text{bilabial} \end{bmatrix} / \underline{\quad} \begin{bmatrix} +\text{voice} \\ +\text{bilabial} \\ +\text{cons} \end{bmatrix}$$

This rule can be 'translated' into:

(3.1)  A coronal nasal or /n/ becomes ( → ) a bilabial nasal in the environment (/)

before a voiced bilabial consonant ( __ [+voice, +consonant, +bilabial]).

Here we see that the phone [m], resulted from the phonetic change of /n/, retains all its features except its place feature. As mentioned earlier, this is the idea of place assimilation, where the place feature of [b], that is [+bilabial], spreads leftwards, so that /n/ ([-bilabial]) becomes [m] ([+bilabial]). The following representation may help us in understanding this feature-change process:

(3.11) [-bilabial] [+bilabial]     [-bilabial] [+bilabial]     [-bilabial] [+bilabial]

         |          |      →        ‡--------⌐     →         ⁄‾‾‾‾‾|
         n          b               n          b             n          b   [mb]

The representation (3.11) shows how the rule of homorganic assimilation applies to the cluster /nb/. The phoneme /n/ is associated with [-bilabial] until the labial feature of the following obstruent ([b]) spreads leftwards and causes the association with [-bilabial] to delink. Consequently, /n/ takes the labial feature of [b] and becomes [m] in its phonetic representation.

Another process found in *Iqlab* is lengthening. If we view the homorganic nasal assimilation and the lengthening processes as occurring in two diachronic stages, the /n/ first becomes [m] before [b], then the [m] is lengthened. These two processes seem to occur simultaneously so that many people often consider them

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as one single process. In fact, the lengthening is often referred to as the length of nasality, as found in a book by Bakalla (1984). Interestingly, 'the length of the nasalization' in *Tajwid* is carefully measured. Al-Bakr in Bakalla (1984: 52-53) explains that there are several ways employed in measuring the length of nasality:

a.    Measurement by using the palm of the hand

Here the duration of nasality is measured by folding and unfolding the palm of the hand in such a way that is neither slow nor fast. Normally, the length of nasality takes one folding and one unfolding the palm of the hand.

b.    Counting by fingers

We can also use our fingers in measuring the length of nasality. Normally, the nasality lasts as long as folding two fingers in such motion that is neither slow or fast.

c.    Taking the approximate time of pronouncing a word

The duration of nasality is also measured by taking the estimate time of pronouncing the word '*Alif* /ʔalif/ (the name of vowel a in Arabic). It is considered that nasality lasts as long as it takes to pronounce the word.

d.    Taking the approximate time of writing a word

In measuring nasality, we may take not only the approximate time of pronouncing the word '*Alif*, but also the time of writing the word '*Alif*. Nasality normally lasts as long as it takes to write the word.

All these measurements are undoubtedly approximate but they were apparently sufficient for the purpose of learning Qur'anic recitation in days when no modern facilities of speech measurement was available. Today, it is found that the length of nasality based on normal recitation ranges from 1.0 – 1.3 seconds, as suggested

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in recent studies (Bakalla, 1984). This phenomenon is unusual indeed in natural language, as commented by McCarthy (2003), "...no natural language has such extreme lengthening". Regarding this case, Semaan noted:

> *Tajwid* did some experimenting in its effort to "ornament" Arabic for more attractive cantillation and produce effects pleasing to the hearers. At times this ornamentation seems somewhat artificial to the modern phonetician, and more to the grammarian, but apparently it succeeded in doing what Ibn al-Jazari calls "delight the ear, move the heart, and capture the mind."...for example there is an exaggerated lengthening in the pronunciation of certain phonemes (1962: 118).

Here we may say that the 'unusual' duration of lengthening occurs with nasal assimilation in *Tajwid* is due to non-linguistic factor. To show the 'unusual' lengthening in written form, we need special symbol for the phonetic transcription. Ladefoged suggested earlier that the lengthening of consonants (or vowels) can be analyzed as double consonants (or vowels), or the so-called **geminates** (Ladefoged, 1975:223). However, since the case is extra length, we need certain symbol to represent the occurrence sufficiently and exclusively. Besides, we use the special symbol to avoid confusion with other cases of geminates in Arabic which do not involve lengthening. We may see, therefore, the lengthening of the phone [m] in above examples of *Iqlab* is represented by double over-rings above the affected phoneme ([m̊̊]). This symbol is specially devised by the writer to represent the occurrence of extra lengthening of consonants in

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*Tajwid*, as there is no symbol yet in IPA transcription that appropriately serves the purpose.

From the instances of *Iqlab* shown earlier, let us further try to find out the pattern, so that we can attempt to formulate the rule:

- The phone [m], which is [+nasal, +bilabial], becomes long when it is followed by [b], which is [+consonant, +voice, +bilabial]. .

From the above occurrence, we get the following information:

- the segment that changes is a bilabial nasal

- the change that occurs is lengthening (change from [-long] to [+long])

- the phonemic environment is before voiced bilabial consonant.

Relying on the information available, let us devise the formal notation:

(3.2)   [m] → [+long] /__ [b], or

$$\begin{bmatrix} +nasal \\ +bilabial \end{bmatrix} \rightarrow [+long] \ /\underline{\ \ } \begin{bmatrix} +\ voice \\ +\ bilabial \\ +\ cons \end{bmatrix}$$

This rule can be 'translated' into:

(3.2)   A bilabial nasal or [m] becomes long in the environment before a voiced bilabial consonant.

Here we see that the phone [m] is lengthened when it occurs before [b]. Both [m] and [b] share the same place feature, notably [+bilabial]. Therefore, we may conclude that in the case of *Iqlab*, the phone [m] is lengthened before [b] because both phones share the same place feature.

Now we have the rules in hand. To check the validity of the rules, we can apply the rules to one or two examples from the data set where they should apply,

and one or two examples where they should not apply. Let us check in the following derivations:

| Phonemic | "man balagho" | "man 'amila" | "anbi'naa" | "abnaa'anaa" | "am firqotan" |
|---|---|---|---|---|---|
| Representation | /man balaɔɔ/ | /man ʕamila/ | /anbiʔna:/ | /abna:ʔana:/ | /ʔam firqɔtan/ |
| Apply rule (3.1) | m | NA* | m | NA* | NA* |
| Apply rule (3.2) | m̈ | NA* | m̈ | NA* | NA* |
| Phonetic | | | | | |
| Representation | [mam̈ balaɔɔ] | [man ʕamila] | [am̈biʔna:] | [abna:ʔana:] | [ʔam firqɔtan] |

*NA = 'not applicable'

Table 3.1    Rule derivations for homorganic nasal assimilation and lengthening processes in *Iqlab*.

In the derivations above, we can see that consonants which are not in the class of [+voice, +cons, +bilabial] cannot trigger the /n/ to change into /m/, such as in the words "*man 'amila*"—where the /n/ remains in its phonetic representation. The phonetic environment is also a crucial factor for the changes to occur. As seen in the above derivation, /n/ which occurs AFTER [b] in the words '*abnaa'anaa*' is not assimilated nor changed into [m]. Here we can see as well that the lengthening rule is only applicable if the affected consonant have the same place feature with the following consonant. In the words '*am firqotan*' for example, the phone [m] is not lengthened because it does not share the same place feature with the following phone ( [ f ] ), which is [+labiodental], although [m] and [f] are in the same place of articulation, namely **labials**.

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**III.2** *Ikhfa' Haqiqi* ( اخفاء حقيقى )

In an Arabic – English dictionary, we can find the word *Ikhfa'* defined as concealment (Wehr, 1979: 292). In *Tajwid, Ikhfa'* means pronouncing a letter with a quality between manifestation ( اظهار = *Idzhar*) and assimilation ( ادغام = *Idgham*) without doubling (*shaddah*) while retaining the *ghunnah*/nasal twang (Alwi, 1997: 32). *Ikhfa'* is called '*haqiqi*' or 'real' because of the real concealment of the non-vowelled *noon* (نْ ) and the nunnation (ــــًـ ). The concealment/disguise meant in this context is the condition of *noon* or nunnation which is not pronounced as clear [n] sound when it meets 15 (fifteen) *Ikhfa'* letters (Zarkasyi, 1989:11). The letters are: ص /ş/, ذ /ð/, ث /θ/, ك /k/, ج / ʤ /, ش /ʃ/, ق /q/ , س /s/ , د /d/, ط /t/, ز /z/, ف /f/, ت /t/, ض /d/, ظ /ðʷ/. Technically, in *Ikhfa' Haqiqi*, the /n/ sound is partly assimilated by the following *Ikhfa'* letters so it may manifest in different sounds, adjusting to the sound of the next letter. Besides the partial assimilation, *ghunnah* (nasal twang) and lengthening are also maintained in *Ikhfa' Haqiqi*. Let us check the following occurrences:

(2.a)  مَنْصُوْرًا  /manşu:rɔn/ → [maɲ̃ʃu:rɔn]

When *noon sukoon*  (نْ ) meets *Shaad* ( ص ), the *noon* is disguised (not pronounced as clear /n/ but palatalized /n/) and lengthened, so the above word is read as [maɲ̃ʃu:rɔn].

(2.b)  عَمَلًاصَالِحًا  /ʕamalan/ + /şɔ:liħan/ → [ʕamalaɲ̃ şɔ:liħan]

When *fathah tanwin* (ـًـ) meets *Shaad* ( ص ), the nunnation is disguised (not pronounced as clear /n/ but palatalized /n/) and lengthened, so the above word is read as [ʕamalaɲ̃ şɔ:liħan].

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(2.c) اَنْذَرْتَهُمْ /ʔanðarțahum/ → [ʔaŋ̈ðarțahum]

When *noon sukoon* ( نْ ) meets *Dzaal* ( ذ ), the *noon* is disguised (not pronounced as clear /n/ but dentalized /n̪/) and lengthened, so the above word is read as [ʔaŋ̈ðarțahum].

(2.d) سِرَاعًاذَلِكَ /sirɔːʔan/ + /ðaːlika/ → [sirɔːʔaŋ̈ ðaːlika]

When *fathah tanwin* ( ً ) meets *Dzaal* ( ذ ), the nunnation is disguised (not pronounced as clear /n/ but dentalized /n̪/) and lengthened, so the above word is read as [sirɔːʔaŋ̈ ðaːlika].

(2.e) مِنْ شَمَرَةٍ /min/ + /θamarɔțin/ → [mĩ̈ θamarɔțin]

When *noon sukoon* ( نْ ) meets *Tsaa'* ( ث ), the *noon* is disguised (not pronounced as clear /n/ but dentalized /n̪/) and lengthened, so the above word is read as [mĩ̈ θamarɔțin].

(2.f) خَيْرٌثَوَابًا /khɔjrun/ + /θawaːban/ → [khɔjruŋ̈ θawaːban]

When *dhommah tanwin* (ٌ) meets *Tsaa'* ( ث ), the *noon* is disguised (not pronounced as clear /n/ but dentalized /n̪/) and lengthened, so the above word is read as [khɔjruŋ̈ θawaːban].

(2.g) مِنْكُمْ /minkum/ → [mĩŋkum]

When *noon sukoon* ( نْ ) meets *Kaaf* ( ك ), the *noon* is disguised (not pronounced as clear /n/ but /ŋ/) and lengthened, so the above word is read as [mĩŋkum].

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(2.h) مَنْ كَانَ /man/ + /ka: na/ → [maŋ̈ ka: na]

When *noon sukoon* ( نْ ) meets *Kaaf* ( ك ), the *noon* is disguised (not pronounced as clear /n/ but /ŋ/) and lengthened, so the above word is read as [maŋ̈ ka: na].

(2.i) اَنْجَيْنَا /anɟajna:/ → [aɲ̈ɟajna:]

When *noon sukoon* ( نْ ) meets *Jeem* ( ج ), the *noon* is disguised (not pronounced as clear /n/ but /ŋ/) and lengthened, so the above word is read as [aɲ̈ɟajna:].

(2.j) شَيْئًا جَمِيلًا /ʃaj?an/ + /ɟami:lan/ → [ʃaj?aɲ̈ ɟami:lan]

When *fathah tanwin* ( ـً ) meets *Jeem* ( ج ), the *noon* is disguised (not pronounced as clear /n/ but /ŋ/) and lengthened, so the above word is read as [ʃaj?aɲ̈ ɟami:lan].

(2.k) نُنْشِزُهَا /nunʃizuha:/ → [nuɲ̈̍ʃizuha:]

When *noon sukoon* ( نْ ) meets *Syiin* ( ش ), the *noon* is disguised (not pronounced as clear /n/ but palatalized /n/) and lengthened, so the above word is read as [nuɲ̈̍ʃizuha:].

(2.l) غَفُورٌ شَكُورٌ /ɡɔfu:run/ + /ʃaku:run/ → [ɡɔfu:ruɲ̈̍ ʃaku:run]

When *dhammah tanwin* ( ـٌ ) meets *Syiin* ( ش ), the *noon* is disguised (not pronounced as clear /n/ but palatalized /n/) and lengthened, so the above word is read as [ɡɔfu:ruɲ̈̍ ʃaku:run].

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(2.m) فَانْقَلَبُوْا /fanqɔlabuː / → [faN̈qɔlabuː]

When *noon sukoon* ( نْ ) meets *Qaaf*( ق ), the *noon* is disguised (not pronounced as clear /n/ but /N/) and lengthened, so the above word is read as [faN̈qɔlabuː].

(2.n) مِنْ قَبْلِكُمْ /min/ + /qɔblikum/→ [miN̈qɔblikum]

When *noon sukoon* ( نْ ) meets *Qaaf*( ق ), the *noon* is disguised (not pronounced as clear /n/ but /N/) and lengthened, so the above word is read as [miN̈qɔblikum].

(2.o) مِنْسَأَتَهُ /minsaʔaṭah/ → [miñʲsaʔaṭah]

When *noon sukoon* ( نْ ) meets *Seen* ( س ), the *noon* is disguised (not pronounced as clear /n/ but palatalized /n/) and lengthened, so the above word is read as [miñʲsaʔaṭah].

(2.p) بَعْضًا سِرَاعًا /baʕḍɔn/ + /sirɔːʕan/ → [baʕḍɔñʲ sirɔːʕan]

When *fathah tanwin* ( ـً ) meets *Seen* ( س ), the *noon* is disguised (not pronounced as clear /n/ but palatalized /n/) and lengthened, so the above word is read as [baʕḍɔñʲ sirɔːʕan].

(2.q) عِنْدَ /ʕinda/ →[ʕin̪ḍa]

When *noon sukoon* ( نْ ) meets *Daal* ( د ), the *noon* is disguised (not pronounced as clear /n/ but dentalized /n/) and lengthened, so the above word is read as [ʕin̪ḍa].

(2.r)   قِنْوَانٌ دَانِيَةٌ    /qinwa:nun/ + /ɖa:nijatun/ → [qinwa:nuɲ̊ ɖa:nijatun]

When *dhammah tanwin* ( ٌ ) meets *Daal* ( د ), the *noon* is disguised (not pronounced as clear /n/ but dentalized /n̪/) and lengthened, so the above word is read as [qinwa:nuɲ̊ ɖa:nijatun].

(2.s)   اِنْطَلَقْتُمْ    /ʔintˁlaqtum/→ [ʔiɳ̊tˁlaqtum]

When *noon sukoon* ( نْ ) meets *Tha'* ( ط ), the *noon* is disguised (not pronounced as clear /n/ but dentalized /n̪/) and lengthened, so the above word is read as [ʔiɳ̊tˁlaqtum].

(2.t)   مِنْ طَيِّبَاتِ    /min/ + /tˁɔjjiba:ti/ → [miɳ̊ tˁɔjjiba:ti]

When *fathah tanwin* ( ً ) meets *Tha'* ( ط ), the *noon* is disguised (not pronounced as clear /n/ but dentalized /n̪/) and lengthened, so the above word is read as[miɳ̊ tˁɔjjiba:ti].

(2.u)   أَنْزَلْنَا    /ʔanzalna:/ → [ʔaɲ̊ʲzalna:]

When *noon sukoon* ( نْ ) meets *Zai* ( ز ), the *noon* is disguised (not pronounced as clear /n/ but palatalized /nʲ/) and lengthened, so the above word is read as [ʔaɲ̊ʲzalna:].

(2.v)   صَعِيدًا زَلَقًا    /sˁɔʕi:dan/ + /zalaqɔn/ → [sˁɔʕi:daɲ̊ʲ zalaqɔn]

When *fathah tanwin* ( ً ) meets *Zai* ( ز ), the *noon* is disguised (not pronounced as clear /n/ but palatalized /nʲ/) and lengthened, so the above word is read as [sˁɔʕi:daɲ̊ʲ zalaqɔn].

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(2.w) اَنْفَالَ /anfaːla/ → [aɱfaːla]

When *noon sukoon* ( نْ ) meets *Faa'* ( ف ), the *noon* is disguised (not pronounced as clear /n/ but /ɱ/) and lengthened, so the above word is read as [aɱfaːla].

(2.x) مِنْ فَوْرِهِمْ /min/ + /fawrihim/ → [miɱfawrihim]

When *noon sukoon* ( نْ ) meets *Faa'* (ف ), the *noon* is disguised (not pronounced as clear /n/ but /ɱ/) and lengthened, so the above word is read as [miɱfawrihim].

(2.y) لِنْتَ /linta/ → [liṉta]

When *fathah tanwin* ( ً ) meets *Taa'* (ت ), the *noon* is disguised (not pronounced as clear /n/ but dentalized /n̪/) and lengthened, so the above word is read as [liṉta].

(2.z) قِنْوَانٌ تَجْرِي /qinwaːnun tajriː/ → [qinwaːnṵ tajriː]

When *dhammah tanwin* ( ٌ ) meets *Taa'* (ت ), the nunnation is disguised (not pronounced as clear /n/ but dentalized /n̪/) and lengthened, so the above word is read as [qinwaːnṵ tajriː].

(2.aa) مَنْضُودٍ /manḍuːdin/ → [maṋḍuːdin]

When *noon sukoon* (نْ) meets *Dlad* ( ض ), the *noon* is disguised (not pronounced as clear /n/ but /ɳ/) and lengthened, so the above word is read as [maṋḍuːdin].

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(2.ab) مَوِيْـثَـةَ ضَنْكَ /maʕiːʃaṭan/ + /ḍɔnkan/ → [maʕiːʃaṭaɳ̃ḍɔɳ̃kan]

When *fathah tanwin* (ـً ) meets *Dlad* ( ض ), the *noon* is disguised (not

pronounced as clear /n/ but /n̪/) and lengthened, so the above word is read

as [maʕiːʃaṭaɳ̃ḍɔɳ̃kan].

(2.ac) يَنْظُرُوْنَ /junð"ɔruːna/ → [juɳ̪ð"ɔruːna]

When *noon sukoon* ( نْ ) meets *Dzo'* ( ظ ), the *noon* is disguised (not

pronounced as clear /n/ but dentalized /n̪/) and lengthened, so the above

word is read as [juɳ̪ð"ɔruːna].

(2.ad) ظِلاًّ ظَلِيْلًا /ð"illan/ + /ð"ɔliːlan/ → [ð"illaɳ̪ ð"ɔliːlan]

When *fathah tanwin* ( ـً ) meets *Dzo'* ( ظ ), the *noon* is disguised (not

pronounced as clear /n/ but dentalized /n̪/) and lengthened, so the above

word is read as [ð"illaɳ̪ ð"ɔliːlan].

In all examples shown above, we may find two processes happen:

(1)     phoneme /n/ becomes:

[ɱ] before [f]

[ n̪ ] before [θ, ð, ð", t̪ , d̪ , l̪ ]

[ ɳ ] before [ḍ]

[ ɲ] before [j]

[ nʲ] before [ṣ , ʃ , s , z]

[ ŋ ] before [k]

[ɴ] before [q]

(2)    the lengthening of:

[ɱ] before [f]

[ n̪ ] before [θ, ð, ðʷ, t̪ , d̪ , t̪ ]

[ ɳ ] before [ɖ]

[ ɲ]  before [ɟ]

[ nʲ ] before [ṣ , ʃ , s , z]

[ ŋ ] before [k]

[ɴ] before [q]

In the first occurrence, we may call this process **regressive homorganic nasal assimilation**, where a consonant (in this case is /n/) becomes more similar to a consonant following it. Notice that this assimilation process creates new variants called allophones. The allophones of /n/ in this process are [ɱ , n̪ , ɳ , ɲ , nʲ, ŋ , and N]. The variants are created as anticipatory (regressive) 'action' of the phoneme /n/ when it is followed by certain consonants (*Ikhfa'* letters), namely [f, θ, ð, ðʷ, t̪ , d̪ , t̪ , ɖ, ɟ , ṣ , ʃ, s , z , k, and q]. In process (1), it is evidently shown that the allophones of /n/ and the following consonants share the same place of articulation (=homorganic). This is why the process is called regressive homorganic nasal assimilation.

Another thing to note is that the assimilation seems to occur generally, without any restriction from word boundary. This can be seen from all examples, where /n/ clearly becomes [ɱ , n̪ , ɳ , ɲ , nʲ, ŋ , and ɴ] before the specified consonants—although in (2.b), (2.d), (2.f), (2.h), (2.j), (2.l), (2.n), (2.p), (2.r),

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(2.t), (2.v), (2.x), (2.z), (2.ab), and (2.ad) the target of assimilation (i.e. allophones of /n/) and the trigger (the consonants following /n/) are separated by a word boundary. Therefore, we may say that word boundary in this case is not an influential environment for the phonetic change to occur. Let us further identify the pattern:

- The phoneme /n/, which is [+nasal, +anterior, +coronal], becomes [ɱ] or [+nasal, +labiodental] when it is followed by [f], which is [+labiodental, -nasal, +continuant].

- The phoneme /n/, which is [+nasal, +anterior, +coronal], becomes [n̪] or [+nasal, +dental] when it is followed by [θ, ð, ọ̄, ṭ, ḍ, ḷ], which are [+dental, -nasal].

- The phoneme /n/, which is [+nasal, +anterior, +coronal], becomes [ɳ] or [+nasal, +alveopalatal] when it is followed by [ɖ], which is [-continuant, +alveopalatal, -nasal].

- The phoneme /n/, which is [+nasal, +anterior, +coronal], becomes [ɲ] or [+nasal, +palatal] when it is followed by [ɟ], which is [-continuant, -nasal, +palatal].

- The phoneme /n/, which is [+nasal, +anterior, +coronal], becomes [nʲ] or [+nasal, +palatal] when it is followed by [ʂ, ʃ, s, z], which is [+continuant, -nasal, +palatal].

- The phoneme /n/, which is [+nasal, +anterior, +coronal], becomes [ŋ] or [+nasal, +velar] when it is followed by [k], which is [-nasal, -cont, +velar].

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- The phoneme /n/, which is [+nasal, +anterior, +coronal], becomes [ɴ] or [+nasal, +uvular] when it is followed by [q], which is [-nasal, -continuant, +uvular].

As suggested in the guidance of writing rules, we need to try to make our analysis as general as possible (Smith, 2003). We may not assume that a rule will be specific to an individual morpheme or phoneme unless there is actual evidence showing that this is the case. In the case of *Ikhfa Haqiqi*, we may generalize some place features: [+labiodental], [+dental], [+alveopalatal], [+palatal] can be put under the heading of [+anterior], while [+velar] and [+uvular] can be put under the heading of [-anterior] or [+back], as listed in the following:

[ɱ]  =  [+ ant, - cor]                [ņ ]  =  [+ ant, + cor]

[ ɳ ]  =  [- ant, + cor]                [ ɲ]  =  [- ant, + cor]

[ nʲ ]  =  [- ant, + cor]                [ ŋ ]  =  [- ant, - cor]

[ɴ]   =  [- ant, - cor]

However, if we use only [+anterior] and [+coronal] in our rule formation to explain the homorganic nasal assimilation phenomena in *Ikhfa' Haqiqi*, we will fail to capture the complex place assimilation because the features referred to are not formally related. In other words, [anterior] and [coronal] are not sufficient for the rule formation of *Ikhfa' Haqiqi*. The process (1) found in *Ikhfa' Haqiqi* evidently shows that /n/ manifests as several distinct allophones when it meets certain consonants as specified previously. These allophones need to be distinguished respectively, according to their place-feature agreement with the following consonants. The features [anterior] and [coronal] cannot do this since

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[ ɳ ] and [ɲ ] are both [-ant, +cor], and [ ŋ ] and [ɴ] are both [-ant, -cor]. Therefore, we need a general rule to capture and specify each homorganic nasal assimilation occurrence in *Ikhfa' Haqiqi*.

Below is the information acquired from the above occurrences:

- the segment that changes is /n/ or a coronal nasal

- the change that occurs is regressive homorganic nasal assimilation

- the phonemic environment is before consonants.

Relying on the information available, let us devise the formal notation:

$$
(3.3) \quad /n/ \rightarrow \begin{pmatrix} + \text{ nasal} \\ \alpha \text{ [place]} \end{pmatrix} / \underline{\hspace{1cm}} \begin{pmatrix} + \text{ consonantal} \\ \alpha \text{ [place]} \end{pmatrix}
$$

This rule can be 'translated' into:

(3.3)  A coronal nasal or /n/ becomes nasal stops, where the value for [place] of the nasal stops must match the value for [place] of the following consonants.

Here we see that we employ Greek letter variable α in our formal notation. The variable comes in handy when we try to capture the generalization that /n/ manifests as [m], [ɱ], [ɳ], [ɲ], [nʲ], [ŋ], and [ɴ], depending on the place feature specifications of the subsequent segment. By using Greek variable, we have possibility to match the place features concerned. If we use a single feature-matching process by using '+' and '-', imagine how many rules we need to devise to explain all the assimilation processes. Therefore, as suggested by Davenport and Hannahs, by replacing the '+' or '-' value of regular feature specification,

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**alpha notation** represents *either* '+' or '-', matching the value of an occurrence of the feature in question elsewhere in the rule (1998: 124). Using α allows the feature in question to be specified independently without affecting other features.

As we see in rule (3.3), we are dealing with place assimilation, where the place features of the segments following /n/ spread leftwards, causing the phoneme /n/ ([+alveolar]) to change into [ɱ] ([+labiodental]), [ṉ] ([+dental]), [ṉ] [+alveopalatal]), [ɲ] ([+palatal]), [nʲ] ([+palatal]), [ŋ] ([+velar]), and [N] ([+uvular]). In this case, only the place feature of /n/ that alters, the [+nasal] feature of /n/ remains unchanged. Therefore, this type of place assimilation found in *Ikhfa' Haqiqi* falls under the heading of partial assimilation. The following is an example of non-linear representation, which may help us in understanding this feature-change process:
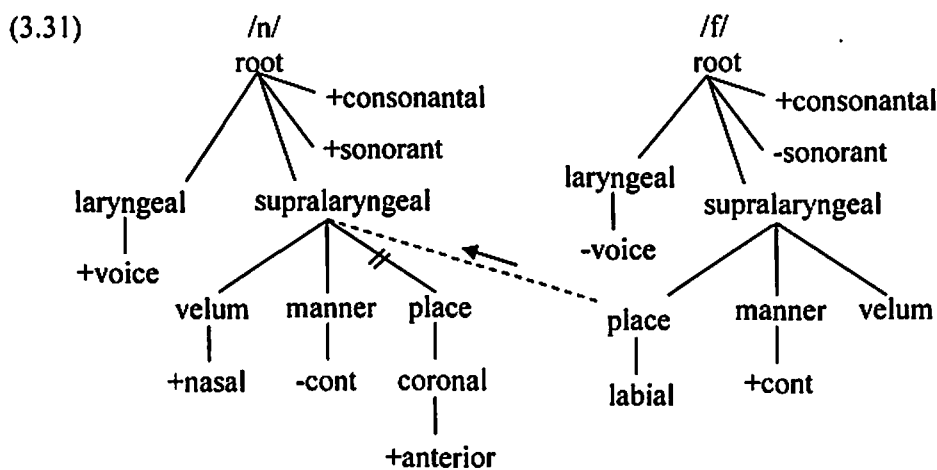
(3.31)



**Figure 3.1** Feature trees of the phonemes /n/ and /f/, showing the spreading and delinking of features in case of place assimilation.

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The representation (3.31) shows how the rule of homorganic assimilation applies to the cluster /nf/. The place node from the following obstruent ([f]) spreads to the nasal /n/ and causes the place node of the nasal to delink. Consequently, /n/ takes the labial feature of [f] and becomes [ɱ] in its phonetic representation.

Based on the above homorganic nasal assimilation rule, we may actually include the principle of *Iqlab* as we have discussed earlier. The process of assimilation found of *Iqlab* is in fact the same process of that found in *Ikhfa' Haqiqi*, notably place assimilation, or the so-called regressive homorganic nasal assimilation. In other words, we can write the same rule notation for both *Iqlab* and *Ikhfa' Haqiqi* as to account for their similar phonological phenomena.

Another process found in *Ikhfa' Haqiqi* is lengthening. After the homorganic nasal assimilation takes place, lengthening occurs. As well as the lengthening found in *Iqlab*, the lengthening that accompanies nasal assimilation in *Ikhfa' Haqiqi* lasts about 1.0 – 1.3 seconds. From the instances of *Ikhfa' Haqiqi* shown earlier, let us further try to find out the pattern, so that we can attempt to formulate the rule:

- The phones [ɱ , n̪ , ɳ, ɲ , nʲ, ŋ , and ɴ], which are [+nasal, -cont], becomes long when they are followed by [f, θ, ð, ðʷ, t̪ , ḍ , t̪ , ḍ, ɟ , ṣ , ʃ, s , z , k, and q], which are [+consonant].

From the above occurrence, we get the following information:

- the segments that change are nasal stops

- the change that occurs is lengthening (change from [-long] to [+long])

- the phonemic environment is before consonants.

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Relying on the information available, let us devise the formal notation:

$$(3.4) \quad \begin{bmatrix} + \text{nasal} \\ \alpha \text{ [place]} \end{bmatrix} \rightarrow [+\text{long}] \ / \underline{\quad} \begin{bmatrix} + \text{consonantal} \\ \alpha \text{ [place]} \end{bmatrix}$$

This rule can be 'translated' into:

(3.4)   Nasal stops become long in the environment before consonants, where the place feature of the nasal stops must match the place feature of the following consonants.

In the above rule, we see that the phones [ɱ , n̪ , ɳ , ɲ , nʲ, ŋ , and ɴ] are lengthened when they occur before [f, θ, ð, ðʷ, t̪ , d̪ , ʈ ,ɖ , ɟ , ş , ʃ, s , z , k, and q]. Notice that we use again the Greek letter α. As in our previous rule, **alpha notation** represents *either* '+' or '-', independently specifying each feature elsewhere in the rule without affecting other features. By employing α, the place features of the nasal stops correspond to the place features the following consonants. Here we understand that the nasal stops and their corresponding consonants have the same place features respectively. Thus, we may conclude that in the case of *Ikhfa' Haqiqi*, the phones [ɱ , n̪ , ɳ , ɲ , nʲ, ŋ , and ɴ] are lengthened before [f, θ, ð, ðʷ, t̪, d̪ ,ʈ , ɖ , ɟ , ş , ʃ, s , z , k, and q] because both nasal stops and their corresponding consonants share the same place features.

Now we have the rules in hand. To check the validity of the rules, we can apply the rules to one or two examples from the data set where they should apply,

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and one or two examples where they should not apply. Let us check in the following derivations:

| Phonemic Representation | "anfaala" /anfaːla/ | "qinwaanun" /qinwaːnun/ | "linta" /linta/ | "anzalnaa" /ʔanzalnaː/ |
|---|---|---|---|---|
| Apply rule (3.3) | m̥ | NA* | n̪ | nʲ |
| Apply rule (3.4) | m̥̈ | NA* | n̪̈ | n̈ʲ |
| Phonetic Representation | [am̥̈faːla] | [qinwaːnun] | [lin̪̈ta] | [ʔan̈ʲzalnaː] |

*NA = 'not applicable'

**Table 3.2**  Rule derivations for homorganic nasal assimilation and lengthening processes in *Ikhfa' Haqiqi*.

In the derivations above, we can see that the rule (3.3) does not apply to the word "*qinwaaanun*" since the /n/ and the following segment in the pronunciation of the word do not share the same place features. In [qinwaːnun], for example, the [n] has the feature of [+coronal], while the [w] has the feature of [-coronal]. The place feature of the nasal stop does not match with the place feature of the following consonant. Therefore, the rule does not apply to "*qinwaanun*" as the /n/ remains in its p honetic r epresentation. Rules and phonological explanations f or words like "*qinwaanun*" can be found in other principles in *Tajwid*, which are not discussed in this thesis, namely principle of *Idhar Muthlaq*. As for the lengthening, the rule is only applicable if the nasal stop occurs before consonants having the same place feature with the nasal stop. In the word [qinwaːnun] for example, the [n] is not

lengthened because it does not share the same place feature with the following segment ([w]).

## III.3 *Idgham* ( اِدُغَامُ )

In an Arabic – English dictionary, we can find the word *Idgham* defined as putting one letter into another (Wehr, 1979: 328). In *Tajwid*, *Idgham* means inserting a non-vowelled letter into a vowelled one to become one doubled (*mushaddad*) letter (Alwi, 1997). *Idgham* is divided into several kinds, some of which will be our focus in the following section.

### III.3.1 *Idgham Bi Ghunnah* ( اِدْغَام بِغْنَة )

The principle of *Idgham Bi Ghunnah* explains the meeting of *noon sukoon* ( نْ ) or *tanwin* ( ـًـ ) with these four letters: *Ya'* ي (/ja:ʔ/), *Noon* ن (/nu:n/), *Meem* م (/mi:m/), *Wawu* و (/wa:w/) in two different words. If the non-vowelled noon/*noon sukoon* or the noon of nunnation/*tanwin* meets any of these letters, they are inserted or totally assimilated to the subsequent letters and become doubled (*mushaddad*) letters, or the so-called geminates in Linguistics. Then, the *mushaddad* letters are p ronounced w ith g hunnah (nasal t wang) a nd l engthened. The following instances show the occurrence:

(3.a)   فَمَنْ يَمْلِكُ   /faman/ + /jamliku/ → [famaj̃ jamliku]

When *noon sukoon* ( نْ ) meets *ya'* ( ي ), the *noon* is inserted to the *ya'*, nasalized and lengthened, so the phrase above is read as [famaj̃ jamliku].

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(3.b) قَضًا يَسِيْرًا /qɔbdɔn/ + /jasiːrɔn/ → [qɔbdɔj̃ jasiːrɔn]

When *fathah tanwin* (ً) meets *ya'* ( ي ), the nunnation is inserted to the ya', nasalized and lengthened, so the phrase above is read as [qɔbdɔj̃ jasiːrɔn].

Here we see that in both examples (in 3.a and 3.b), the phoneme /n/ is totally assimilated by the following phoneme (/j/) and finally becomes /j/ in the given environment.

(3.c) مِنْ نِعْمَةٍ /min/ + /niʕmatin/ → [miñ niʕmatin]

When *noon sukoon* ( ْن ) meets *noon* ( ن ), the *noon sukoon* is inserted to the *noon*, nasalized and lengthened, so the phrase above is read as [miñ niʕmatin].

(3.d) عَذَابًا نُكْرًا /ʕaðaːban/ + /nukrɔn/ → [ʕaðaːbañ ñukrɔn]

When *fathah tanwin* (ً ) meets *noon* (ن ), the nunnation is inserted to the *noon*, nasalized and lengthened, so the phrase above is read as [ʕaðaːbañ ñukrɔn].

In both examples (3.c and 3.d), the phoneme /n/ is totally assimilated by the following phoneme (/n/) and finally becomes /n/ in the given environment.

(3.e) عَنْ مَوَاضِعِهِ /ʕan/ + /mawaːdʒiʕihiː/ → [ʕam̃ m̃awaːdʒiʕihiː]

When *noon sukoon* ( ْن ) meets *meem* ( م ), the *noon sukoon* is inserted to the *meem*, nasalized and lengthened, so the phrase above is read as [ʕam̃ m̃awaːdʒiʕihiː].

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(3.f)   جِحْرًا مَّسْجُوْرٍ   /hiʃrɔn/ + /mahʃuːrɔn/ → [hiʃrɔm̃ m̃ahʃuːrɔn]

When *fathah tanwin* (  ) meets *meem* ( م ), the nunnation is inserted to

the *meem*, nasalized and lengthened, so the phrase above is read as [hiʃrɔm̃

m̃ahʃuːrɔn].

In both examples (3.d and 3.f), the phoneme /n/ is totally assimilated by

the following phoneme (/m/) and finally becomes /m/ in the given

environment.

(3.g).   مَنْ وُجِدَ   /man/ + /wuʃida/ → [maw̃ w̃uʃida]

When *noon sukoon* (  ) meets *wawu* ( و ), the *noon sukoon* is inserted to

the *wawu*, nasalized and lengthened, so the phrase above is read as [maw̃

w̃uʃida].

(3.h)   تَحِيَّةً وَسَلَامًا   /tahiʃʃatan/ + /wasalaːman/ → [tahiʃʃataw̃ w̃asalaːman]

When *fathah tanwin* (  ) meets *wawu* ( و ), the nunnation is inserted to the

*meem*, nasalized and lengthened, so the phrase above is read as [tahiʃʃataw̃

w̃asalaːman].

In both examples (3.g and 3.h), the phoneme /n/ is totally assimilated by

the following phoneme (/w/) and finally becomes /w/ in the given

environment.

In all examples shown above, we may find three diachronic processes happen:

(1)    the phonemes /ʃ, n, m, w/ are nasalized when they occur after /n/

(2)    phoneme /n/ at the end of a word becomes [ʃ, n, m, w] when it occurs

       before [ʃ, n, m, w] at the beginning of the following word

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(3)     the phones [j, n, m, w] are lengthened before [j, n, m, w].

In the first process found in *Idgham Bi Ghunnah*, we may call this process **progressive nasal assimilation**. The nasalization process is said to be progressive because the nasal feature of a segment spreads rightwards and affects the following segment. Let us further identify the pattern:

- The phonemes /j, n, m, w/, which are [+voice, +sonorant], are nasalized when they occur after /n/, which is [+nasal, +cons].

From the above occurrences, we get the following information:

- the segments that change are voiced sonorants

- the change that occurs is progressive nasal assimilation

- the phonemic environment is after nasal

Now we have all required information to formulate the rule. Let us devise the formal notation:

$$
(3.5) \quad \begin{bmatrix} +\text{voice} \\ +\text{sonorant} \end{bmatrix} \rightarrow [+\text{nasal}] \ / \ \begin{bmatrix} +\text{cons} \\ +\text{nasal} \end{bmatrix} \underline{\quad}
$$

This rule can be 'translated' into:

(3.5)   voiced sonorants become ( → ) nasal ([+nasal]) in the environment (/) after nasal ([+cons, +nasal] __).

As stated in the rule, voiced sonorants are nasalized when they occur after nasal. Here we see that the nasal feature of /n/ spreads to the next segments, notably /j, n,

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m, w/, so that the affected segments have nasal feature as well (i.e. being nasalized).

Another process, which also characterizes *Idgham Bi Ghunnah*, is **regressive total assimilation**. Notice that the assimilation of /n/ to the following phonemes eventually forms geminates: /jj/ in (3.a and 3.b), /nn/ in (3.c and 3.d), /mm/ in (3.e and 3.f), and /ww/ in (3.g and 3.h). That is the reason why we call this process **regressive complete assimilation**: a consonant (in this case is /n/) becomes totally like c onsonants which f ollow it (i.e /j/, /n/, / m/, /w/). Another thing to note is that this assimilation seems to be restricted by word boundary. This c an b e s een from all e xamples, where /n/ a t the end o f a w ord is c learly assimilated by the specified segments at the beginning of the following word. In this case, the target of assimilation (i.e. /n/) and the trigger (the segments following /n/) are separated by a word boundary. In fact, there is an evidence showing that the segment /j/ which occurs after /n/ in the same word is not assimilated, such as in the word '*bunjaanun*'. Therefore, we may say that word boundary in this case is an influential environment for the phonetic change to occur. Let us further identify the pattern:

- The phoneme /n/, which is [+nasal, +sonorant, +coronal], at the end of a word, becomes [j, n, m, w] when it is followed by [j, n, m, w], which is [+voice, +sonorant], at the beginning of the following word.

From the above occurrences, we get the following information:

- the segment that changes is a coronal nasal

- the change that occurs is regressive complete assimilation

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- the phonemic environments are (1) at the end of a word, and (2) before voiced sonorants at the beginning of the following word.

Now we have all required information to formulate the rule. Let us devise the formal notation:

(3.6)   /n/ → [j, n, m, w]/__# # [j, n, m, w]

or,

$$\begin{bmatrix} \text{+nasal} \\ \text{+coronal} \end{bmatrix} \rightarrow \begin{bmatrix} \text{+voice} \\ \text{+sonorant} \\ \text{+nasal} \end{bmatrix} / \underline{\quad} \# \# \begin{bmatrix} \text{+voice} \\ \text{+sonorant} \end{bmatrix}$$

This rule can be 'translated' into:

(3.6)   /n/ or a coronal nasal becomes ( → ) voiced sonorants in the environment (/) at the end of a word ( __#) which is followed by a word beginning with voiced sonorants (# [+voice, +sonorant]).

This assimilation rule states that the environment in which a phoneme /n/ becomes voiced sonorants is at the end of a word. We use the symbol # to represent a word boundary.

Both nasal assimilation and regressive complete assimilation are the main processes in *Idgham bi Ghunnah*. This is the reason why the case is called *Idgham Bi Ghunnah*, which means assimilating with nasalizing. In fact, both processes occur synchronically. The /n/ nasalizes the following segments (/j, n, m, w/), and the segments assimilate the /n/. Interestingly, the segments /j, n, m, w/ at the beginning of a word still retain their nasality when they assimilate the phoneme /n/ at the end of the preceding word. The phoneme /n/ itself also retain its nasal feature when it is in turn assimilated by /j, n, m, w/ (as we see in rule 3.5). It

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seems that nasality is a strong feature in the two cases. To understand better these synchronic processes, let us check the examples of non-linear representations for the two processes:

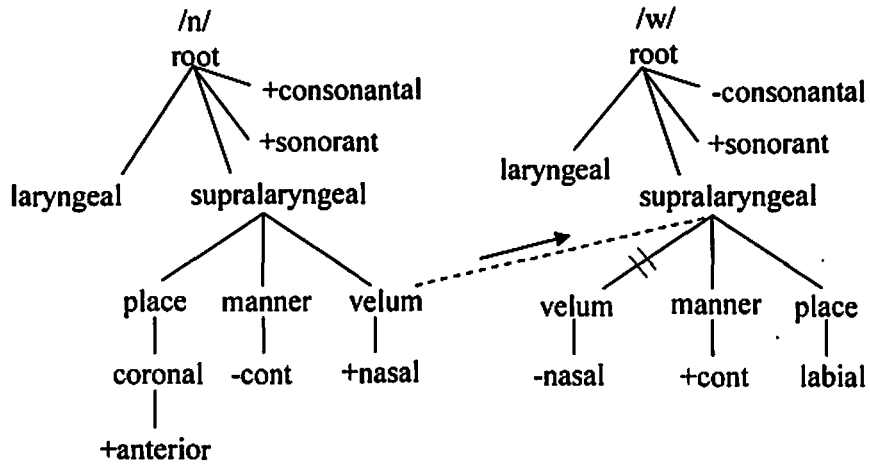(3.51) *Nasalization process of /n/ to /w/ becoming [w̃]*



**Figure 3.2** Feature trees of the phonemes /n/ and /w/, showing the spreading and delinking of velum nodes in case of nasalization.

The representation (3.51) shows how the rule of nasal assimilation applies to the cluster /nw/. The velum node from the nasal ([n]) spreads to the glide /w/ and causes the velum node of the glide to delink. Consequently, /w/ takes the nasal feature of [n] and becomes [w̃] in its phonetic representation.

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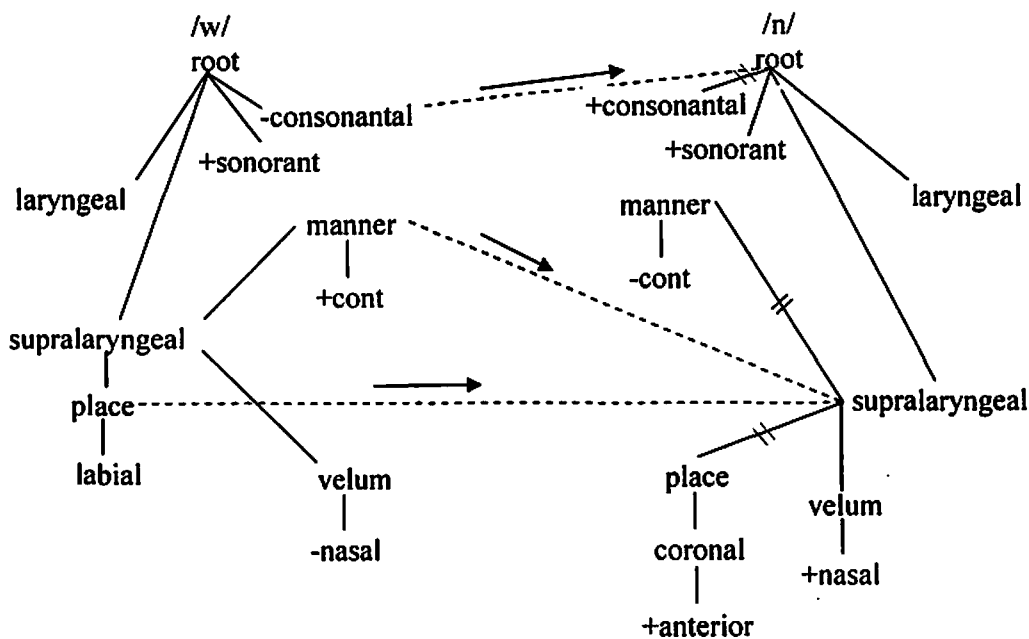(3.61) *Total assimilation process of /w/ to /n/ becoming [ w̃ ]*



**Figure 3.3**    Feature trees of the phonemes /w/ and /n/, showing the spreading and delinking of features in case of total assimilation.

The representation (3.61) shows how the segment /w/ assimilates the /n/. What is happening here is that the /n/ is taking on all the characteristics of the /w/ except for its nasality. Although the /n/ becomes /w/ accordingly, the nasal feature if /n/ is retained, so that the /n/ manifests as [w̃] in its phonetic representation. In sum, the result of the two synchronic processes (progressive nasal assimilation and regressive total assimilation) is the phonetic representation of the cluster /nw/ as [w̃w̃].

There is still another process in *Idgham bi Ghunnah*, which is not less important, namely lengthening. As mentioned earlier, besides inserting and

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nasalizing we can also find lengthening in *Idgham bi Ghunnah*. As well as the lengthening found in previous *Tajwid* principles, the lengthening identified in *Idgham bi Ghunnah* lasts about 1.0 – 1.3 seconds. Let us further try to find out the pattern, so that we can attempt to formulate the rule:

- The nasalized phones [j̃, ñ, m̃, w̃], which are [+voice, +sonorant, +nasal], becomes long when they are followed by [j, n, m, w], which are [+voice, +sonorant].

From the above occurrence, we get the following information:

- the segments that change are nasalized voiced sonorants

- the change that occurs is lengthening (change from [-long] to [+long])

- the phonemic environment is before voiced sonorants.

Relying on the information available, let us devise the formal notation:

$$(3.7) \quad \begin{pmatrix} +\text{voice} \\ +\text{sonorant} \\ +\text{nasal} \end{pmatrix} \rightarrow [+\text{long}] \ / \underline{\quad} \begin{pmatrix} +\text{voice} \\ +\text{sonorant} \end{pmatrix}$$

This rule can be 'translated' into:

(3.7)   nasalized voiced sonorants become long in the environment before voiced sonorants.

In the above rule, we see that the phones [j̃, ñ, m̃, w̃] are lengthened when they occur before [j, n, m, w]. Here we understand that the affecting and affected segments share the same place features.

Now we have the rule in hand. To check the validity of the rule, we can apply the rule to one or two examples from the data set where it should apply, and

one or two examples where it should not apply. Let us check in the following derivations:

| Phonemic Representation | "man wujida" /man wuʄida/ | "bunjaanun" /bunʄaːnun/ | "an mawaadli'ihi" /ʕan mawaːdiʕihiː/ | "likay yaf'ala" /likaj jafʕala/ |
|---|---|---|---|---|
| Apply rule (3.5) | w̄ | j̃ | m̃ | NA* |
| Apply rule (3.6) | w̃ | NA* | m̃ | NA* |
| Apply rule (3.7) | w̤̃ | NA* | m̤̃ | NA* |
| Phonetic Representation | [maw̤̃ w̃uʄida] | [bunʄaːnun] | [ʕam̤̃ mawaːdiʕihiː] | [likaj jafʕala] |

*NA = 'not applicable'

**Table 3.3**   Rule derivations for progressive nasal assimilation, total assimilation, and lengthening processes in *Idgham Bi Ghunnah*.

According to our rule (3.5) we nasalize /j, n, m, w/ after nasal. This rule is apparently supported by Rodman and Fromkin, who assert that vowels and glides are nasalized before and after nasal—a natural process found also in many other languages (1988: 97 – 98). Based on the notion, we should also apply the rule (3.5) to word "*bunjaanun*", besides "*man wujida*" and "*an mawaadli'ihi*". Here we presume that word boundary is not an influential factor. That is why we do not include it in our rule formulation for nasalization. However, word boundary is crucial in our second rule, i.e. (3.6). In the above derivations, notice that the segment /n/ in the word '*bunjaanun*' is not assimilated by the following /w/ and remains as [n] in its phonetic representation, contrary to the word '*man wujida*'.

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Rules and phonological explanations for cases like in *"bunjaanun"* are dealt in another principle in *Tajwid*, namely *Idhar Muthlaq*. As for the lengthening, we see in the above derivations that the segment /j/ is not lengthened before the following /j/, although both segments share the same place feature. Comparing the occurrence of /ww/ in the word [maw̃ w̃uɟiḍa], which is lengthened, with that of /jj/ in the word [likaj jaffala], we notice that the later in fact does not come in contact with nasal. Here we learn that lengthening is applicable not only when the affected segment shares the same place feature with the following segment, but also when the segments involved include nasality.

The principle of *Idgham bi Ghunnah* above applies to all words in the Qur'an where non-vowelled letter *noon* or nunnation (*tanwin*) at the end of a word meets the letters *ya', noon, meem,* or *wawu* at the beginning of the following word. However, we may find two exceptions in the Qur'an, notably:

a.  *Surah Yaasin:* 1- 2 'Yaasin wal Quranilhakiim' [يس والقرآن الحكيم]

The words 'Yaasin' + 'wal' should remain to be read as /jaːsiːn wal/, although there is a meeting of *noon sukoon* (at the end of the word 'Yaasiin') and the letter *wawu* (at the beginning of the word 'wal').

b.  *Surah Al-Qolam:* 1 → [ن والقلم وما يسطرون]

'Nuun wal qalami wa maa yasturuun'

The words 'Nun' + 'wal' should remain to be read as /nuːn wal/, although there is a meeting of *noon sukoon* (at the end of the word 'Nun') and the letter *wawu* (at the beginning of the word 'wal').

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The principle applied in these two exceptional cases is no longer *Idgham Bi Ghunnah*, but *Idzhar Mutlaq* or Absolute Manifestation. It is called 'absolute manifestation' because the letter *noon sukoon* or the nunnation is clearly manifested in the recitation. However, we do not discuss *Idzhar Mutlaq* in this thesis since this principle does not involve the concurrence between nasal assimilation and lengthening processes.

### III.3.2 Special Case: Assimilation of /b/ to /m/ in *Idgham Mutajaanisain* (إدغام متجانسين)

The principle of *Idgham Mutaajanisain* explains the meeting of *Daal sukoon* (دْ) with *Taa'* ( ت ), *Taa' Sukoon* (تْ) with *Daal* (د), *Taa' Sukoon* ( تْ ) with *Thaa'* ( ط ), *Dzaal Sukoon* ( ذْ ) with *Dzaa'* ( ظ ), *Tsaa' Sukoon* ( ثْ ) with *Dzaal* (ذ), and *Baa' Sukoon* ( بْ ) with *Meem* ( م ). *Idgham* is called *Mutajaanisain* because the letters of *Idgham Mutajaanisain* mentioned above have the same place of articulation but are different in the manner of articulation (Alwi, 1997:43). However, we will discuss only the meeting of *Baa' Sukoon* ( بْ ) with *Meem* (م) as it involves nasal assimilation and lengthening, unlike that of the other letters. That is why the writer uses the term 'special case' to explain this occurrence. Another reason which makes the occurrence special is that it is only found in one sentence in the Qur'an, notably in *Surah Huud*: 41. If the *Baa'Sukoon* meets *Meem*, the *Baa'* is inserted or totally assimilated to the *Meem* and become doubled (*mushaddad*) letters, or the so-called geminates in Linguistics. Then, the *mushaddad* letters are pronounced with *ghunnah* (nasal twang) and lengthened. Let us check the the following occurrence:

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يْبَيُّ اُرْكَب مَعَـنَا /jaːbunajjarkab/ + /maʕanaː/ → [jaːbunajjarkam̃ maʕanaː]

When *Baa' Sukoon* ( ب ) meets *meem* ( م ), the *Baa'* is inserted to the *meem*, nasalized and lengthened, so the phrase above is read as [jaːbunajjarkam̃ maʕanaː].

In the occurrence of *Idgham Mutajaanisain* shown above, we may find two processes happen:

(1)   phoneme /b/ becomes [m] before [m]

(2)   the phone [m] is lengthened before [m].

In the first process found in *Idgham Mutajaanisain*, notice that the assimilation of /b/ to the following segment, namely [m], eventually forms geminates: /mm/. We may call this process as **regressive complete nasal assimilation**, where a consonant (in this case is /b/) becomes totally like a nasal consonant which follows it (i.e /m/). Let us further identify the pattern:

- The phoneme /b/, which is [-nasal, -sonorant, +bilabial] becomes [m], which is [+nasal, +sonorant, +bilabial], when it is followed by /m/, which is [+nasal, +bilabial].

From the above occurrences, we get the following information:

- the segment that changes is nonnasal voiced bilabial

- the change that occurs is regressive complete nasal assimilation (change from [-nasal, -sonorant, +bilabial] into [+nasal, +sonorant, +bilabial])

- the phonemic environment is before nasal bilabial.

Now we have all required information to formulate the rule. Let us devise the formal notation:

(3.8)   /b/ → [m] /__ [m], or
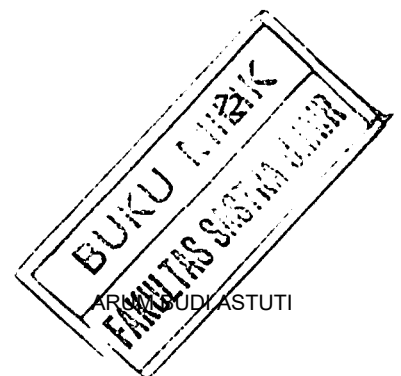
$$\begin{pmatrix} - \text{ nasal} \\ + \text{ bilabial} \\ - \text{ sonorant} \end{pmatrix} \rightarrow \begin{pmatrix} + \text{ nasal} \\ + \text{ bilabial} \\ + \text{ sonorant} \end{pmatrix} / \_\_ \begin{pmatrix} + \text{ nasal} \\ + \text{ bilabial} \\ + \text{ sonorant} \end{pmatrix}$$

This rule can be 'translated' into:

(3.8)  A nonnasal voiced bilabial or /b/ becomes ( → ) a nasal bilabial sonorant in the environment (/) before a nasal bilabial sonorant (__[+nasal, +sonorant, +bilabial]).

The above rule description illustrates the process of total assimilation in *Idgham Mutajaanisain*, in which the *Baa' sukoon* becomes exactly like the letter that follows it—a process which later forms geminates (double letters). Another process happens in *Idgham Mutajaanisain* is lengthening (which usually lasts about 1.0 – 1.3 seconds), as we see in the occurrence above. Let us identify the pattern to get more information about the phenomenon:

- The phone [m], which is [+nasal, +bilabial], becomes [+long] when it is followed by /m/, which is [+nasal, +bilabial].

From the above occurrence, we get the following information:

- the segment that changes is a nasal bilabial

- the change that occurs is lengthening (change from [-long] into [+long])

- the phonemic environments are before nasal bilabial.

Now we have all required information to formulate the rule. Let us devise the formal notation:

(3.9)  [m] → [long] /__[m], or

$$\begin{pmatrix} + \text{ nasal} \\ + \text{ bilabial} \end{pmatrix} \rightarrow [+\text{long}] / \_\_ \begin{pmatrix} + \text{ nasal} \\ + \text{ bilabial} \end{pmatrix}$$

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This rule can be 'translated' into:

(3.9)    A nasal bilabial or [m] becomes ( → ) long in the environment (/) before a

nasal bilabial (# [+nasal, +bilabial]).

Now we have the rule in hand. Let us check the rule derivation:

| Phonemic | "yaabunayyarkab ma'anaa" | "hablun" | "abwaabun" | "am firqotan" |
|---|---|---|---|---|
| Representation | /jaːbunajjarkab maʕanaː/ | /hablun/ | /ʔabwaːbun/ | /ʔam firqɔʈan/ |
| Apply rule (3.8) | m | NA* | NA* | |
| Apply rule (3.9) | m̈ | NA* | NA* | NA* |
| Phonetic Representation | [jaːbunajjarkam̈ maʕanaː] | /hablun/ | /ʔabwaːbun/ | [ʔam firqɔʈan] |

**Table 3.4**    Rule derivations for regressive complete nasal assimilation and

lengthening processes in *Idgham Mutajaanisain*.

In the derivations above, we can see that consonants which are not in the class of

[+nasal, +sonorant, +bilabial] cannot trigger the /b/ to change into /m/, such as in

the words *"hablun"* and *"abwaabun"*—where the /n/ remains in its phonetic

representation. Here we can see as well that the lengthening rule is only applicable

if the affected segment occurs before segment having the same place feature with

the affected segment. In the words '*am firqotan*' for example, the phone [m] is not

lengthened because it does not share the same place feature with the following

phone ( [ f ] ), which is [+labiodental], although [m] and [f] are in the same place

of articulation, namely **labials**.

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# CHAPTER IV
# CONCLUSION