CHAPTER II

LITERATURE REVIEW

II.1 Assimilation: A 'Never-Boring' Topic among Linguistic Studies

Perhaps the adjective word 'never-boring' in this subchapter title is a little bit exaggerating, but it is necessary to know that assimilation has been a popular topic among linguistic scholars. Although there are so many studies about assimilation already conducted on different languages and various contexts, but discussions and reviews on the topic may always be interesting because every single language in the world is unique and distinctive. Let us take an example from our very own national and official language, Bahasa Indonesia. Originated from Malay language, Bahasa Indonesia has developed into a modern language with its all complexities. Its disposition has lured numerous language researchers to conduct in-depth studies toward its grammar, countering the myth that Bahasa Indonesia is a simple language (Sneddon, 2000). An outstanding phonological analysis was brought by Halle and Clements (discussed in Harrington and Mannel, 2001), who investigated the assimilation found in the forming of transitive verbs with the prefix '*me-*'.

In Bahasa Indonesia, transitive verbs are created by combining prefix '*me-*' with basic form. Let us pay attention to the following set of data:

Simple Form		Prefixed Form		
Lempar	/lɛmpar/	*Melempar*	/məlɛmpar/	'throw'
Hitung	/hitʊŋ/	*Menghitung*	/məŋhitʊŋ/	'count'
Dengar	/dəŋar/	*Mendengar*	/məndəŋar/	'hear'
Bantu	/bantu/	*Membantu*	/məmbantu/	'help'
Jahit	/dʒahit/	*Menjahit*	/məɲdʒahit/	'sew'

Table 2.1. Data set of simple and prefixed forms in Bahasa Indonesia, showing the alternation of 'me-' into several different allomorphs (data presented by Halle and Clements in Harrington and Mannel, 2001).

We can see that there are some variations in the phonetic shape of the prefix '*me-*'. In the examples above, we have /mə/ in 5 allomorphs: /mə/, /məŋ/, /məɲ/, /mən/, and /məm/. Halle and Clements (discussed in Harrington and Mannel, 2001) analized the alternation by examining the phonological rules applied and came up with a conclusion that the varied phonetic shape of the prefix seems to be affected by the place of articulation of the following consonant. This is a rule of *anticipatory assimilation*, which occurs in many languages: a final consonant assimilates to the following consonant which has the same place of articulation (see Harrington and Mannel (2001) for further discussion).

Another study was held by Kuijpers and Van Donselaar, who contrasted the occurrence of voice assimilation across morpheme boundaries and word boundaries in Dutch. The word *kaasboer* 'cheese maker', for example, is often pronounced as /ka:zboər/ instead of /ka:sboər/. As further noted, voice assimilation in Dutch is less common across word boundaries than across morpheme boundaries (Kuijpers and Van Donselaar, 1997). This is shown in the comparison between compound words like *kaasboer*, and phrases like k*aas bakt.* Speakers more frequently assimilate the phoneme /s/ into the voiced /z/ in the word *kaasboer* rather than *kaas bakt*.

Nearly similar to the research above, Daan Wissing and Justus Roux also investigated the case of voice assimilation, but in Tswana Afrikaan. The word *Naas Botha* (name and surname) is pronounced both /na:zboθa/ (assimilated) and /na:sboθa/ (no assimilation). There are also words like *sesde*, *elfde*, and *liefde* which are pronounced without any assimilation. Based on the data gathered, Wissing and Roux conclude that voice assimilation is an optional and unpredictable process in Afrikaan, unlike the situation in Russian, where it is an obligatory process (Wissing and Roux, 1998). Neither the general place assimilation rule nor any syntactic restriction can explain this linguistic phenomenon due to unknown and yet unrevealed factors.

As we may see, the above cases are examples of assimilation studies conducted on totally different languages. Actually, there are also several inquiries performed on variants of the same language. Let us take Arabic language as an example. Being the sixth most widely spoken language in the world, it has undergone many changes and development throughout the centuries. The older version of Arabic is Classical Arabic (CA), used in Al-Hijaz region nearly 1500 years ago (Beeston, 1970). It had been the formal language of the royal and princely courts, the schools, and the written materials, before Modern Standard Arabic (MSA) was agreed few centuries later as the formal form up to present days (Abdullah, 2002). There are quite many scholars who study assimilation in Modern Standard Arabic (MSA). Some of them were Ingleby and Ali (2001), who investigated nasal assimilation in MSA. Other studies was presented by Wafi, mentioning assimilation of definite article in Arabic (1945: 298-299), and many

other similar studies in MSA such as Muller (2001). An inquiry on Classical Arabic was done by Fischer (2002), presenting all aspects of CA grammar, including the assimilation process (which we can find in the Phonology Section of his book). Another name noted is Cardoso (2000), who quotes that assimilation process in CA is restricted to coronal consonants only. Either Fischer or Cardoso offers their own theories and analyses, and so do any other scholar interested in this topic. Still discussing Classical Arabic, there is one question we need to examine. Many scholars consider that the Qur'an was revealed in Classical Arabic. Can we say, therefore, that *Tajwid* is part of Classical Arabic sound system? Let us try to discuss in brief some findings and opinions from some people about this issue in the next part of this chapter.

The above studies may lead us into a fact that language is unique and distinctive. As we learn in the cases shown previously, none of the studies shows exactly similar results although they are in the same particular topic, voice assimilation for instance. This is why the writer employs the word 'never-boring' in our subchapter title as to emphasize this point. In fact, as long as language develops and changes, scholars may always find enough fields to conduct research, to explore and reveal linguistic phenomena.

II.2 *Tajwid* and the Language of the Qur'an

Lexically, as mentioned in the previous chapter, *Tajwid* means 'betterment' or 'improvement' (Online Qur'an Reciter, 2002). In usage, *Tajwid* means articulating every letter from its articulation point and giving the letter its rights and dues of characteristics (Qutton, 1973: 188). Rights of the letters are its

required characteristics that never leave it, i.e. the features of the letter, while the dues of the letters are its presented characteristics that are present in it some of the time, and not present at other times. i.e. *Idgham*, *Madd*, etc (Qutton, 1973: 188-189). Another scholar, Abdul-Aziz (2002), defines *Tajwid* as reciting every letter correctly, i.e. from its proper origin of pronunciation coupled with its stipulated attributes. Every definition offered leads to the same meaning, notably, reciting every sound and words in the Qur'an in correct manner, as close as possible to the recitation of Prophet Muhammad at the time of Revelation.

Why do we have to be so careful in reciting the Qur'an? Due to the vastness of the Arabic language, any small mistake in pronunciation of a letter or word may change the meaning of that word. For example, the word '*Qalb*' (with q) means 'heart', if read '*Kalb*' (with k), it will mean 'a dog'. *Tajwid* is not like all other subjects which we are able to separate from the Qur'an, but instead *Tajwid* and the Qur'an work hand in hand. When a letter changes in a word, the word changes—which eventually leads to the changing of the sentence and meaning of the Qur'an. Therefore, since the early days of Islam and its final form *Tajwid* has been carefully taken care of and become an important part in the study of the Qur'an.

The formulation of *Tajwid* science and its maintenance are actually efforts to preserve the recitation or (in broader word) the language of the Qur'an. It was Ali Ibn Abi Thalib, who noticed that the Qur'anic recitation of some of the Arabs slightly changed due to different dialects, and then ordered for the rules of recitation to be recorded in a universal form (Barakatullah, 2000). Not only the

recitation method, but also has the Qur'an itself been memorized since the time of *Shahabah* (Prophet's Companions) up to present days as to preserve its purity. Therefore, we can find the language of the Qur'an remains unchanged, and the language itself has been a valuable source for linguistic research in Arabic language.

There are several opinions and issues develop regarding the language of the Qur'an. Many scholars, such as Beeston (1970) and Newman (2001), suggested that the Qur'an was revealed in Classical Arabic (CA), because the language used is relatively different and definitely older than the MSA (Modern Standard Arabic). Interestingly, Fischer insisted that the language of the Qur'an be not classical, yet even pre-classical! In his famous book, *A Grammar of Classical Arabic*, he stated that the language of the Qur'an frequently exhibited apparent differences from the language of the classical period, and therefore did not gain acceptance in prescriptive grammatical circles (2002: 1). As to assert his point, he further explained:

> Despite some modification, the structure of Classical Arabic, which had stabilized in the 9th century, has remained a genuine immutable standard. The description of classical arabic necessarily focuses on the language of the 'classical' period. This grammar treats above all this classical language. Insofar as it is possible from the current state of research, the 'pre-classical' and post-classical' languages are referred to as divergent forms. Deviations from the classical norm, which cannot be unequivocally identified

> as either pre- or post-classical, are designated 'non-classical' (2002: 2)
>
> It is difficult, however, to draw a precise boundary between the 'pre-classical' language of the pre- and early islamic corpus and the classical language of the philologically learned, because the early texts were widely known, learned, and admired (2002: 1).

Supporting Fischer's opinion, Sara (2002) from Georgetown University noted in his article, *Cavity Factors in Assimilation in Classical Arabic*, that the language of the Qur'an was the continuation of pre-Islamic Arabic, i.e. the only language available before the period of Classical Arabic. Because of this reason, he further explained, there are some rules or grammar in the Qur'an which cannot be classified as either Classical or Modern Standard Arabic.

There are still many other ideas and theories on the matter which seem unable to be settled. Therefore, if one asks, "Does *Tajwid* reflect the sound system of Classical Arabic?", the answer may be various, depending on one's opinion and reason. In spite of the debate on the matter, this thesis attempts to present *Tajwid* in the frame of the language of the Qur'an—a separate entity and context—regardless the taxonomy of Arabic language. The focus presented here is the concurrence of nasal assimilation and lengthening processes, which is commented by McCarthy (2003)—a linguist and Arabicist from University of Massachussets—in his correspondence with the writer as a special part of the Qur'anic performance.

II.3 The Sound Segments in *Tajwid*

As said by Fromkin and Rodman, knowing a language means knowing what sounds are in the language and how they are combined to produce meaning (1988: 31). One different sound may change the meaning or even make the word meaningless. In *Tajwid*, and perhaps in all audio and verbal system of languages in the world, sounds are very crucial. In fact, we can find topics in *Tajwid* which specifically discuss about sounds: how they are produced and what characteristics they have. The special topics are called Place of Articulation (مخارج الحروف) and Characteristics of Letter (صفاة الحروف). We need to discuss these topics first in order to grasp and understand the nature of sounds in *Tajwid*, before we go to our main discussion in the next chapter. In understanding how these Arabic sounds differ in the pronunciation, the writer will provide transcription by utilizing IPA symbols, one of internationally-recognized phonetic characters.

II.3.1 Places of Articulation (مخارج الحروف)

The articulation point of a letter is the place the letter is emitted, meaning a sound that comes out of the mouth relying on a specific place of articulation or an approximate one (Alwi, 1993: 4). According to Asy-Syeikh Ibn Jazary (cited in Alwi, 1993), an early *Tajwid* scholar, the points of articulation are in 17 places, but are then summarized into 5 places:

1. **The empty space in the mouth and throat** (الجوف /aljauf/) is the articulation point of three lengthening letters:

a. *Alif* (ا) preceded by a letter with *fathah* (ـَـ), for example:

قَا - كَا - خَا /qɔ:/ , /ka:/, /χɔ:/

b. *Wawu* (و) with a *sukoon* (ـْـ) preceded by a letter with a *dhammah* (ـُـ) :

For example : خُوْ - نُوْ - أُوْ (/ʔu:/, /nu:/, / χu:/).

c. *Yaa'* (ى) with a *sukoon* (ـْـ) preceded by a letter with a *kasroh* (ـِـ)

For example : بِيْ - لِيْ (/li:/, /bi:/).

As we can see from the examples, unlike other letters, these lengthening letters do not have specific places where they are pronounced from.

2. **The throat** (الحلق /halq/) has three articulation points :

a. **The deepest part of the throat** (اقصى الحلق /ʔaqṣɔlhalq/) is the furthest part from the mouth and the closest to the chest. Two letters articulated from here are *hamzah* (ء) همزة (which manifest as glottal sound /ʔ/), and *haa'* (ه) هاء (/ha:ʔ/).

b. **The middle part of the throat** (وصط الحلق /wasṭulhalq/) lies half way in between the beginning and the end of the throat. The two letters that are emitted from here are *haa'* (ح) حاء /ha:ʔ/ and *'Ain* (ع) عين /ʕajn/.

c. **The closest part of the throat** (ادنى الحلق /ʔadnalhalq/) is the beginning of the throat, or the closest to the mouth. Two letters are articulated from this area, that are *Ghain* (غ) غين /ɢɔjn/ and *Kha'* (خ) خاء /χɔ:ʔ/.

2. **The Tongue** (اللسان /ʔallisaːn/) is the articulation place of eighteen letters:

- (ق) قاف /qɑːf/, articulated from the deepest part of the tongue in the area which comes in contact with the uvular.
- (ك) كاف /kaːf/, articulated from the deepest part of the tongue and the area of soft palate (velum).
- (ج) جيم /ʤiːm/, (ش) شين /ʃiːn/, unlengthened (ي) ياء /jaːʔ/, produced from the middle of the tongue which collides with the hard palate.
- (ض) ضاد /ɖɑːḍ/, articulated from one or both sides of the tongue and from the molars and the gum area next to the molars. Articulating this letter from the left side is easier and most commonly used than the right side.
- (ل) لام /laːm/, (ن) نون /nuːn/, and (ر) راء /rɑːʔ/ , articulated from the anterior of the tongue with the alveolar.
- (ت) تاء /ʈaːʔ/, (د) دال /ɖaːl/, (ط) طاء /ʈɑːʔ/, articulated from the top side of the tip of the tongue and the gum line of the two front upper incisors.
- (س) سين /siːn/, (ز) زاي /zaːj/, (ص) صاد /ʂɑːḍ/, emitted from the tip of the tongue and the back plates of the alveolars.

- (ث) ثاء /θa:ʔ/, (ذ) ذال /ða:l/, and (ظ) ظاء /ðʷɔ:ʔ/, emitted from the tip of the tongue and the bottom edges of the two top front incisors.

3. **The Two Lips** (الشفتان /ʔaʃʃafaṭa:n/)

The lips have two articulation points for four letters :

- (ف) فاء /fa:ʔ/, articulated between the inside of the lower lip and the tips (or edges) of the two top incisors.

- (م) ميم /mi:m/, (ب) باء /ba:ʔ/, (و) واو /wa:w/ are three letters that are articulated from the two lips, but they do not all share the same mechanism in articulation : the (م) ميم /mi:m/ is articulated by closing the two lips together; the (ب) باء /ba:ʔ/ is articulated by closing the two lips together, but with stronger closing than the /mi:m/; the (و) واو /wa:w/ is articulated by forming a circle of the two lips, without the the two lips meeting completely.

4. **The Nasal Passage** (الخيشوم /ʔalχɔiʃu:m/)

From the hole of nose towards the inside of the mouth, there is one articulation point, the *Ghunnah*. The letters are *Nun* with *Shaddah* (نّ) /nn/ and *Mim* with *Shaddah* (مّ) /mm/. They are nasal sounds coming from the nasopharynx without any influence from the tongue. If you hold your nose closed you will not be able to produce the *ghunnah* sounds.

The following picture shows these articulation areas :

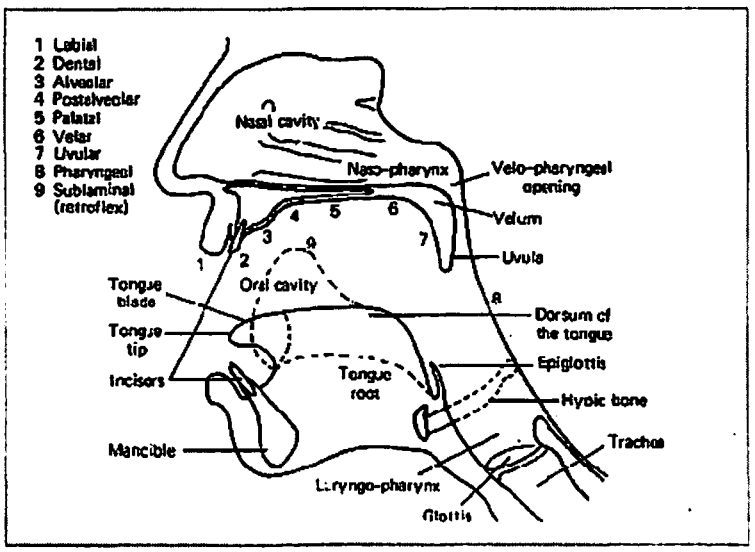

Figure 2.1. Articulation places as stipulated in *Tajwid* (taken from Online Qur'an Reciter, 2002)

II.3.2 Characteristic of the Letters/Features (صفاة الحروف)

The characteristics of the letters are what differentiate one letter from others. In Linguistics, these characteristics are called *features*, i.e. articulatory components or properties (Davenport and Hannahs, 1998). If the student of the Qur'an is not applying all the characteristics of the particular letter he/she is articulating, it will sound either like a totally different letter, or will sound incorrect at the very least. Therefore, it is apparent that the study of the characteristics of the letters plays an important part in *Tajwid*. Indeed, the application of the characteristics of letters differentiates a good Qur'an reciter from an average one.

In *Tajwid*, there are total 18 characteristics of letters. Every letter may have more than three characteristics all together. The following is short

explanation of each characteristic as compiled in one of *Tajwid* books by Sibawaihi (1967):

1. ***Al-Hams*** الهمس (/ʔalhams/), defined as running on of breath when pronouncing the letter. This means that there is a flow of breath when any of the letters having the characteristic of *Al-Hams* are pronounced. The letters that have this characteristic are the letters found in the group: فحثه شخص سكت (/f/, /h/, /θ/, /h/, /ʃ/, /χ/, /ṣ/, /s/, /k/, /ṯ/. One letter to note in this group is the letter (ف) فاء /fa:ʔ/. If it is pronounced like the /f/ in English, there will not be the needed air flow. The English /f/ is articulated from the edges of the two upper front teeth and middle of the lower lip (Jones, 1988). The Arabic *Faa'* (/fa:ʔ/) in *Tajwid* has the same articulation point, but the part of the lip used is more towards the inside. If a slight adjustment is made in the placement of the two front teeth on the lip, the air flow will then occur and the proper sound for the *Faa'* which includes air flow will be heard.

2. ***Al-Jahr*** الجهر (/ʔaljahr/), the opposite of *Al-Hams*, is imprisonment of running on of breath when pronouncing a letter. The letters that have the characteristics of *Jahr* are all the rest of the Arabic letters that do not have the characteristics of *Hams*.

3. ***Al-Syiddah*** الشدة (/ʔaʃʃiḍḍah/) is defined lexically as the strength. In *Tajwid*, it is defined as the imprisonment of the running of sound when pronouncing or stopping a letter. The letters of the Arabic alphabet that have the

characteristic of *Al-Syiddah* are those in the group: اجد قط بكت (/ʔ/, /ʤ/,/ḍ/, /q/, /ṭ/, /b/, /k/, and /ṯ/).

4. ***Al-Rikhwah*** الرخوة (/ʔarrixwah/) is the running of sound when pronouncing or stopping a letter. The letters having this characteristic are all the rest of the Arabic letters except those of *Al-Syiddah*, and *A-Tawassuth*.

4. ***Al-Tawassuth*** التوسط (/ʔaṯṯawassuṯ/) is the sound being partially imprisoned and partially running when pronouncing the letter. The letters of *Al-Tawassuth* are those found in the group لن عمر (/l/, /n/, /ʕ/, /m/, /r/).

5. ***Al-Isti'la*** الاستعلاء (/ʔalʔisṯiʕlaʔ/) is defined lexically as elevation. In *Tajwid*, it is defined as elevation of tongue to the roof of the mouth when pronouncing a letter. The letters that have this characteristic are those in the group: قظ خص ضغط /χ/,/ʂ/, /ɖ/, /ɢ/, /ṭ/,/q/, /ðˠ/. When pronouncing any of these seven letters, the posterior portion of our tongue needs to elevate up to the roof of the mouth (in the soft palate area).

6. ***Al-Istifal*** الاستفال (/ʔalʔisṯifaːl/) is dropping or lowering. It means lowering of the tongue from the roof of the mouth when pronouncing a letter. The letters of *Al-Istifal* are all Arabic letters, except those of *Al-Isti'la*.

7. ***Al-Ithbaq*** الاطباق (/ʔalʔiṯbaːq/) is defined lexically as adhering. The applied *Tajwid* definition of *Al-Ithbaq* is the adhesion of most of the tongue to the roof of the mouth when pronouncing the letter. The letters that have the characteristic of *Al-Ithbaq* are: ظاء, طاء, ضاد, صاد (/ðˠɔːʔ/,/ʈɔːʔ/,/ɖɔːɖ/, /ʂɔːɖ/).

9. ***Al-Infitah*** الإ نفتاح (/ʔalʔinfiṭaːħ/) is defined as separation. It means separation between the tongue and the roof of the mouth when pronouncing a letter. The letters of *Al-Infitah* are the remaining letters in the Arabic alphabet except the four letters of *Al-Ithbaq*.

10. ***Al-Idzlaq*** الإذلاق (/ʔalʔiðlaːq/) is defined lexically as the tip. More specifically, it means relying on the tip of the tongue or the mouth in pronouncing letters. The letters of *Al-Idzlaq* are فر من لب (/f/, /r/, /m/, /n/, /l/, /b/).

11. ***Al-Ishmat*** الإصمات (/ʔalʔiṣmaːṭ/) means not relying on the tip of the mouth or the tongue when pronouncing letters. The letters having this characteristic are all Arabic letters except those of *Al-Idzlaq*.

12. ***Al-Shofir*** الصفير (/ʔaṣṣɔfiːr/) means the occurrence of an extra sound that is similar to the sound of a bird emitted from between the two lips (or teeth) when pronouncing a letter. The letters are (س) سين /siːn/, (ز) زاي /zaːj/, (ص) صاد /ṣɔːḍ/.

13. ***Al-Lin*** اللين (/ʔalliːn/) means emitting the letter from its articulation point with ease without effort from the tongue. Its letters are (و) واو (/waːw/), (ي) ياء (/jaːʔ/), and (ب) باء (/baːʔ/).

14. ***Al-Inhirof*** الإ نحراف (/ʔalʔinħiɾɔːf/) means drifting of the sound of letter as it leaves its articulation point due to the incomplete running caused by the turning of the tongue. The letters of *Al-Inhirof* are (ل) لام (/laːm/) and (ر) راء (/ɾɔːʔ/).

15. ***Al-Takrir*** التكرير (/ʔaṯṯakri:r/) is repeating something once or more, meaning the trilling of the tongue when pronouncing a letter. Its letter is (ر) راء (/rɔ:ʔ/). This characteristic of the (ر) راء (*Raa'*) is studied because the possibility of its happening exists. This is not a desired characteristic. In fact we must avoid trilling our tongue when we pronounce the *Raa'*. We learn this characteristic to avoid applying it, unlike the other characteristics.

16. ***Al-Tafasyi*** التفشى (/ʔaṯṯafaʃʃi:) means spreading of the air in the mouth when articulating a letter. The letter of Al-Tafasyi is (ش) شين (/ʃi:n/).

17. ***Al-Istitholah*** الإستطاله (/ʔalʔisṯiṯɔ:lah/) is defined lexically as lengthening. In applied *Tajwid*, it is defined as the pushing of the tongue from the back of the mouth to the front, until the tip of the tongue lightly touches the gum line of the two top front incisors. The letter of *Al-Istitholah* is (ض) ضاد (/ɖɔ:ḍ/).

18. ***Al-Qolqolah*** القلقلة (/ʔalqɔlqɔ:lah/) means shaking. In *Tajwid*, it refers to the bouncing of sound when the *Qolqolah* letters are stopped. The letters are قطب جد (/q/, /ṭ/, /b/, /ʤ/, /ḍ/).

Many people agreed that Arabic science had originated from an intense interest in the study of religious works (Bakalla, 1984). In the case of Arabic phonetics, it grew out from an immense enthusiasm on the part of the Muslims for reading, understanding, and articulating the sounds of the Qur'an correctly (Abdul-Aziz, 2002). A distinguished study was made by Khalil Ibrahim Semaan (1962), emphasizing the importance of *Tajwid* as a source in phonetic research.

The works of Sibawaihi and Al-Khalil—two major *Tajwid* and linguistic scholars—are of great influence on Semaan in arranging phonetic features based on the theories of sounds in *Tajwid*. Semaan in Bakalla (1984) arranged the Arabic sounds according to what is called the ascending order. That is to say that the sounds which are articulated in the larynx are described first, then gradually followed by the sounds which sounds of articulation are further forward along the vocal tract until the bilabial sounds are finally reached. The arrangement containing phonetic features is as follows :

Arabic Letter	Approximate Phonetic Value	IPA Symbol
ع	Voiced pharyngeal fricative	ʕ
ح	Voiceless pharyngeal fricative	ħ
ه	Voiceless breathed fricative	h
خ	Voiceless uvular fricative	χ
غ	Voiced uvular fricative	ɢ
ق	Voiced uvular stop	q
ء	Glottal stop	ʔ
ك	Voiceless velar stop	k
ج	Voiced palatal stop	ɟ
ي	Voiced palatal glide	j
ش	Voiceless palatal fricative	ʃ
ض	Voiced alveo-palatal stop emphatic	ɖ

ص	Voiceless alveo-palatal fricative emphatic	ʂ
س	Voiceless alveo-palatal fricative non-emphatic	s
ز	Voiced alveo-palatal fricative non-emphatic	z
ط	Voiced alveo-dental stop emphatic	t̪
ت	Voiceless alveo-dental stop non-emphatic	t̪
د	Voiced alveo-dental stop non-emphatic	d̪
ظ	Voiced interdental fricative emphatic	ðʷ
ث	Voiceless interdental fricative non-emphatic	θ
ذ	Voiced interdental fricative non-emphatic	ð
ر	Voiced retroflex liquid	r
ل	Voiced alveolar lateral	l
ن	Voiced alveolar nasal	n
ف	Voiceless labio-dental fricative	f
ب	Voiced bilabial stop	b
م	Voiced bilabial nasal	m
و	Voiced bilabial glide	w

The above features will come in handy for our phonological analysis in the next chapter. By employing these a rticulatory components and set of rules, we will know what sound segments undergo changes and how they change in certain environment of a phonological context.

II.4 Phonological Rules

When working in Phonology, we may often need to make a phonological rule to account for some phenomenon or pattern observed in a language. We have mentioned in passing about phonological rules in our preliminary chapter. However, the writer feels necessary to explain more about rule, its function, and how to write a phonological rule, as we will try to make some rules later in the third chapter. The following overview on phonological rules is given in brief but as clear as possible.

II.4.1 Rules : Means of Representation

In the preceding chapter, we have learned that we can perform two levels/forms of representations: (1) the underlying/basic form or phonemic representation, which contains information concerning the set of contrasts in the phonology of a language; and (2) the surface form or phonetic representation, which specifies the particular positional variants (allophones) which realize the underlying phonemes (Davenport and Hannahs, 1998: 101). We also know that these two levels of representations are linked by using rules. By means of rule, as further stated by Davenport and Hannahs, we can represent processes, and characterize the alternations that result from them (1998: 114). In a more detailed way, we can use phonological rules for:

1. specifying detailed realization of phonemes as allophones, or describing sound alternations that regularly occur in speech
2. making modifications where morphemes come together

3. specifying historical changes, for example the change of [p] to [f] in German (Gasser, 1998).

In formulating phonological rules, there are several steps or guidelines we need to keep in mind. One interesting and simple guideline is suggested in an article by Jennifer L. Smith (2003) as follows:

1. **Identify and describe the phenomenon**

The first task is to identify the phenomenon that you want to account for with your rule. Ask yourself the following questions:

- What segments, or classes of segments, are changing?
- How are the segments changing? What sound properties or features are involved?
- Under what circumstances are the segments changing? What are the crucial factors in the segments' environment that determine where they will or will not change?

2. **Make your analysis as general as possible**

Always try to describe the phenomenon in terms that are as general as possible. For example, do not assume that a rule will be specific to an individual morpheme unless there is actual evidence showing that this is the case. Also, state any natural classes in terms that are as general as is consistent with the data.

3. **State a formal phonological rule**

Now that we know what we need our rule to do, it is only a matter of applying our formal phonological tools correctly. We will use our set of features to pick out the appropriate natural classes and indicate what changes are taking

place. We will also use what is known as formal rule notation to express our rule. We will discuss more this formal rule notation in the next section.

3. Give derivations to show that your rule is correct

To prove that you have written a rule that works, you need to show it in action. Apply it to one or two examples from the data set where it should apply, and show that it works correctly in each case. This kind of demonstration of how rules apply to examples from a language is known as a **derivation**.

This simple guideline will come in handy if we are trying to formulate a phonological rule. We will try to follow these steps in our rule formulation in the next chapter.

II.4.2 Writing Formal Rule Notation

From the above overview on phonological rules, we may say that rules are shorthand notations for various sound relationships. Whatever formal expression we employ, the rules show that some items become some other items in some certain environment (Davenport and Hannahs, 1998). In making rules, it is our task to specify the items affected, the alteration that takes place, and the environment in which the alteration occurs. All components involved—segments affected, phonetic change, and phonemic environment—must be included in the statement of a phonological rule (Fromkin and Rodman, 1988). How then can we state these rules in the most explicit and simple way?

With the development of linguistic theory, technical notations began to be used to simplify the theoretical statements and to reveal the sound pattern of a

language (Fromkin and Rodman, 1988). The most common way of expressing such a formal statement is:

(2.1) A → B / C

The formula in (2.1) states that A becomes B in the environment of C. A is the segment that is changing, B is the segment that is being changed, and C is the environment in which the change occurs (Smith, 2003). There are other symbols accompanying C, for instance the dash (__) which represents the position of the item affected by the rule. Other symbols or notations that frequently appear in phonological rules, as suggested by Davenport and Hannahs (1998), are:

1. **Parentheses Notation**

Parentheses ( ) are used to enclose optional elements in rules.

(2.2) A → B / X(Y) __ Z

The rule in (2.2) states that A becomes B either between X and Z or between XY and Z. The optional element is Y, which may or may not be present. Although the rule (2.2) is written as a single rule, it in fact contains two rules, that are A → B / X __ Z and A → B / XY __ Z. By employing parentheses, we can have both rules written as one rule only. An example of rule illustrating the use of parentheses is l-velarisation in English:

(2.3) /l/ → [ɬ] / __ (C) #

The rule in (2.3) shows that /l/ becomes velarised in the environment of either at the end of a word or before a consonant at the end of a word. So words like 'fall' and 'silk' have a velarised l, unlike the word 'love' which has a clear l.

2. Braces

Brace notation represents an either/or relationship between two environments in the same process.

(2.4) $A \rightarrow B / \left\{ \begin{matrix} X \\ Y \end{matrix} \right\} \_\_ Y$

The rule in (2.4) shows that A becomes B either between X and Y or between Z and Y. There are actually two rules captured, that are A → B / X __ Y or A → B / Z __ Y. Unlike parentheses, braces means not optional, so either X or Z must be present. The use of braces can be seen in glottalising final t in English like the following:

(2.5) /t/ → [ʔ] / $\_\_ \left\{ \begin{matrix} C \\ \# \end{matrix} \right\}$

Here we can say that ' t ' appears to have an either/or environment : either before the end of a word or before another consonant. For example in the word 'petrol' [pɛʔɹɔl] and 'pet' [pɛʔ].

3. Superscripts and Subscripts

Superscripts and subscripts numbers, which are associated with variables, show minimum and maximum numbers of segments appropriate to a given environment. The superscript indicates the maximum number of elements allowable for the rule to apply, and the subscript indicates the minimum number of elements required for the rule to apply. Let us see the following rule example:

(2.6) /i/ → [ɪ] / C __ C_1^1

According to this rule /nis/ would surface as [n ɪ s], but /nist/ would be [nist] because /nist/ exceeds the maximum number of consonants specified.

4. Alpha-notation

Alpha-notation is very much useful if we want to make feature-matching generalisation. In the case of nasal assimilation in English, for example /n/ becoming /n/, /m/, and /ŋ/ in the word 'indeed', 'unproductive', and 'include', the segments [d], [p], and [k] share the values of [± ant] and [± cor] with [n], [m], and [ŋ]. Let us observe the rule:

$$(2.7)\quad /n/ \rightarrow \begin{bmatrix} \alpha\ ant \\ \beta\ cor \end{bmatrix} / \_\_ \begin{pmatrix} +\ cons \\ \alpha\ ant \\ \beta\ cor \end{pmatrix}$$

By using two Greek letter variables (represented by α and β) we can match the value of these features between the obstruent and the nasal. Using both α and β allows each feature to be specified independently without affecting other features.

The use of devices like parentheses, braces, and other notations as mentioned above allows us to formulate rules of greater complexity. These special symbols are part of theory of Phonology (Fromkin and Rodman, 1988). They do more than abbreviate long statements. They provide a way to express the generalizations of a language.

Besides the linear rule formulation as discussed above, there is also non-linear rule writing. The later seems to offer richer representation, especially in explaining complex phonological processes, which often cannot be sufficiently done by linear rule formulation. One type of non-linear representation is called **feature geometry**, a more widespread representation on the notion of features as potentially independent, organizing the features in terms of a tree structure (Davenport and Hannahs, 1998: 135).

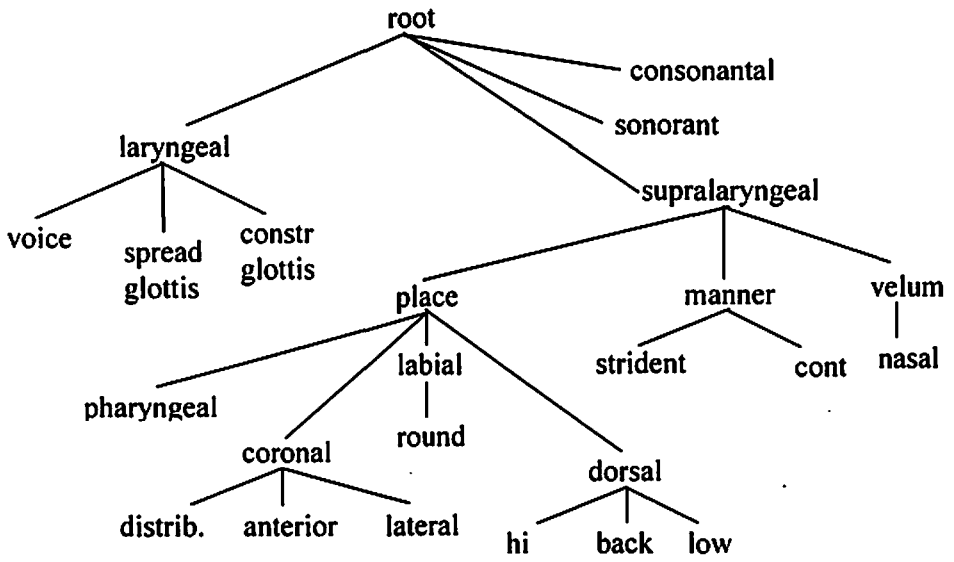

Figure 2.2 McCarthy's feature tree showing the organization of features in non-linear representation (taken from McCarthy, 1988)

As further explained by Davenport and Hannahs, the **root** is a 'holding position'; **nodes** are the rest of the features associated to the root, giving specifications to the segment in question (1998: 135). In this type of representation, we only reveal the features that are crucial for the characterization of the segment. For example, since /b/ is a labial sound, we do not need to specify values for any of the features dependent on other nodes which concern place of articulation, namely [coronal] and [dorsal] (see Figure 2.2). Besides the general terms like root and node, we may also classify various levels of feature (or **node types**) in such trees: nodes like [place] and [manner] are **class nodes** or **organising nodes**, while those like [anterior] and [hi] are **terminal nodes** (Davenport and Hannahs, 1998: 137). Our rule may refer to any type of node, but if we mention a class node, it means that we include all nodes dependent on that class node.

CHAPTER III
DATA PRESENTATION AND ANALYSIS