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Syllabification Nature in Bedouin-North Yemeni Arabic dialects (Bed-NYAD)

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Abstract--This study is concerned with discussing the syllable structure or the syllable nature of the bedouin or nomadic north Yemeni Arabic dialect spoken mainly in five governorates namely, Aljawf, Tihamah, Amran, Sa'adah and Ma'rib, in Yemen referred to in the study as Bed-NYAD. The main goal of this paper is to show how many syllables are there in such dialects of the Yemeni Arabic and how they differ from those NYAD. Data collection was achieved with the help of a digital recorder. Many speakers of Bed-NYAD have been recorded for the sake of proving our claim that Bed-NYAD have different syllable nature from those other Yemeni dialects of Arabic. The finding of the study revealed that Bed-NYAD have five main types CV, CV:, CVC, CVCC and CV:C while NYAD have only three types of syllables CV, CVV, CVC and the semisyllable C.

Keywords---bedouin, constraint, syllabification, syllable, Yemeni Arabic.

Introduction

Arabic language is the language of more than 455,487,424 million people (Jenkins, 2000). Arabic has three various fundamental forms: Classical Arabic

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(CA henceforth), Modern Standard Arabic (MSA henceforth) and Dialectal Arabic (DA henceforth). The Classical Arabic that is the language of the Holy Qur'an. The other variety is called Modern Standard Arabic (MSA) (in Arabic, FUSHAA). It is modified form of CA. MSA is the official language of the Arab world. MSA is hugely taught in schools and universities within all the countries that use Arabic. According to [Abu-Mansour \(1990\)](#), Arabic largely sticks to the grammatical standards of Quranic variety and employs much of the same vocabulary. [Abu-Mansour \(2015\)](#), writes that Arabic is preferred in all contemporary Arabic written publications as well as used as the language of the Arabic media in the broadcast. The third variety is the dialectal Arabic which is the most commonly used throughout the whole Arab countries. In fact, Arabic is like a wide term indicating to many varieties of Arabic. According to [Yeou \(2004\)](#), the geographical-based dialectal Arabic, is used as native variety. Each and every country of the Arab world is distinguished by its own colloquial dialect of Arabic that differs from one country to another and even in the same country, the dialect has several subdialects that differ in many aspects. Interestingly, some dialects can be spread to another country and based on this linguistic closeness ([Aichert & Ziegler, 2004](#); [Cholin et al., 2006](#)).

Dialectology of Arabic in general, Yemeni Arabic in particular, continued for longer time as the least known, and this is obvious in the huge gap in Arabic sociolinguistics. [Behnstedt & Woidich \(1985\)](#) provided dialect atlas produced by Syrian and Yemeni regions, however the large places of the Arabophone region are unknown, namely, the Arabian Peninsula ([Versteegh, 2001](#)). In Arabic dialect geography, the Yemeni dialects used to be the most neglected ones. According to [Mohammed Shaghi \(2010\)](#), “there is no unified dialect in Yemen, but there are various dialects each of which differs from the other and the colloquial Yemeni Arabic needs more research to clarify such variations”. Recently, Yemeni dialects have gained little attention as narrates “the dialects of Yemen used to be one of the most neglected topics in Arabic dialect geography”. Behnstedt, P., & Woidich, M. (1985) proposed eleven main dialects (with subdialects) in the north of Yemen (the former Yemen Arab Republic, before 1990) and they were like: 1-*Tihamah*, 2 - *k dialects* (including the 'southern mountainous places), 3-*Hujariyah*, 4a. *Jabal Washah*, 4b. *Almahaabisah*, 5a. *Northern High Plateau*, 5b. *Arrhab*, 6. *Sana'a and the Central Mountains*, 7. *Southern High Plateau*, 8. *Ma'rib and Albaydaa' Dialects*, 9. *Northern High Plateau*, 10. *Aljawf Dialects* and 11. *Sadah* In addition to these 11 types in the northern part of Yemen, five main dialects in the southern part of Yemen (the former People's Democratic Republic, before 1990) categorized by [Behnstedt & Woidich \(1985\)](#), as: *Lahej*, *Aden*, *Gayl Habbaan*, *Abyan* and *Hadramawt*. Most of the previous studies on Yemeni Arabic including [Greenman \(1979\)](#); [Behnstedt & Woidich \(1985\)](#); [Versteegh \(1993\)](#); [Versteegh \(1997\)](#); [Kiparsky \(2003\)](#); [Watson \(2007\)](#), examined the aspects of the Yemeni dialects on the base of their own understanding, but this study is done with the support of recorded data across the five governorates in the north part of the country ([Ali et al., 2001](#); [Sporry, 1991](#)).

So far, there is no exact and complete classification of all Yemeni dialects of Arabic and what is mentioned above forms considerable attempts and efforts that help a lot getting a clear view of how Yemeni dialectology of Arabic is linguistically rich. What can be said briefly is that Yemeni Arabic has several main dialects and

subdialects. The most important of these dialects can be geopolitically divided in this study into two main groups northern and southern dialects. Common North dialects include San'ani-Amarni, Thamari, Hajji-Mahweeti, Tihami, Sa'adi, Taizzi and Ibbi and the South dialects include Adeni, Hadthrami, Yafi'ii-Dhale'ii, Abyani, Mahri and Socotri. This classification can be said to linguistic closeness in the sense that one can find some common phonological features shared by two dialects, for example Hajji and Mahweeti have many in common to share (Treiman & Danis, 1988; Treiman & Zukowski, 1990).

In addition to the three-way classification above, there is a very important group of Yemeni Arabic dialects having much in common which can be called Bedouin dialects (a variety spoken by nomadic people). Bedouin dialects are used in many scattered parts of Yemen, to name but few, in the north governorates like (Shiharah, Harf-Sofyan and Algaflah in Amran governorate, Sa'adah), middle governorates like (Shabwah, Aljawf and Ma'rib) and the south governorates like (Abyan, Hadhramout, and Shabwah). Each of these Yemeni dialects groups has its own distinctive vocabulary and phonological patterns. Accordingly, the current research offers an attempt to shed light on a narrow phonological aspect, the syllable structure across the bedouin north-Yemeni Arabic dialects (Bed-NYAD), mainly in Aljawf, Ma'rib, Tihamah, Amran and Sa'adah (Senghas, 2005; Grattan et al., 2003).

Objective of the study

The aim of the present paper is investigate the syllable types in the bedouin north-Yemeni Arabic dialects (Bed-NYAD), mainly in Aljawf, Ma'rib, Tihamah, Amran and Sa'adah.

Literature review

Syllable structure of Yemeni Arabic dialects has gained the consideration of many scholars (Kiparsky, 2003; Watson, 2007; Bamakhramah, 2010; Al-Shuaibi, 2010; Sameer, 2011; Yaari et al., 2012; Damom, 2013; Bareq & Mirgane, 2017; Naji Naji Al-Mamri, 2018). Kiparsky (2003), provided syllable structure and syllabification of many Arabic dialects, with a little reference to the north Yemeni dialects of Arabic. He came out with an important classification of Arabic dialects composed of three categories based on their licensing of semisyllables: CV-dialects, which ban semisyllables, VC-dialects that allow semisyllables only postlexically and C-dialects that permit semisyllables lexically and postlexically. According to Kiparsky (2003), the north Yemeni dialects of Arabic group with CV-dialects allowing no semisyllable to take place. But that was true to some Yemeni dialects of Arabic but not true to some other Yemeni dialects of Arabic that do not confirm to Kiparsky (2003), classification including the dialects under study Bed-NYAD which are claimed to join C-dialects for having the same features of Kiparsky, P.'s (2003) C-dialects in the sense that Bed-NYAD allow the medial cluster -CCC- as one of the criterial for allowing semisyllables as is proved throughout this study which is carried out following the same prospective of OT (Dechter et al., 1991; Jaffar & Maher, 1994).

Watson (2002); Watson (2007), devoted a space for the examination of syllable structures and syllabification besides many other aspects like word stress lexical, post lexical phonology of Yemeni and Cairene Arabic since these are the most visited places and most studied varieties of Arabic by Watson at the time of writing this book. Following Kiparsky (2003), classification of Arabic dialects and syllabification, Watson (2007), found out that Kiparsky's classification ignored some other dialects that can come between CV-and VC-dialects. That is why she extended the three-way typology (CV, VC and C) by Kiparsky (2003), into four-way typology (CV, VC, C and Cv). Cv- refers to the dialect that can share the characteristics of CV-dialects and VC-dialects: for example, Yemeni dialects like San'ani, Yarimi, Ibbi and Yafe'i are Cv-dialects. Like the CV-dialect group, Yemeni Cv-dialects never allow semisyllables neither lexically nor postlexically. In this regard Watson (2007), was supported by Alqahtani (2014), study of the non-final superheavy syllables in Najdi Arabic (NA) and affirmed that the non-final superheavy syllables (CV:C,CVCC) when associated with initial-consonant affix, they motivate epenthesis. This study along with Kiparsky (2003), study are hugely referred to in the whole research paper as they form two main references for dialects under investigation (Akzam et al., 2021; Issa et al., 2021).

The syllable structure of Zabidi dialect of Yemeni Arabic, one of the northern Yemeni dialects of Arabic, was studied by Al-Shuaibi (2010) within an autosegmental analysis investigating the syllable coda deletion in such dialect. The study assumed that, the loss of a coda consonant leads to a lengthening of the nucleus of the syllable, cannot be applied to Yemeni Tihami Dialect (YTD) and many other languages. In addition, the disyllabic words, mainly verbs, have a close-syllable ending but the underlying form has an open-syllable ending. Yaari et al. (2012) studied issues concerned with the features of vowel deletion in Yemeni dialects of Arabic (ADY) within of Optimality Theory (OT) who found out that all the dialects of Yemeni Arabic welcome the deletion of short vowels word initially except one dialect that is Aden dialect of Yemeni Arabic. They found out that the short vowel deletion occurs not only in verbs but also in pronouns. Unfortunately, the study did mention the status of semisyllable and how the syllables are parsed after the vowel deletion. In addition, the dialects studied by them were not bedouin dialects and mainly spoken in the cities that can be CV-dialects of Yemeni Arabic which show difference to Bed-NYAD, as C-dialects, in terms of licensing semisyllable (Vocroix, 2021; Suwija et al., 2019).

Damom (2013), accounted for the syllables and syllabification in Zabidi dialect of Yemeni Arabic. According to this study, Zabidi dialect has different syllable types to that of Modern Standard Arabic CV, CV: CVC, CV: C and CVCC. Zabidi dialect shows that it enjoys five types of syllables and several syllable patterns: CV, CV: CVC, CV: C, CVCC, CCVC, CCV: C, CCCVC and CCCV: C. The study enriched the phonological stock of Yemeni Arabic and contributed a lot to its advancement. The study contradicts the Tihamah Bed-NYAD in terms of the syllable types and licensing semisyllables which were ignored in such study by Damom (2013). Naji Naji Al-Mamri, M. J. (2018) conducted his study on the syllable structure along with the word stress of the Zabidi and Hajji dialects of Yemeni Arabic in OT. The study covered much of the details regarding the syllabification and syllable structure besides stress in these two dialects of Yemeni Arabic. The findings of the study revealed that, like many other dialects of Yemeni Arabic, Hajji and

Zabidi dialects have five normal types syllables CV, CV: , CVC, CV:C and CVCC. Again, such study never mentioned the deletion of vowel in such dialects that cause the semisyllable forming and it seems that such dialects break the medial -CCC- as CV-dialect that avoid semisyllable by an epenthetic vowel to the right of the unsyllabified mora as supported (Kiparsky, 2003; Watson, 2007). These dialects proved to be CV-dialects of Yemeni Arabic which do not confirm to dialects under study, Bed-NYAD, in terms of the syllable types and licensing semisyllables.

Bamakhramah (2010), within Optimality Theory, analyzed the syllable structure, with a special focus on superheavy syllables, in three Arabic varieties; namely Classical Arabic (CLA) and Hadhrami Arabic (HA), one of Yemeni dialects, along with Meccan Arabic (MA). The study analysis proved that HA has unique syllable structure and syllabification nature. The study also revealed that HA prefers the single onset/coda constraints (*COMPONSET and *COMPCODA, respectively) and avoids the syllable trimoraicity (*3 μ) for a better syllable structure and syllabification analysis in these dialects of Arabic and in this case it is similar to Bed-NYAD but it is different from Bed-NYAD in parsing the unsyllabified moras by banning semisyllables by employing an epenthetic vowel to the right of the unsyllabified moras as the habit of the CV-dialects of Yemeni Arabic showing an approval to what Kiparsky, P. (2003) claimed about CV-dialects. The study revealed that the mora-sharing is not allowed in such dialects of Arabic.

Sameer (2011), investigated the syllabification and syllable types of Taizi Yemeni Arabic (TYA) in the frame of the Optimality Theory. He argued that TYA has six types of syllables (CV, CCV, CVC, CV: CVCC) rather than most of the Arabic dialects who have five types of syllables, but the same syllabification patterns to those found in MSA. Interestingly, it was found that TYA is closer to many Egyptian Arabic dialects than its closeness to other Yemeni dialects like San'ani and Tihami. Such dialectal differences justified Watson (2007), extension of Kiparsky (2003), classification of Arabic dialects who grouped those Yemeni dialects (San'ani, Tihami, Yafi'ii) as Cv-dialects, distinguishing them from CV-dialects with the lower case 'v'. However, such study demonstrated that TYA truly belongs to Kiparsky's CV-dialects and not to Watson's Cv-dialects in terms of not sharing mora and banning semisyllables.

The syllable structure of Amrani Yemeni Arabic (AYA), a CV-dialect of Yemeni Arabic, was studied by Bareq & Mirgane (2017) who examined possible syllabification patterns in respect to the sonority scales and syllable types. They found that AYA belongs to Watson's CV-dialects having a similar syllable structure to many Arabic dialects. Another result disclosed that AYA has five syllable types "(CV.CV:.CVC.CV: C and CVCC) carrying seven syllabification patterns (mono syllabic, disyllabic, tri-syllabic, tetra-syllabic, penta-syllabic, hexa-syllabic and Septa-syllabic" allowing no consonant clusters in onsets but coda can have clusters of maximally two consonants. What is noticed about this dialect of Yemeni Arabic is that YAY proved to be CV-dialect that does not allow semisyllable as all the segments get fully linked to syllables, showing no vowel syncope in all positions. The studies above dealt with some studies of the syllable structure of the north Yemeni Arabic dialects (NYAD), but in the current paper deals with the bedouin north Yemeni Arabic dialects Bed-NYAD which are

expected to show a difference in the syllable structure as detailed in the sections to follow.

Data and Methodology

Some words have been chosen to be spoken by five bedouin speakers coming from the same targeted areas, the same five targeted dialects of Yemeni Arabic (Bed-NYAD). Only four words are selected to be analyzed to represent the syllable types in Bed-NYAD. The researchers met the informants or speakers in many different places in India, in places like Mysore, Aligarh, Kerala and Pune who came to such places for purposes of study and some for medical care. The participants were recorded with the help of a recording device called 'ZoomH1-Handy-Portable-Digital-Recorder'. The speakers or the participants were told to speak the words in isolation for many times. Then the recordings were tabulated and organized with the help of the laptop. The words are presented in a table as spoken by Bed-NYAD speakers and accompanied by their English meanings as seen in the following table:

Table 1
Bed-NYAD words selected for analysis

Word	Meaning
<i>/ba.b.na/</i>	'our door'
<i>/ʃa:z.bih/</i>	'bachelorette'
<i>/g.bu:r/</i>	'graves'
<i>/sə.la.m.tək/</i>	'your safety'

The analysis is achieved with the help of a descriptive methodology using the tree-diagram, OT tables and the empirical Praat software. In the tree diagrams analysis, the constituents of the words are marked with the syllable and the semisyllable nodes. In the Optimality theory (OT), the word is put in a table in which the first column contains a number of possible outputs followed by a set of constraints in the other columns. Such constraints or parameters are ranked according to their hierarchy. The optimal or winning output, usually only one surface form or candidate, is the result of such constraints interaction with one another. In Praat analysis, one can see concretely how such syllabification and fragments of the words are displayed. Praat analysis reveals visually syllable and semisyllable boundaries, sounds boundaries and the other suprasegmental or abstract characteristics of sounds including intones, formants and frequencies that cannot be shown or explained with the help of other analysis approaches (Hashem & Muhi, 2021; Lutfi Hussein & Ali Dawood, 2018).

Discussion and Analysis

In terms of onset, coda, light and heavy syllables, the syllable structure in Yemeni dialects of Arabic is similar to the pattern of syllables in many Arabic varieties. Many researchers have investigated the syllable structure of certain Yemeni Arabic dialects and discovered that some subdialects differ from one another in their syllabification patterns. For the sake of demonstration, the researchers mention some previous studied syllable types in different Yemeni dialects

including Amrani, Taizi, Hajji, and Zabidi. These dialects are non-bedouin dialects of Yemeni Arabic, and they are assumed to have slightly different syllable types to the ones in Bed-NYAD. Furthermore, they proved to have a difference in their syllable patterns as explained below.

Types of Syllable in Amrani dialect of Yemeni Arabic

This Yemeni dialect of Arabic is regarded as a non-bedouin dialect. It has proved to have a specific type of syllables. According to [Bareq & Mirgane \(2017\)](#), Amrani dialect of Yemeni Arabic carry a number of five types of syllables: CV, CV:, CVC, CV:C and CVCC. Such types of syllables form many patterns as demonstrated in the following table presented by [Bareq & Mirgane \(2017\)](#):

Table 2
Types of Syllable in Amrani dialect of Yemeni Arabic

No	Syllable type	Word	Meaning
a	CV	/ra.si/	'my head'
b	CV:	/lee/	'for me'
c	CVC	/dim/	'cat'
d	CV:C	/ra:s/	'head'
e	CVCC	/kalb/	'dog'

Types of Syllable in Tazi dialect of Yemeni Arabic

This variety of Yemeni Arabic shows somehow different syllabification to Yemeni dialects and also to MSA according to [Sameer \(2011\)](#) who argued that Taizi dialect enjoys six types of syllables on contrary to many other Yemeni dialects of Arabic which have only five types syllable. His study revealed the following types of syllables and syllable patterns:

Table 3
Types of Syllable in Tazi dialect of Yemeni Arabic

No	Syllable type	Word	Meaning
a	CV	/sa.ma/	'sky'
b	CV:	/sa.li/	'happy'
c	CVC	/ser/	'secret'
d	CV:C	/saar/	'he went'
e	CVCC	/seʔr/	'price'
f	CVCCC	/maa.qe.ltʃ/	'you (MASC SG) did not say'

In terms of syllable patterns, it is clear from the table above that this dialect of Yemeni Arabic has a different syllabification pattern than the Amrani dialect of Yemeni Arabic. The syllable pattern, CVCCC, denotes a distinction in that it is absent from Amrani dialect. [Watson \(2002\)](#), also used the identical syllable /ma:.gu.ltʃ/ 'I, you did not say' in her study of San'ani dialect of Yemeni Arabic. But none of the two scholars explained how such a final tri-consonant cluster might be broken since they believed it was ultimately possible in Yemeni Arabic

dialects with CV-dialects. However, in several other Yemeni Arabic dialects, such as Bed-NYAD, such a syllable does not exist.

Types of Syllable in Zabidi dialect of Yemeni Arabic

According to Zabidi dialect of Yemeni Arabic, one of the NYAD, has different syllable types to that of Modern Standard Arabic CV.CV:CVC. CV: C and CVCC. Zabidi dialect shows that it enjoys around five types of syllables and several syllable patterns. [Naji Naji Al-Mamri \(2018\)](#), conducted a study on the syllable types of the Zabidi dialect of Yemeni Arabic, one of the NYAD. He assumed that such dialect differ from those of Modern Standard Arabic as it offers CV.CV:CVC.CV:C. and CVCC as illustrated in the following table.

Table 4
Syllable Types in Zabidi dialect of Yemeni Arabic

No	Syllable type	Word	Meaning
a	CV	/bu/	'father'
b	CVCV	/damu/	'blood'
c	CVCC	/daftru/	'copybook'
d	CVC	/safargalu/	'quince'
e	CV:CVCV:	/talfazyuunaatu/	'television'

Although the syllable types of the Zabidi dialect of Yemeni Arabic appear to be comparable to those of the Amrani dialect of Yemeni Arabic, they are not expressed effectively or clearly in this table by the same researcher. There are five types: CV. CV:CVC. CVCC and CV:C having different patterns. What can be seen here also is that this dialect allows having superheavy syllables which is a feature of CV-dialects of Yemeni Arabic.

Types of Syllable in Hajji dialect of Yemeni Arabic

Hajjah dialect of Yemeni Arabic has a five-syllable fundamental syllable structure as explained by [Naji Naji Al-Mamri \(2018\)](#), which revealed that such dialect the five normal types syllables CV, CV:, CVC, CV:C and CVCC just like many other Yemeni non-bedouin dialects of Yemeni Arabic. This can be illustrated as in the following table by [Naji Naji Al-Mamri \(2018\)](#):

Table 5
Types of Syllable in Hajji Dialect of Yemeni Arabic

No	Syllable type	Word	Meaning
a	CV	/wa/	'and'
b	CV:	/jee/	'come'
c	CVC	/nar/	'fire'
d	CV:C	/dʕa:r/	'neighbor'
e	CVCC	/sahl/	'easy'

Like Amrani and Zabidi dialects of Yemeni Arabic, Hajji Dialect of Yemeni Arabic has the same syllable types including the superheavy CV:C and CVCC, the

syllables that are not welcomed in Bed-NYAD. Such syllabification resembles Kiparsky (2003); Watson (2007), classification of Arabic dialects. However, it has been found that such classification does not fit with some dialects, for example, the bedouin north Yemeni dialects of Arabic, Bed-NYAD, which is under study show different syllable types and syllabification. The following section shows the possible syllable types of Bed-NYAD. The syllable kinds of Bed-NYAD are shown in the next section.

Syllable types in Bed-NYAD

The study of Yemeni Arabic dialects spoken by Bedouins, mainly in the north part of Yemen, could be rare. This is the first research to propose that Bed-NYAD, as a C-dialect of Yemeni Arabic, licenses semisyllables and has distinct syllable types than the dialects indicated in the above sections. As previously stated, Bed-NYAD dialects including Aljawf, Ma'rib, Tihamah (Hais, Aljarrahi, and Almansouriah), Amran (Shiharah, Algafalah, and Harf-sufyan) and Sa'adah differ from the dialects above in that they have three syllable types in addition to a semisyllable as shown in the table below:

Table 6
Types of Syllable in Bed-NYAD

No	Syllable Type	Word	Meaning
1	CV	/ba:.b.na/	'our door'
2	CVC	/ʃa:.z.bih/	'bachelorette'
3	CV:	/g.bu:.r/	'graves'
4	C (semisyllable)	/sə.la:.m.tək	'your safety'

The above table contains the words that are selected for the analysis. It shows the number of syllables in Bed-NYAD. These words and syllable types can be analyzed in details in three ways: tree-diagram, OT tables and finally with the help of Praat. Explaining them one by one as follows:

Tree-diagram analysis

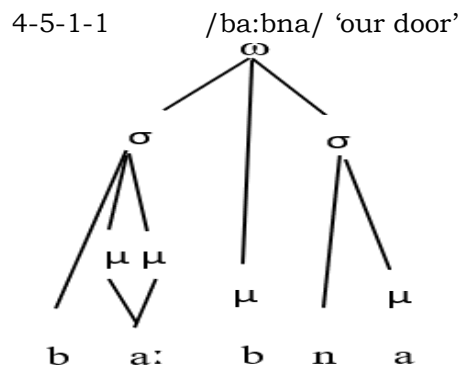


Figure 1. /ba:.b.na/ 'our door' in Bed-NYAD

In the figure above, there are only two full syllables, the first heavy syllable /ba:/ and the final /na/ which are separated by an isolated consonant /b/ forming a syllable structure of CV: C and CV. If the word is spoken in NYAD, it would be as in /ba.ba.na/ forming a structure of three complete syllables CV: CV and CV. But this form does not allow consonants to cluster medially as all the syllables to get perfectly parsed. This is the typical case in CV-dialect of Yemeni Arabic in which retains all the vowels leaving no space for semisyllables. Unlike NYAD, Bed-NYAD as in this figure, deletes such vowels as in the examples above resulting in a medial consonants cluster /bn/. If the first consonant /b/ in this cluster joins the preceding superheavy syllable /ba:/, it makes it trimoraic syllable which is not accepted in Bed-NYAD. It also cannot be linked to the following final syllable /na/ as it will form a complex onset in the final syllable which is also not welcomed. Then, /b/ is treated in OT as a semisyllable that is linked to the higher prosodic word which is not subject to any foot and syllable size constraints (Kiparsky, 2003).

5-5-1-2 /ʕa:.z.bih/ 'bachelorette'

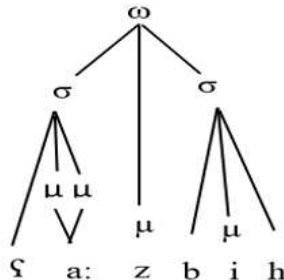


Figure 2. /ʕa:.z.bih/ 'bachelorette' in Bed-NYAD

The second word /ʕa:.z.bih/ has also two full syllables and one semisyllable. The targeted syllable here is the final syllable /bih/ forming CVC structure. It has also one medial semisyllable that is formed due to the syncope of the high short vowel /i/ as the word in NYAD (CV-dialects); /ʕa:.zi.bih/. When this vowel gets syncopated, a bi-consonant cluster takes place /-zb-/. If the first consonant /z/ joins the preceding syllable, the syllable will be rejected as it violates the foot size constraints. Thus, the cluster gets splitted by making first one a semisyllable and the last as onset to the following syllable because no syllable starts without an onset in Arabic language, according to Watson (2002), in general and in Bed-NYAD in particular.

5-5-1-3 /g.bu:.r/ 'graves'

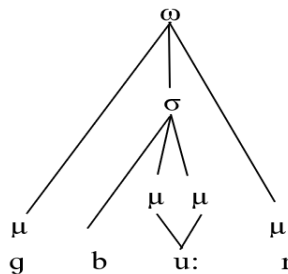


Figure 3. /g.bu:.r/ 'graves' in Bed-NYAD

The figure above contains a lexical word as spoken in Bed-NYAD. It is obvious that the /g.bu:.r/ 'graves' has only one full medial heavy syllable /bu: / forming CV: structure or syllable type. The remaining are two unsyllabified consonants, one initial /g/ and one final /r/, the two unsyllabified consonants are parsed as semisyllables. Both of the initial semisyllables /g/ and /r/ in the two examples are licensed at the word or lexical level, they are caused by the bi-consonant cluster /gb/ incurred by the vowel /u/ deletion. The final semisyllable is resulted by the requirement of the undominated foot size constraint Ft-Bin which forces superheavy syllables to leave their final consonants unsyllabified directly linked to the higher prosodic word as semisyllables in C- and VC-dialects.

5-5-1-4 /sə.la:.m.tək/ 'your safety'

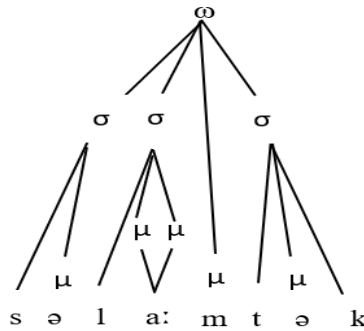


Figure 4. /sə.la:.m.tək/ 'your safety' in Bed-NYAD

By looking at the figure above, it is realized that this word has three full syllables /sə.la:.m.tək/ and nasal unsyllabified consonant before the final syllable. This unsyllabified consonant is regarded as a semisyllable since it comes after a heavy syllable, bimoraic syllable, which cannot host any more consonants as per requirement of the undominated constraints Ft-Bin and *3μ in Bed-NYAD. With this section, the tree-diagram ends and what comes next is the OT analysis of the data.

OT analysis

In OT analysis, the Optimal Theory main perspectives are followed. The main idea of OT is, as already mentioned above, the function of constraints which interact to decide the most optimal candidate of the outputs organized all in one table. This table contains constraints like Reduce, Ft-Bin, *3μ, *COMPLEX, ONS, License-μ, Max-μ and *COD. the arrow \longrightarrow indicates that the change in the word pronunciation form the non-bedouin north Yemeni Arabic dialects NYAD to the bedouin north Yemeni Arabic dialects and the pointer symbol \Rightarrow refers to the optimal or winning candidate or output as shown as follows:

Table 7
/ba:.ba.na/ ‘our door’ CV:.CV.CV in NYAD \longrightarrow /ba:.b.na/ CV:.C.CV in Bed-NYAD

Input: /ba:.ba.na/	Reduce	Ft-Bin	*3 μ	*COMPLEX	ONS	License- μ	Max- μ	*COD
☞ a. /ba:.b.na/					*	*	*	
b. /ba:.ba.na/	*							
c. /ba:.b.a.na/	*	*	*		*			*
d. /ba:.bna/				*			*	

This table includes four candidates competing for winning the candidacy. As we can see in the table, they are all ruled out except the first one (a). The candidate (a) satisfies the first four top ranked constraints out of which the most important one is Reduce which incurs the deletion of the high vowel /a/ in the second syllable /ba/ resulting in unsyllabified consonant /b/. This candidate or output has the syllable structure of CV:.C. CV the last of which is the targeted type of syllable in this example. Such consonant stands alone as a semisyllable that is linked to the prosodic word and not to the syllable node. The last candidate satisfies the constraints Reduce, Ft-Bin and *3 μ but violates *COMPLEX and thus gets eliminated. The candidates (b) is not loyal to Reduce and (c) violates Reduce, Ft-Bin and *3 μ and for these violations they are excluded from the candidacy.

Table 8
/ʃa:zi.bih/ ‘bachelorette’ CV:.CV.CVC in NYAD \longrightarrow /ʃa:.z.bih/ CV:.C.CVC in Bed-NYAD

Input: /ʃa:zi.bih/	Reduce	Ft-Bin	*3 μ	*COMPLEX	ONS	License- μ	Max- μ	*COD
a. /ʃa:zi.bih/	*							*
b. /ʃa:z.ih/	*	*	*		*			**!
c. /ʃa:.zb.ih/				*	*	*	*	**!
☞ d. /ʃa:.z.bih/					*	*	*	*

As seen in the table above, the candidate (d) is the winner or the most optimal candidate as it satisfies the equally highly-ranked constraints Reduce, Ft-Bin, *3 μ and *COMPLEX. It has two full syllables and one medial semisyllable. They form these types: CV:.C.CVC super heavy syllable, semisyllable and final heavy syllable. The last syllable is the targeted syllable type in this example. The candidate (a) stands second in optimality but it is eliminated as it violates the undominated faithful constraint Reduce that requires a high vowel deletion. Candidate (b) is totally unwelcomed and ruled out for its fatal violation of the undominated high-ranked Reduce. The constraint License- μ is ranked lower in C-dialects as it prohibits affiliation of semisyllable to the high prosodic word. The other constraints ONS, Max- μ and *COD become more dominated and much violated as not preferred constraints in Bed-NYAD in general.

Table 9
 /gʊ.bu:.r/ ‘graves’ CV.CV:C in NYAD \longrightarrow /g.bu:.r/ C.CV:C in Bed-NYAD

Input:	Reduce	Ft-Bin	*3 μ	*COMPLEX	ONS	License- μ	Max- μ	*COD
☞ a. /g.bu:.r/					**!	*	*	*
b. /gʊ.bu:.r/	*	*	*			*		*
c. /gʊb.u:r/	*				*			**!
d. /gʊb.u:r/				*	*	*	*	**!

Before seeing the outputs, the input word has two syllables and one final semisyllable: CV.CV:C in the table above. This is the case of NYAD. As we see, it has four competing outputs or candidates. Out of these four, (a) is the most optimal output or surface form because it satisfies all the requirement of the dominant constraints Reduce, Ft-Bin, *3 μ and *COMPLEX though it violates the remaining low-ranked constraints. It forms the syllabification welcomed by Bed-NYAD in which the second syllable represents the targeted syllable in Bed-NYAD: C. CV:C, which is a superheavy syllable. This the case of Bed-NYAD as C-dialects that license an initial semisyllable by breaking the initial CC- into semisyllable /g/ and /b/ as an onset of the following syllable, and finally by isolating the last consonant /r/ from the same syllable as a semisyllable to satisfy the highly ranked constraints Ft-Bin *3 μ . Candidate (b) causes the most violations of the three top ranked constraints and as a result it is excluded for the optimality race. Candidate (c) stands second in the race for incurring the least constraint violation, but it is ruled out for violating the undominated Reduce. Candidate (d) stands the least optimal output for militating against the constraint the *COMPLEX which bans having initial cluster which can be two adjacent semisyllables but such adjacent semisyllables are never allowed in all dialects.

Table 10
 /sə.la:.ma.tək/ ‘your safety’ CV.CV:C.CV.CVC in NYAD \longrightarrow /sə.la:.m.tək/
 CV.CV:C.CV.CVC in Bed-NYAD

Input:	Reduce	Ft-Bin	*3 μ	*COMPLEX	ONS	License- μ	Max- μ	*COD
/sə.la:.ma.tək/								
☞ a. /sə.la:m.a.tək/	*	*	*		*			**!
b. /sə.la:.m.tək/					*	*	*	*
c. /sla:.mat.ək/				*	*			**!
d. /sə.la:.ma.tk/				*			*	*

The example word above contains four complete syllables forming CV.CV:C.CV.CVC as spoken in NYAD. But this syllabification changes when the word is spoken in Bed-NAD to three full syllables and one semisyllable located before the final syllable formed as CV.CV:C.CV.CVC. The targeted semisyllable here in this example is incurred by the deletion of the vowel /a/ in the third syllable. As we see the possible inputs or candidates in the table, out of all the four candidates in the table above, only candidate (b) wins the competition because it does not fail the highest ranking constraints by making the nasal sound /m/ a semisyllable after it loses its nucleus that is retained in NYAD form of the same word as in /sə.la:.ma.tək/. Candidate (a) presents a syllabification that is rejected by the dominant constraints in Bed-NYAD. Candidate (c), unless it hosts an initial two

adjacent semisyllables, it would win the candidacy race. Candidate (d) is like (c) but it hosts the cluster finally in the coda instead and thus eliminated from competition of optimality. Thus, Bed-NYAD prefers the construction that carries semisyllable /sə.la:.m.tək/ CV.CV:.C.CVC to /sə.la:.ma.tək/ CV.CV:.CV.CVC. Last syllable.

Praat analysis

Praat analysis concretes the abstract explanations above. It gives a clear image of how the words are syllabified generally and how semisyllables are formed due to the vowel deletions. It clears the doubt of such syllabification. It also shows the supramental features of sounds like vowel and consonant cues, frequencies, length and strength of sounds, the boundaries of sounds, syllables and words and names of dialects. Three Bed-NYAD are mentioned in praat analysis: Ma'rib, Aljawf and Tihamah. Praat analysis offers many syllabification features as seen in the following figures or spectrograms:

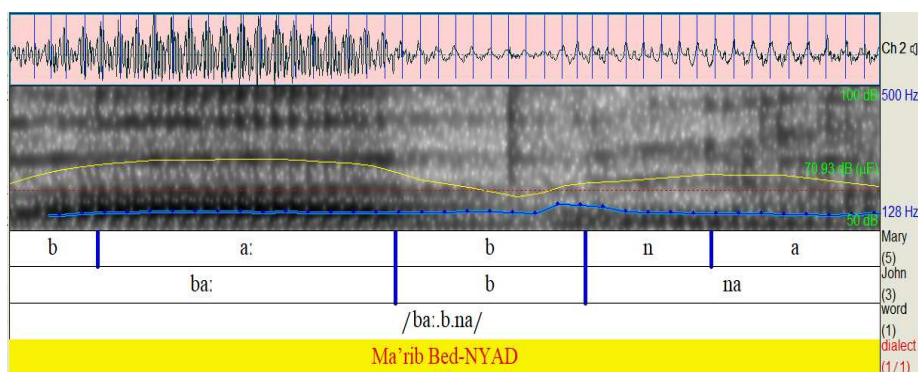


Figure 5. Spectrogram 1 /ba:.b.na/ 'our door' in Ma'rib Bed-NYAD

The example above is the same example analyzed in the two previous ways above. Here, we named the dialect, Ma'rib Bed-NYAD which proves its capability of hosting the targeted syllable type of CV in the final position as seen in the figure or spectrogram above CV:C.CV. As it is noticed in the image above; the word /ba:.b.na/ is spoken in NYAD as /ba:bə.na/ but in Ma'rib Bed-NYA the short vowel /ə/ is simply dropped which consequently results in the medial cluster of -CC- /bn/. No vowel cues appear in the spectrogram after the plosive bilabial consonant /b/. It is only followed by another nasal consonant /n/ showing consonants cues that are less in darkness. This cluster of consonant shows a dipping in the pitch and frequency as assuring the nonexistence of vowel. Therefore, the first consonant /b/ of this cluster is parsed as a semisyllable linked directly to the prosodic word.

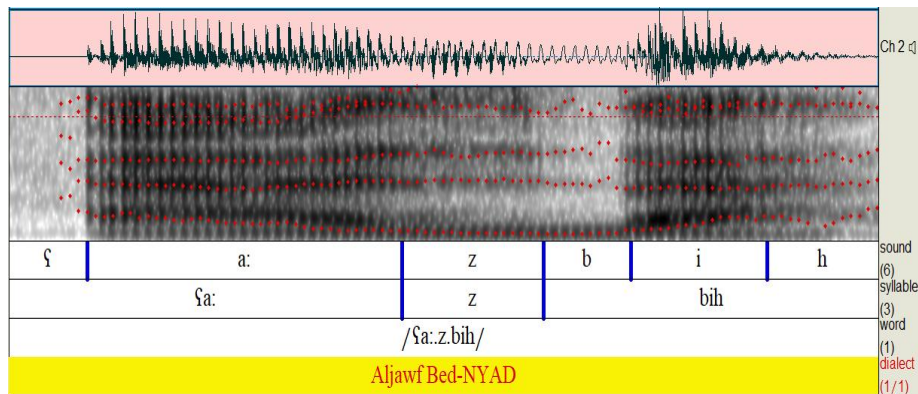


Figure 6. Spectrogram 2 /ʃa:.z.bih/ 'bachelorette' in Aljawf Bed-NYAD

The spectrogram above presents the word /ʃa:.z.bih/ as spoken in Aljawf Bed-NYAD. It is realized that there are two full syllables separated by a medial isolated or unsyllabified consonant /z/ which is called semisyllable. The initial CV: syllable is the targeted syllable we seek here in this example. Such syllables in the lexical phonology are caused to appear in all VC- and C-dialects according to [Watson \(2007\)](#), and this is due to the licensing of the third mora /z/ as a semisyllable in C-dialects, like Bed-NYAD. This is imaged by a grey area after /z/ which is immediately followed by the whitish cues of the bilabial /b/ and not by any black vowel cues as a sign of having no vowel at all.

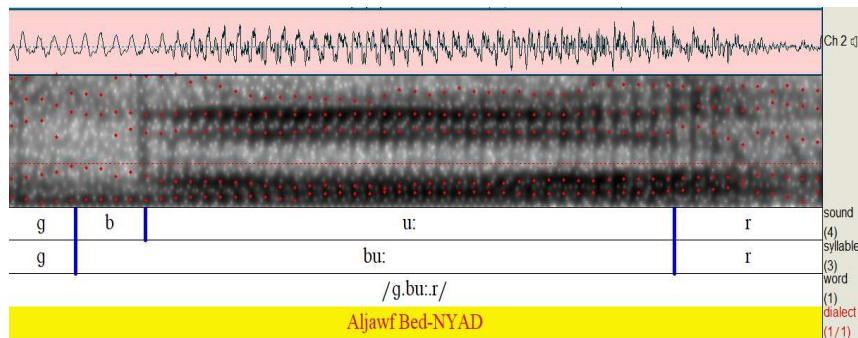


Figure 7. Spectrogram 3 /g.bu:.r/ 'graves' in Aljawf Bed-NYAD

As seen in the spectrogram above, the word has only one medial complete syllable and two semisyllables located initially and finally forming C.CV:.C the second of which is the targeted syllable type in Bed-NYAD. The same word is spoken differently in NYAD where the short back vowel /u/ is retained looks /gu.bu:.r/ and it forms the structure CV.CV:C. Looking at the spectrogram, we see no vowel cues after the first consonant /g/ and what comes only is the reflection of the bilabial plosive /b/. The vowel deletion results in having a bi-consonant cluster CC- which is not accepted in Arabic language in general and in C-dialects, like Bed-NYAD, in particular. To avoid such cluster, Bed-NYAD considers the initial consonant as an initial semisyllable and the second one as an onset of the following syllable with the help of *COMPLEX.

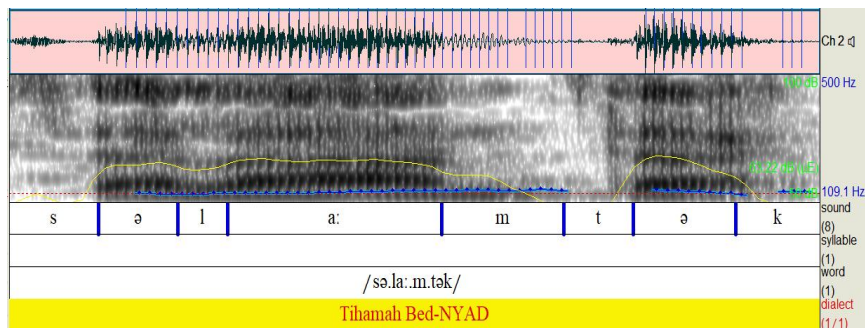


Figure 8. Spectrogram 4 /sə.la:.m.tək/ 'your safety' in Tihamah Bed-NYAD

The Praat spectrogram above shows the reflection of the word /sə.la:.m.tək/ which comprises three full syllables and one semisyllable /sa.la:.m.tək/ forming CV.CV:.C.CVC, the medial semisyllable is the one we seek here to prove that it is available in Bed-NYAD. The spectrogram shows no dark space or vowel cues after the nasal consonant /m/ and this means that there is no vowel at all after it. What comes after /m/ is the whitish cues of the consonant /t/ forming a complex onset of the final syllable /mt/ which is not forbidden in Arabic in general and in Bed-NYAD in particular by the highly ranked constraint *COMPLEX. The unsyllabified /m/ cannot also be affiliated to the preceding syllable as it violates Ft-Bin constraint which bans trimoraicity of syllables. Therefore, the best way for treating such single unsyllabified consonant is rendering it semisyllable as followed in OT.

Finding and Conclusion

According to the analysis of data in this paper, it was found out that Bed-NYAD differ from the other Yemeni Arabic dialects in the sense that they have three main syllables types: CV, CV: and CVC in addition to a semisyllable C. The superheavy syllables CV:C and CVCC or CCVC have no room in Bed-NYAD which break these superheavy syllables into heavy syllables and a semisyllable C. This semisyllable is, according to Kiparsky (2003), an unsyllabified mora or consonant connected to no syllable by the higher prosodic word. These classifications, however, did not cover all Yemeni Arabic dialects. For example, Bed-NYAD can be C-dialects since they license semisyllables lexically and postlexically as in the case of Kiparsky (2003), classification that give special focus on the initial and medial consonant clusters.

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