SYLLABLE STRUCTURES OF MOROCCO: 
A COMPARISON OF SYLLABIFICATION IN MOROCCAN DARIJA AND TASHLHIYT BERBER

Linguistics and Languages Thesis 
by 
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In every language around the world, words consist of syllables, units of organization in speech that were represented in writing systems even before individual sound segments were depicted as alphabetic symbols. Moroccan Berber languages spoken in the Central Atlas region of Morocco have been particularly noted for their syllables and words with neither vowels nor sonorants. Examples include /tfktstt/ “you gave it” and /tkkststt/ “you took it off.”

Moroccan Arabic, which has a long history of interaction with Berber dialects, is noted for the collapse of its short vowels, and is audibly more consonant heavy than other dialects of Arabic.

In this thesis, I seek to find possible similarities between the syllabification system of the Tashlhiyt Berber dialect and that of Moroccan Arabic. In order to do this, I will explore both systems of syllabification, and compare the two. To help determine what can be seen as a syllable I will look into poetry and songs from the two languages.

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Section 1: Introduction

In this thesis, I examine syllabification in two of the major languages of Morocco. The first, Tashlhiyt Berber, is a Berber dialect, which would have been spoken within regional tribes in Morocco before Islam and Arabic spread to the Maghreb. The second, Moroccan Darija, also known as Moroccan Arabic, is a dialect of Arabic that would have arrived with the religion spreading from the Middle East, and interacted with the existing languages to become what it is today. Tashlhiyt Berber has grown more popular in linguistic studies this decade [Vergnaud, Hall, et al. (1979), Hyman (1985), Prince and Smolensky (1993)] but there remains a fairly small amount of information available on it. However, it has been especially noted due to its frequent consonant clusters, prompting studies on what sounds can function as the nucleus of a syllable, and if vowel sounds are necessary to the language [Vergnaud, Hall, et al (1979)]. Currently, research leans towards the conclusion that any consonant has the ability to act as the nucleus of a syllable in Tashlhiyt, but other opinions remain present. This paper will attempt to come to a single conclusion about the structure of a syllable in Tashlhiyt Berber.

However, rather than focusing solely on Tashlhiyt, I hope to start by considering previous methodology used to consider syllabification in Tashlhiyt, and then carry on by attempting to apply these methods to Moroccan Darija. Moroccan Darija is well known in the Arab world for having a very different sound to it than other Arabic dialects. Although part of this is due to heavy interaction with French and Spanish, much of it can be attributed to the extremely consonant heavy nature
of the words. After looking at previous research on Tashlhiyt, I will turn my attention to this feature of the Arabic dialect, and try to determine whether consonant clusters can be pronounced without vowel sounds in the syllable nuclei as they can in Tashlhiyt. I will consider the data to decide whether syllabification in Darija acts in the same ways as Tashlhiyt, or if not, whether there are enough similarities to consider Tashlhiyt influence on Arabic as a source of Darija’s consonant heavy nature.

Section 2: An Overview of Moroccan Arabic and Tashlhiyt Berber

Moroccan Darija, is a member of the Semitic macro language Arabic. The language is spoken widely throughout Morocco, with about 21,048,900 speakers worldwide and 18,800,000 speakers within the country. Darija uses the same writing system as Modern Standard Arabic, however in official communications, such as television broadcasts and government publications, MSA is typically used as the literary language. Although there have been recent authors and poets who have experimented with publishing in Darija, this remains a more radical act of language reclamation, and most literature is written in MSA. For this reason, the language is listed as a vernacular, rather than an official language. Despite the fact that Darija is considered by native speakers to be a dialect rather than a language of its own, it should be noted that it differs from MSA in syntax, phonology, and lexicon (Dell and Elmedlaoui, 2002: 8), with many loanwords from Berber, French, and Spanish. Arabic speakers outside of North Africa, and even as close as Egypt, generally find
the language unintelligible. Code switching is incredibly common amongst Darija speakers, and can be seen with French, Berber, Spanish, or even a mix of all these languages.

Darija has 31 consonants and 3 vowels: /a/, /i/, and /u/, along with the epenthetic schwa [ə]. It is an SVO language, with verb affixes to mark person, number, and gender of subject. As is the case in all Arabic dialects, verbs consist of 3 or 4 consonant root plus a vowel melody. The consonants show the lexical meaning of the word, while prefixes, suffixes, and the vowel melody communicates tense, person, number, gender, and modes.

While Darija is written in the same script as Modern Standard Arabic, it has a few added letters for sounds. For example a kaf (ك) with three dots over it (گ) instead of the usual two represents the /g/ not present in Modern Standard Arabic. In this writing system, letters take on different shapes depending on whether they occur initially, medially, finally, or in isolation. The alphabet contains six letters that have only an isolated or final form, such that when written, they cannot be connected to adjacent letters. While most letters look quite similar in all forms, particularly in the initial and medial forms, some such as ha’, or /h/, differ considerably. Here, ha’ is written four times from right to left: once in its initial form, once in medial, once in final, and, after a space it is shown as an isolated letter.

While this is not a word, a similar series of ha’s might be seen in a text message or
Facebook comment to signify laughter.

Because the writing system for Arabic is classified as an abjad, meaning that most of its letters represent consonants, the representation of vowel sounds is one of the most interesting features of written Arabic. While the long vowels /a/ /i/ and /u/ are represented by the letters ‘alif, ya’, and waw respectively, the short vowels are represented by vowel diacritics, which are rarely used outside of books for children and foreign learners, and the Qur’an. Along with aiding pronunciation, the diacritic marks help to identify parts of speech.

Tashlhiyt Berber is one of three main Berber languages in Morocco, belonging to the Afro-asiatic language family. Its 3,000,000 speakers live mostly in the High-Atlas region of Morocco. There are several other Berber languages spoken throughout Morocco, which tend to be similar in grammar, but differ considerably in lexicon (Dell and Elmedlaoui, 2002: 6). Tashlhiyt has an extensive and very rich oral tradition of literature, particularly sung improvised poems (Dell and Elmedlaoui, 2002: 79), which will be further discussed in great detail. This being said, its orthography has been scattered. Through the last several centuries, Tashlhiyt was transcribed into the Arabic script, and for a short time usage of the Latin script emerged as well. Most recently however, the Tifinagh alphabet was reintroduced through the movement to assert Berber identity publically and politically by making it an official language in Morocco.

Tashlhiyt has 33 consonants, and like Moroccan Darija, three vowel phonemes: /i/ /a/ and /u/ (Benhallam, 1990: 177). Verbs use affixes to
communicate person, number, and gender of the subject. However, with respect to this thesis, what truly distinguishes Tashlhiyt from other languages is its potential for consonants, words, and even sentences with neither vowels nor sonorants.

Section 3: Defining a Syllable

Though the concept of a syllable is familiar to most speakers by partway through an elementary education, more precise linguistic definitions are in fact quite complicated and varied. Before commencing a discussion of what can be considered a syllable in Moroccan Darija and Tashlhiyt Berber, I will attempt to conflate some of the previous definitions into a single thorough one.

Put simply, syllables are the units by which we organize speech sounds into the rhythmic units that form words; every language has syllables. When broken down, a syllable is composed of an onset and a rime. The rime can be further broken down into a nucleus and a coda. All languages allow onsets, and some require every syllable to have one. Onsets can be complex, with more than one consonant within them, or simple, with just one C. The coda determines whether a syllable is open or closed. Closed syllables, those without codas, are marked relative to open syllables, and in languages where codas are allowed, the syllabification of VCV is still always V.CV, with the C between vowels occurring in the onset rather than in the coda. Every syllable also has a peak. According to the Sonority Sequencing Generalization, sonority rises through the onset, reaches its highest point at the syllable peak, and falls through the coda. While there are examples of words that violate this
generalization due to equal sonority between the fricative and the stop (such as in the English word *ask*) syllables which entirely violate this generalization are not allowed.

While it is possible to have a syllable without an onset, every syllable must have a rime. Similarly, it is possible to have a rime without a coda, but every rime must have a nucleus, which may or may not branch. Throughout many of the examples shown in this paper, the Coda will be marked by a D so as not to be confused with the C, which in this paper marks a consonant.

Syllables also have complexity and weight. A complex onset or rime contains more than one skeletal slot. However, the syllable onset never represents any moras. Instead, moras can be seen in the rime. Arabic makes a three-way distinction in syllable weight. One-mora syllables have one element in the rime, and are referred to as light syllables. Two-mora syllables have two elements in the rime, and are called heavy syllables, and three-mora syllables account for syllables with more than two elements in the rime and are said to be superheavy syllables (Crystal, 2008).

However, this analysis does not account for consonant geminates, which Tashlhiyt and Moroccan Arabic frequently use. The Arabic writing system even contains a w-shaped diacritic symbol called a *shadda* which is placed above doubled consonants. Examples of gemination in Tashlhiyt include:
(1) a. *il- lan- nrr*

b. *dar.ta.fl-.la*
Section 4: An intro to Berber songs: What are they and why are they useful to this study?

Although this paper will refer to the verses used for data in the songs as Tashlhiyt poetry, it is important to note the difference between the implications of the word *poetry* in English, and the actual characteristics of Tashlhiyt poetry. Generally, the verses are comprised of non-rhyming couplets sung on a repeated line of melody and made up on the spot by a single poet, while a group of singers provides backup (Dell and Elmedlaoui, 2002: 80). The result is a much more musical event than a poetry reading or slam, however there are also significant differences between the English concept of a song, and Tashlhiyt poetry. Western songs often take previously existing prose text and assign it to a melody, as in Handel’s *Messiah* or *The Star-Spangled Banner*, or vice versa as in *Twinkle Twinkle Little Star* or *Sweetly Sings the Donkey*. However, in Tashlhiyt poetry and music remain inseparable: The music was made to be sung to, and the words do not stand on their own without melody. (Dell and Elmedlaoui, 2002: 79).

Throughout the Arab world, this poetry plays a unique and powerful role. Historically, poetry was so important that it could be used not only to inspire warriors before battle or console them afterwards, but sometimes even became part of the battle itself. Poets were expected to improvise verses on the spot, and those
with a particular gift, known as a *lrrays*\(^{1}\) took on a role as a kind of minstrel, traveling and giving performances. (Horiuchi, 2001: 1) These poet-musicians held extremely important roles as the transmitters of cultural knowledge between individuals, villages, and tribes. Even now that the invention of radio and television has lessened the need for this kind of ambassador, those with true poetic talent are held in great esteem. In modern times, some poets have experimented with holding something akin to a poetry slam, and testing out their skills without the support of music. However, it should be noted that even these poets are subject to harsh and immediate judgment from listeners, who have the ability to call out a poorly formed line even as it’s being spoken. (Allen, 2012: Swarthmore lecture)

This tradition becomes incredibly useful when studying syllables in the Tashlhiyt language. Though speakers of many languages can automatically assign their own unique words to melodies they hear, Tashlhiyt speakers have an advantage in the activity since they have grown up learning to perform this way, or at least to listen with a critical ear. By analyzing text-to-tune alignment, we are provided with a great wealth of material to consider, all of which was done with serious yet automatic and natural attention to the breakdown of language into phonological units.

**Section 5: Methodology**

\(^{1}\) According to Dell and Elmedlaoui, (2002) the underlying form of this is /l-!rays/, the plural is *lrrays* and the feminine singular is *ltarrayst*. 
Like Dell and Elmedlaoui, I wish to introduce the method of text-to-tune analysis with an example of a song that will be familiar to the reader. Their paper uses *Au Clair de la Lune*, and while this French nursery rhyme is useful to show how the method works, I choose to use *Good King Wenceslas*, both to avoid adding any more languages to the paper and to hopefully provide something better known to my audience.

(2)

a. Good King Wenceslas looked out on the Feast of Steven

b. When the snow lay round about deep and crisp and even

These two lines of the carol are sung to the same thirteen note tune, with the seventh, twelfth, and thirteenth notes taking twice the length value of the others. Therefore, the tune can be laid out as follows, with ‘*’ representing an eighth note, and ‘o’ representing a quarter note:

(3) 1  2  3  4  5  6  7  8  9  10  11  12  13
     * * * * * * o * * * * o o

As Dell and Elmedlaoui note, certain features in lyrics are considered landmarks, and are matched with landmarks in a tune. As can be seen in *Good King Wenceslas*, English singing uses syllable nuclei as the landmark for aligning words and notes. If
we were to break down the words into their phonetic transcriptions, and align them with whichever respective note of the thirteen to which they belong, we would find that the ways in which the vocoids match the notes remain constant:

(4)

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. gud kir' wen sis los luikt aut on ðe fist ev sti ven</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>b. wen ði snou ler raund æ' baot dip æn krisp æn iv œn</td>
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</tbody>
</table>

However, the speaker need not have memorized the words in order to know how to sing them along with the tune. Given a set of made up words, such as:

(5) Rudolph woke up with a cold on a wintry morning

In most situations, speakers are able to apply new words to a previously heard tune without any practice or effort. Dell and Elmedlaoui (2002: 82) point out further evidence of this in published anthologies of songs, noting that “in each song, the text-to-tune alignment is indicated only for the first stanza," while remaining verses are written in paragraphs at the bottom.

Section 6: Tashlhiyt Berber

The following takes this method and applies it to the words of a song written in Tashlhiyt by Hmad Biyzmawn (as cited in Dell and Elmedlaoui 2002: 95):
The translation of the lyrics (Translation by Dell and Elmedlaoui 2002: 95) is as follows:

(7)

2. If peace does not settle, begin your journey
3. Where serenity comes to you, there you should take the ground to be your carpet.
4. It is a small poncho which our mistress has brought him

What stands out in this verse is the existence of obstruent nuclei. While Shaw (1996) analysed large amounts of poetry without finding any closed syllables with obstruent nuclei, and consequently stated that such syllables were excluded by Universal Grammar, Dell and Elmedlaoui (2002) are determined that this is not the case. As a concrete example, they provide a rhyme about the hoopoe from Tashlhiyt. As might be guessed, the first two lines are onomatopeias of a hoopoe’s call. The
words themselves are to the left, while the syllabic parse is on the right:

(8)

\[
\begin{align*}
\text{stu} & \quad \text{tutut} & \quad \text{s} & \quad \text{tu} & \quad \text{tu} & \quad \text{tut} \\
\text{stu} & \quad \text{tutut} & \quad \text{s} & \quad \text{tu} & \quad \text{tu} & \quad \text{tut} \\
\text{t-yla} & \quad \text{t-isn-t} & \quad \text{ty} & \quad \text{la} & \quad \text{ti} & \quad \text{snt} \\
\text{t-šqqa} & \quad \text{t-aka-t} & \quad \text{tšq-} & \quad \text{qa} & \quad \text{ta} & \quad \text{kat}
\end{align*}
\]

The first syllable of the last line in this ditty is tšq~, which is a closed syllable, with consonants on either side of the nucleus. The nucleus is decidedly not a sonorant, but rather /š/. Dell and Elmedlaoui (2002) propose that this returns to the difference between heavy and light syllables. Heavy syllables are more likely to be aligned with beats in the tune which are more musically prominent, but obstruent nuclei are phonetically difficult to use in carrying a musical note. Because of this, Elmedlaoui claims that the lines in (6) sounded “quite natural” (Dell and Elmedlaoui, 2002: 95) to him, despite the fact that the seventh syllable of the first two lines and the third syllable of the third line contain a complex rime with an obstruent nucleus. The words can be taken and applied to other tunes as well, however when tunes contain musically prominent notes that align with the third or seventh syllable, the words and music no longer match.
Section 7: Moroccan Darija

While many linguists have taken brief looks at Darija, my research has found surprisingly few thorough accounts of the grammar or phonology available. Those that are present however, tend to argue potentially interesting points, that would suggest a similarity between Darija and Tashlhiyt. Richard Harrell [1962] argues that Darija allows long series of voiceless syllables in a row. He (1962: 243) cites “an utterance of seven syllables of which the first six are voiceless in ordinary conversational delivery”:/xassak tfattas fossatta/. This type of long passage of voiceless syllables does not exist in Standard Arabic, so it seems likely that a connection between Berber and Moroccan Arabic may be visible within the syllable structure.

According to Shaw (2009), most previous work on syllabification in Moroccan Arabic can be split into two classes. The first, which he refers to as “the complex onset hypothesis,” (2009: 188) places complex onsets into one syllable, while the second, which he calls “the simplex onset hypothesis” (2009: 188) divides consonant strings into two syllables. For example, the word /kra/ ‘rent’ would be seen as monosyllabic by those who follow the complex onset hypothesis, but disyllabic ([k.ra]) by the simplex onset hypothesis. One way in which these hypotheses prove useful is in accounting for the e vocoids. As was mentioned in the overview of Darija, the language has three vowel phonemes, /i/, /a/ and /u/, as well as the unstable vowel [a]. This [a], sometimes referred to as an epenthetic schwa [Benhallam 1980: 181] is a short voiced vocoid whose presence may or may not be
part of the standard transcription. It has been analyzed as a short vowel (Harris 1942, Benhallam 1980, Keegan 1986) and as a transition between two consonants (Dell & Elmedlaoui 2002, Gafos 2002), but regardless of how the authors choose to label it, it is generally agreed that it does not occur between consonants in initial clusters (#CCV.) Given the complex onset hypothesis, it does not occur here because it is prevented in complex syllable onsets. In the simplex onset hypothesis, the vocoid's absence can be explained because it is prevented at syllable boundaries. One example seen in Dell and Elmedlaoui’s account of Moroccan Arabic is the phrase meaning ‘you were manhandled.’ The standard transcription in (9a), the underlying representation ie., before schwa epenthesis, in (9b), the pronunciation as recorded from Elmedlaoui’s speech in (9c), and the syllabic parse of this pronunciation in (9d) as given by Dell and Elmedlaoui (2002: 228) are given below:

(9)  
   a. ttekseftu  
   b. /tt-ksf-tu/  
   c. ttks@ftu  
   d. .t.tk.s@f.tu

Here, the @ symbol stands for a an audible object, or short voiced vocoid. The relevant part of this word is of course the medial syllable that contains the @. In this medial syllable we find a schwa that appears both in the standard transcription in (9a) and in the pronunciation in (9c), but not in the underlying representation. This syllable can be analyzed with the same trees as were used to describe Tashlhiyt.
These trees (Dell and Elmedlaoui, 2002: 228) show the two thought processes used by Dell and Elmedlaoui, and represent stages of analysis, rather than the final conclusion.

(10)
a.

In the first tree, the form is analyzed as containing four syllables, in which the third has a voiced vocoid. This would go along with the representation et.tek.ʃef.tu, so that there is a vowel in every syllable, and the lack of vocoids in the syllables t.
and .tk. are due simply to word-initial position or devoicing between voiceless consonants. Alternatively however, (10) b. represents the argument that the addition of vowels is only needed in special circumstances, and that it is in fact possible for the onset to be ʃ and the nucleus ʃ. The full argument made by Dell and Elmedlaoui (2002: 229) is stated: “Except under special circumstances, the short voiced vocoids which occur immediately after onset consonants are not segments; they are mere transitions between the onset and the nucleus.” This idea will be explored in greater detail later in this section. First however, it is important to consider how this short voiced vocoid has been treated in other previous works on Moroccan Arabic.

One of the most cited sources on the syllabification of Moroccan Arabic comes from Benhallam (1990), one of the authors who supports the complex onset hypothesis (Shaw, 2009). He also classifies two types of syllabification in Moroccan Arabic, but rather than making this classification depend upon where to view the syllable split, he looks closer at the vowels. He agrees with the previous description of vowels in Darija, saying that “the full vowels i, a, and u are underlying and that the schwa is epenthetic.” (Benhallam, 1990: 177). Therefore, he concludes, we need two types of syllables: ones which have an underlying vowel and ones which don’t. With the former, we have ordinary syllabification, what he calls “full vowel syllabification.” With the later, we have what he calls “schwa syllabification.” While observations and conclusions do hold similarities with the evidence considered in this paper, his methods raise many questions. Because the paper is so highly
referenced, I will begin with a simple summary of it, and follow with a discussion of what I view as flaws in his analysis. As a basis for this argument, he states that the two syllable types in Darija are CV and CVC. The canonical syllable structure can be shown in the same type of tree as has been seen before, however in (11) we do not have an example word, but rather a template, so C’s and V’s will replace the actual letters of a word:

(11)

According to Benhallam (1980: 178), the optionality of the vowel in the nucleus of the syllable is due to the difference between those vowels represented in the written lexicon and the epenthetic schwa which he claims is “only introduced along with its V-node in the course of syllabification.”

The list of rules for syllable structure assignment of full vowel syllabification according to Benhallam are as follows:
a. Onset and Rhyme rule: Every CV sequence is assigned the following structure:

(12)

Benhallam argues that it makes sense to combine onset and rhyme in a single rule given that a syllable consisting of a rhyme alone never occurs in Moroccan Arabic. Furthermore, by combining the rules, it is guaranteed that a CVCV sequence will be syllabified as CV.CV and not CVC.V, which he claims eliminates the need for a well-formedness condition to state that V syllables in Darija are ungrammatical.

b. Coda Rule: Whenever possible, assign a C to the coda position of the syllable created by the Onset and Rhyme rule. This rule is amended in the next step, as it only applies when there are stray C’s following CV syllables.

c. Stray Consonant rule: Assign a stray consonant to a preceding coda, otherwise to a following onset.

When applied to actual words in Moroccan Arabic, these rules do the following:
In this example, rule c. shows how the k in *ktab* is joined to the following onset, just as the C following a CVC syllable would be assigned to the preceding syllable. After rule c, Benhallam turns to the presence of the short voiced vocoid. Here, he argues that these vocoids occur in “very predictable environments. Going from right to left we notice that there is a schwa between every two consonants: *d.rab, dər.bək, tək.təb.lək*. This suggests the schwa is epenthetic.” (Benhallam, 1990: 180). The data given in (14) are taken from a list of evidence which Benhallam claims supports his argument.
(14)

a. Drēb  ‘he hit’
b. Dērbēk  ‘he hit you’
c. Dērbu  ‘he hit him’
d. takablēk  ‘she writes to you’
e. Šfēr  ‘yellow’ (masc)
f. Šfēra  ‘yellow’ (fem)
g. dērbala  ‘shabby clothing’

Looking at (14f), if we undo the schwa epenthesis rule, we have underlyingly /sfra/.

Following rules a-c, the r becomes assigned as the onset of the rightmost syllable.

The two remaining consonants would then provide an environment for the schwa epenthesis described by Benallam. Therefore, his rules continue for schwa syllabification:

d. Unassigned Consonants rule: Assign every sequence of two unassigned consonants the canonical syllable structure shape as follows:

(15)
Using example (f) again, the structure of /Sfr/ becomes assigned as follows:

(16)

The S then becomes incorporated by the Stray Consonant Rule (c.) such that [Səfra] can be analysed as

(17)

The final step to complete the analysis for the schwa is a rule of Epenthesis in order to fill the empty nucleus node:
While this analysis is cited throughout many works on Moroccan Darija, it presents several problems, especially when compared with the Universal Principles of Syllabification. These principles include the Maximum Onset Principle (Kahn, 1976). This principle says to add as many consonants as possible to the syllable onset, as long as the resulting clusters can be found at the beginning of a word in the language, and like the other universal principles of syllabification, it is supposed to be applicable to any language. Using the Maximum Onset Principle, it can be assumed that a word with the structure CVCV in any language ought to be analyzed as CV.CV, such that as much as possible goes into the onset of the syllable. It is odd therefore that in his Onset rule (12), Benhallam does not bother to invoke the Maximum onset Principle to prove his point.

When he reaches his discussion of Schwa Syllabification, Benhallam’s argument becomes more difficult to follow. His claim that there is a schwa between every two consonants only seems sensible if we interpret what he said with the added restriction that the two Cs be in the same syllable. Furthermore, Benhallam analyses a sequence of CC in word-initial position as being a pre-margin, a syllable boundary, and then the next C, so in the end, no schwa is actually epended. Even
more to the contrary of his argument, he breaks up many CC sequences as one C being in a coda and the next in an onset, when universal principles would put them both in the following onset. Overall the data from Moroccan Darija simply do not appear to support the rules he has created.

Having seen an example of the complex onset hypothesis, this paper will now turn back to Dell and Elmedlaoui (2002) for their account of simplex onset hypothesis. However, in order to follow a similar process, a Moroccan Darija version of Tashlhiyt poetry must be found. Today, more modern Moroccan writers are beginning to experiment with publishing works in Moroccan Darija, as can be seen in books like Taxi, or publications like Nishan (the Arabic version of French magazine TelQuel.) This is generally limited to publications that are meant to express the voice of the people. However, songs and rhymes do exist in spoken Moroccan Darija which can be used in a similar way as the Tashlhiyt poetry to facilitate an understanding of syllabification in the language.

First, this paper will look to one of the most universally present poem types: lullabies and nursery rhymes. The following rhyme, which is common in the Marrakesh-Taroudant area is chanted such that the syllables align with the beats in a rhythmic pattern. Shown below is the transcription (19) the translation (20) and the text to tune alignment (21):
(19)
1. !bid-a !bid-a lillah
2. b=aš n-zewweq luh-t=i
3. u=luh-t=i ñend !taleb
4. !we=t=taleb fe=z=zen-a
5. we-ž-zen=a me-hlul=a
6. hellel-ha mula=na
7. mula=na mula=na
8. la !te-qteḥ !rža=na
9. fi sabil muhammed
10. muhammed !we=shab=u
11. fe=ž=zen-a !ye-nsab-u

(20)
1. Egg, egg, for God’s sake
2. With what could I decorate my writing tablet?
3. And my writing tablet is with a teacher
4. And the teacher is in Paradise
5. And Paradise is open
6. Our Lord made it accessible
7. Our Lord, our Lord
8. Do not shatter our hope
9. In Muhammad’s way
10. Muhammad and his companions

11. In Paradise they are dwelling

Each line of this nursery rhyme is 6 syllables long. The first five syllables occur evenly in time, as do the first, third, fifth, and sixth syllables. The beats are broken up as follows:

(21)
*   *   *   *   *
*   *   *   *   *   *
bi da bi da lil lah

Here, columns with two stars depict strong beats, while the bottom line of stars represent points in time separated by equal durations. All items which are vertically aligned occur simultaneously. As can be seen, the final syllable of one line would lead into the first syllable of the next with successive strong beats. When (19) and (21) are combined into a single table, we can truly see the alignment of text and rhythmic pattern:
The bold letters and # symbols in this transcription belong to Dell and Elmedlaoui, and identify what they call “putative vowels” (2002: 244). By putative, they refer to vowels other than the /a/ /i/ and /u/ that are accounted for; this is the same dichotomy seen in Benhallam’s account of full vowel syllabification and schwa syllabification. Instead of using the term schwa syllabification, Dell and Elmedlaoui refer to it in a less problematic manner as “the unstable vowel” [2002: 235]. In introducing this concept, they clarify that this unstable vowel does not always have a corresponding voiced vocoid in the pronunciation, and that one hears short voiced
vocoids in places where no unstable vowel occurs in the standard transcription. Therefore they warn strongly against construing standard transcriptions as representations. The bolded e seen in the transcription stands for this unstable vowel.

Dell and Elmedlaoui set out to analyze each of these appearances of unstable vowels in a highly complicated manner, using the underlying assumption that all syllable nuclei in Moroccan Darija are vowels. Although they also posit an alternative, simpler approach, I will begin by summarizing the more complicated steps, and explaining some of the problems, as I did with Benhallam’s paper. My reasons for explaining are threefold: without prior knowledge of how Tashlhiyt syllables are formed and an understanding of the contact between the two languages throughout history, this approach seems very reasonable. Furthermore, it helps bring up many important questions about Moroccan Darija, and hopefully, the contrast between the two approaches and the comparative simplicity of the second will help readers feel comfortable accepting it as the correct solution.

There are several things that can be seen based on these lines of poetry. The first involves onset. In their discussion of onset, Dell and Elmedlaoui make choices that, similar to Benhallam (2009) seem unsettling. First off, they begin the discussion simply by asking their readers to “let us assume” (2002: 244) that the syllables of Moroccan Darija do not allow complex onsets. They do so because the syllables of the nursery, under their own analysis, do not show instances of complex onsets. While I agree with most of their analysis, I question whether 12 lines of a poem is enough data, and I also question their treatment of the name Muhammed
(figure 22, lines 9 & 10.) Under their analysis, the middle syllable of this word appears to end in the same /m/ with which the third syllable begins. This seems to me to be a similar choice to Benhallam’s decision to break up CC sequences as one C being in a coda and the next in an onset. Perhaps it is more sensible because the CC sequence in this instance consists of the same consonant, however that argument raises problems of its own. Gemination in Moroccan Darija is marked in the writing system with a *shedda*, a small symbol placed above the geminated letter, and the name Muhammed, an important one in Islam and therefore unlikely to be casually misspelled, does not contain such a symbol. Ultimately however, I am not a native speaker of Moroccan Darija, whereas Elmedlaoui is.

However, the rest of Dell and Elmedlaoui’s analysis is less problematic. Working again off the data in (22), they note that onsetless syllables only occur at the beginnings of the lines. They also note a strange occurrence whenever a word that ends with a consonant is followed by a word that begins with a consonant. In line 2 for example, *b=âš#n-zewweq* is parsed as *ba.š#n.zew.weq*, so that the second syllable straddles the two words. They label this syllable a “hinge syllable” and when the syllable does not contain a full vowel, they call it “hollow” (Dell & Elmedlaoui, 244). By this logic, the syllable  š#n is a hollow hinge syllable. Because they posit that all syllable nuclei in Moroccan Darija are vowels, the hollow hinge syllables provide a method of avoiding complex onsets without ending up with unsyllabified segments. Thus, every # in (22) stands for the unstable vowel that has been previously discussed. However, the analysis still rests on only 12 lines of nursery rhyme, so we must look further for more data.
Here, a second type of Moroccan Darija poetry proves incredibly useful to this paper. The Malhun is a melodic poem which takes its modes from a tradition of Andalusian music, and while its most renowned performers come from humble roots as artisans, the malhun appeals to both the elite and working class. Along with spanning the classes, the malhun is popular throughout all areas of Morocco. The following text is taken from the ḳasida of Fatma, by Muhammed Lehmer Lermyaq, with English translation as given by Dell and Elmedlaoui (2002: 251)

(23)

1a. mir lle=ywrem xil=u !fe=l=ḥerb !zatm-a
1b. dakk l=ḥedd-a fuq ṣelw-i me-Izum
2a. !we=l=ywram i- ṣeyyeb we=d=dat saqm-a
2b. ḥett l-yiwan ma ṣy-weqqer me-yrum
3a. hakda=k !ẓra l=i ṣqess-a !w=ṭerżm-a
3b. w=anaya ma dri-t !fe=l=ḥerb qyum
4a. ha sbab hwa=ya !xwennar xatm-a
4b. yab-et ṣenn=i w=ṭad qelb=i me-hmum
5a. fi knan=i !yess-et !ywess-at samm-a
5b. kif n=nišan dar xebl-a fe=l=qum
6a. yab-et ʿli=ya we=l=mwḥez-at haym-a
6b. qwel-t a ʿeẓb=i !d=dedd fe=bn-at l=yum
7a. ṭal-et l=yib-a ya le=ywzal ḳfatm-a
7b. ʿib !l=ḥezr-an ya sbiy-et le=nyum
8a. kan-et mlaf=i fe=l=šeššaq hakm-a
8b. we=l=yum sqa-t-ni mhayen we=hmum
9a. hweebb=ha xella l=i dat=i m-faqm-a
9b. we=l=hweebb ššib qal-et dha-t l=qum
10a. sal qis l=me-žnun ūla l=hakm-a
10b. lil-a hiya sbab qelb=ū me-šdum
11a. sal sif l=yazan ūla z=zašm-a
11b. msex ula ywrab !wadeh me=škum
12a. sewwel ūla šenter we=l=qum zašm-a
12b. le=yram i-luh le=šiq l=le=hmum

(24)

1a. Love, the great prince, launches his cavalry into battle
1b. Pounding my side under his impressive beating
2a. Love has made my hair white and my body weak
2b. Amorous yearning does not spare any lover
3a. Here is what happened to me, here is the story, here is the chronicle
3b. I, who am inept in the arts of warfare
4a. The object of my passion is a hard-headed beauty
4b. She has left me and my soul is distraught
5a. At the bottom of my heart, deep and mortal regrets
5b. Like arrows which lay waste to the fighters’ ranks
6a. She left me and my soul is distraught
6b. How obstinate, I realize, girls are nowadays

7a. Absence has lasted too long, O Fatma, my gazelle

7b. Your being away is no good, O you with khol-painted eyes

8a. She was my tame one, she used to bewitch lovers

8b. Now she showers me with adversity and worries

9a. My love for her has unsettled my body

9b. Love is hard, as people with experience say

10a. Ask Qays the madman about the woman who bewitched him

10b. Layla, who bruised his heart

11a. Ask Al-Yazan about his daring one

11b. Better a transfixing curse than a pure and bewitching love

12a. Ask Antar (on how he feels) when armies rush forward

12b. Love plunges the lover into worry.

The meter of this text alternates by line, such that the two lines of the couplets have different meters. Below, the text is split up and arranged into two tables. The first shows the first lines of the couplets, while the second shows the second lines of the couplets. The syllables are numbered by column, and the columns are marked either H for ‘heavy’ or L for ‘light.’

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</table>

1a. mir ley\textsuperscript{w} rem xi lu fel herb zat ma
2a. wely\textsuperscript{w} ra mi šey~ yeb wed~ dat saw ma
3a. hak da k#ž ra li qes~ saw terž ma
4a. has ba b#h wa ya x\textsuperscript{w}en~ nar xat ma
5a. fik na ni yes~ set y\textsuperscript{w}es~ sat sam~ ma
6a. yab t#ř li ya wel m\textsuperscript{w}eh žat hay ma
7a. tal t#l yi ba ya ley\textsuperscript{w} zal fat ma
8a. kan t#m la fi fel ř\textsuperscript{w}eš šaq hak ma
9a. h\textsuperscript{w}ebb ha xel~ la li da tim faq ma
10a. sal qi s#l mež nu n#ř lal hak ma
11a. sal si f#l ya za n#ř laz~ zař ma
12a. seww l#ř la řen ter wel qum za ma
(25) b.

1 2 3 4 5 6 7 8 9
L L L H H L L L H
1b. dak~ k#l hed~ *da fuq šel wi mel zum
2b. het~ t#l yi wan may weq~ qer mey rum
3b. wa na ya mad rit fel her b#q yum
4b. ya bet Šen~ niw Šad qel bi meh mum
5b. ki f#n ni Šan dar xeb la fel qum
6b. qwel ta Šež bid~ dedd feb na t#l yum
7b. i b#l hež ran yas bi yet len yum
8b. wel yu m#s qat nim ha yen weh mum
9b. wel h#web~ b#s Šib qal t#d ha t#l qum
10b. li la hi yas bab qel bu meši dum
11b. #m se xu layw rab wa deh meh kum
12b. leyw ra mi luh lef Ši q#l~ leh mum

Again, there are no apparent complex onsets, and onsetless syllables appear only at
the beginning of a line. Only geminate consonants can give rise to complex codas. In
going further however, Dell and Elmedlaoui’s explanation gets immensely
complicated. They concoct a long string of constraints, but the problem remains:
how to account for the unstable vowel? Ultimately, they conclude that “the
evidence...led us to the conclusion that in most instances hollow syllables have a
consonant in their nucleus. By positing complex nuclei of the form eC, we were able to accept that conclusion while maintaining the assumption that in [Moroccan Darija] every syllable contains a vowel.” (Dell & Elmedlaoui, 290).

This quote, however, reaches the heart of what this paper hopes to find. Moroccan Darija is notorious for its consonant-heavy nature which makes it incomprehensible to speakers of other dialects. While Dell & Elmedlaoui spend a long and complicated chapter forcing the conclusion that all hollow syllables have complex syllables have nuclei composed of an unstable vowel and a consonant, it turns out that if Moroccan Darija, like Tashlhiyt, allow consonants as syllable nuclei, and some of these hollow syllables are allowed to be vowelless, the entire explanation becomes much more graceful. To demonstrate this, Dell and Elmedlaoui (2002: 291) give look to the verb ḫet ‘he slashed’ and the noun ṣeht ‘slash’. If the schwa is actually voiced as part of the segment, the analysis would look like this:
In this analysis, the difference between the noun and the verb is shown in the surface representations, with the letter ‘e’ representing the unstable vowel. Here, it is linked to a sketetal position in the nucleus, right after the onset. However, if the voiced vocoid between the onset and the nuclear consonant is not actually a manifestation of a bundle of distinctive features, but a transition from the onset consonant into the nuclear consonant, the analysis would change:
In (26), !šeht ended up syllabified as eš.हेट. but there was no voiced vocoid in the pronunciation that corresponded to the initial e. Furthermore, by assuming that vowels were necessary to form a syllable Dell and Elmedlaoui (2002) were forced to create several extra components analysis. Ultimately, this solution is appealing because it is the most logical and simple.

However, even with this simpler explanation, there remain complications. Elmedlaoui gives the example of the word fateह, in which it feels natural to
pronounce the voiced vocoid in the final syllable only if the word is being pronounced relatively slowly. Therefore, Dell and Elmedlaoui (2002: 298) posit that Intonational Phrasing is involved in the explanation of hollow syllables. When hollow syllables occur at the last syllable of an intonational phrase, and the nucleus does not contain a sonorant, a voiced vocoid must be inserted before the nuclear consonant to make it complex (Dell and Elmedlaoui, 2002:300).

Section 8: Conclusions and Questions for Further Research

Both Tashlhiyt Berber and Moroccan Arabic allow for syllables to exist without vowels in the nucleus of the syllable, although it seems that Moroccan Arabic is stricter towards where this can happen, and requires schwa insertion if a hollow syllable occurs in the last syllable of an intonational phrase. While the languages remain very different, this syllabification makes Moroccan Darija very different from the Arabic spoken in Egypt or throughout the Middle East. Given the historical interaction between Berber dialects and the Arabic that spread with the rise of Islam, the similarity in syllabification makes attributing Moroccan Darija’s unique sound to its relationship with Berber seem logical and fair.

However, while the question of relationship between the languages may be answered, this paper raises many more potential paths of study. I began this paper without knowing about the existence of Dell and Elmedlaoui’s Syllables in Tashlhiyt Berber and in Moroccan Arabic, (2002), but their research proved vital to this paper. For anyone interested in looking further into the subject, I would highly recommend the work. The question of how sonority functions in the syllabification of these two
languages one of the main pieces left untouched in this paper, and they suggest many interesting rules and constraints regarding that.

One thing neither I nor anyone from my research offers is an in-depth phonetic study, with Praat analysis of recorded Native speakers. Particularly with the large corpus of Tashlhiyt poems and songs offered by Dell and Elmedlaoui (2002) this could prove to be a fascinating course of study. However, if intonational phrases do in fact change the presence of the voiced vocoid, recorded words would be particularly susceptible to the speaker slowing down and over-articulating, which could get in the way of the data.
Works Cited:


