

# The Reality of Consonant Clusters in Dagbanli Syllables

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## **Abstract**

There have been propositions that there are consonant clusters in Dagbanli even though the language is predominantly an open syllable one with only three nasal consonants that serve the purpose of coda in the Dagbbaanli syllable. The study was to ascertain the existence of consonant clusters in Dagbanli syllables. Speeches of two male and two female respondents were recorded using the PRAAT programme. The words, phrases, and sentences were carefully selected to contain the syllables suspected to exhibit consonant clusters. These were subjected to spectrographic analysis to identify vowels, (if they exist) so as to determine whether they are really clusters or not. The results indicated some weak vowels between the 'clusters' thus proving that they are not clusters after all.

**Keywords:** Dagbanli consonant clusters

## 1. Introduction

At the phonological level of a language, the syllable is considered a very significant sound segment that requires some amount of attention given the fact that ‘it is at the heart of phonological representation. It is the unit in terms of which phonological systems are organized’ (Katamba, 1989:153). It is the bases for phonotactic constraints in some languages (Olawsky, 1999). Key constituents of the syllable are the rhyme and coda which happen to manifest as consonant clusters, in some languages. The Dagbanli syllable has received little attention over the years except for (Abukari: 1977: Olawsky: 1999). However, these works treat the syllable in passing as they formed only a part of a larger work. It follows then, that the Dagbanli syllable was not thoroughly examined. Besides, there is an argument posited by Abukari, 1977; (Olawsky, 1999) that there are consonant clusters in Dagbanli. For example Abukari (1977:2) strongly maintains that there are onset consonant clusters. He describes [pl] as a cluster in pligira ‘opening’; in pli ‘to roof a house’, pligi ‘to open’, and zuplgu ‘hat/cap’ pg 3. For Olawsky: 1999, ‘initial consonant clusters exist in loan words, particularly those from English.’ (Olawsky, 1999: 167- 168). He goes on to assert that it is speakers with advance knowledge of the English language that produce the clusters with the English loan words.

In this paper, I examine the structure of the syllable focusing attention on the onset clusters by subjecting them to spectrographic analysis. Through this, the confusion will be addressed. For want of space, the paper will not discuss any cluster occurring in any other position.

The Dagbani language genetically belongs to the Niger-Congo language group, a member of the Gur language family. It has been classified by Naden (1989), Greenberg (1963), and Wilson (1970a) as belonging to the Gur language family and a member of the Moore Gurma sub-group of West African languages. Bodomo (1993) however, suggests the term ‘Mabia’ for the group of languages within which Dagbani is found. These include Dagbani, Dagaare, Mamprili, Kussal, Moore, Safaleba and Talen.

Dagbani is spoken mainly in the Northern Region of Ghana by the Dagbamba people. Speakers of Dagbani are called Dagbamba (plural) and Dagbana (singular). There are other names like Dagbanpaga and Dagbandoo when emphasis is on gender though the two have derogative meaning relating to miserliness. Dagbani and Dagombas are the corrupt forms of Dagbanli and Dagbamba. However, Dagbani and Dagombas are often used. Dagbanli also refers to the culture of the Dagbamba. Dagbani has four dialects. This contradicts, Fusheini 2007 that the language has three dialects namely tomolsili, nayahili and nanun. The fourth dialect is  $\eta$ mampriili. But I regard  $\eta$ mampriili not as a language but as a dialect of Dagbani given the high intelligibility rate between the two (Naden 1989). The data for this study is based on the tomolsili and nayahili dialect of Dagbani.

## 2. An Overview of the Dagbani Syllable Structure

The syllable structure to be adopted is that proposed by (Clements and Keyser:1983). This uses the cv – tier model that assumes a three tiered structure made up of;

- i. The SYLLABLE – TIER ‘ $\sigma$ ’

ii. The CV - TIER

iii. The SEGMENTAL –TIER

The segment tier dominates over the **C** and **V**. The segmental- tier displays the distinctive features that constitute the phonemes.

The Dagbanli syllable type is dominated by the **CV** type. However, there are a number of others as seen below;

### 2.1 C – Type

This type consists of only a consonant. They are the bilabial and the alveolar nasals /m/ and /n/. The bilabial nasal is used to mark possession while the alveolar nasal is the first person pronoun. They are used as in;

M ba

n je

My father

I don't want

This violates the minimalist requirement that regards the **V** component as indispensable especially in languages such as English. For example, (Katamba: 1989:155) emphasises that ‘the rhyme is the only essential element of the syllable in English. What is true of English is also true of other languages. The rhyme is always obligatorily present in all syllables in all languages. This is not so with this free morpheme syllable in Dagabanli. It also falls outside syllabic consonant as they occur alone.

### 2.2 V Only Syllable.

They are usually the third person singular pronoun /o/ and the second person pronoun /a/. But they are also found in disyllabic and polysyllabic words as illustrated in the diagramme below.

2.



Of course [a] occurs at initial positions in some loan words such as **alaamu** ‘bad omen’ **alizanda** ‘heaven’ as part of a word.

### 2.3 CV

There also exists the CV syllable type as seen below;

3. Noo[no:] hen

Daa[da:] to push

Mii[mi:] become sour

Noonja[no:ŋa] a bird

Duunja[du: ŋa] a mosquito

#### 2.4 Cv + Diphthong Type<sup>1</sup>

It is usually verbs that have this syllable type. The words that consist of this syllable type have the same meaning as the ones with CVV type. The two can be said to be allophones. This type is exemplified below;

4a.

Daa = daai[da:i] to push

Vaa = vaai[va:i] to gather and collect from the floor

Duu = duui[du:i] to light fire

fee[fe:] [feei[fe:i] to get down from a height]

This does not happen with nouns and the other word classes as seen below;

4b.

Noo[no:] hen \*nooi

fee[fee] a waste \*feei [fe:i]

#### 2.5 CV + V

This type has two separate vowels occurring after the consonant. They are not diphthongs. However, when they occur before a pronoun or a focus marker, they become long vowels. But if they occur before nouns in an NP or adjP, the second vowel is deleted. Consider the following;

5.

bua[bua] a goat \*bua la \_\_\_\_\_ buu la the goat

tia[tia] a tree \*tia la \_\_\_\_\_ tii la the tree

tua[tua] a buabab tree \*tua maa \_\_\_\_\_ tuu maa

bua[bua] goat bu ʒee \_\_\_\_\_ \*buu ʒee

<sup>1</sup> My description of this type as cv + diphthong may be challenged as it can also perfectly be described as cvvv. This is another rear syllable structure type in natural language.

tia[tia] tree

ti djia short tree \*tii djia

## 2.6 CVC

This type of syllable occurs with the second **C** being a nasal [m n ŋ], or [b l ɣ]. Whereas [m n] can occur in free morphemes, the rest occur in bound morpheme syllables. The illustrations below testify.

6a.

[m ŋ] in free morphemes

baŋ[baŋ] to know

daŋ[daŋ] get/do ahead]

bam[bam] to act in despiration

dam[dam] a drink

6b

[n b l ɣ] in bound morphemes

bindirigu[bindirigu] food

nanzua[nanzua] pepper

bibli[bibli] a maggot

gabga[gabga] a rope

tapalli[tapalli] a tribal mark

palli[palli] a road

gaɣli[gaɣli] a gourge

baytuli [baɣyuli] a spiritual sacrifice

## 2.7 CCV

This type of Dagbanli syllable is the target for this paper. The paper examines the existence or otherwise of onset consonant clusters in the language. For this reason, I subjected words which were suspected to contain clusters to spectrographic analysis. I used the **praat** programme to do the spectrographic analysis. The target clusters were;

 br as in **bri** \_\_ to sow

 bl as in **bli** \_\_ to germinate

 pr as **pri** \_\_ to share

 pl as in **pli** \_\_ to cover

 fr as in **fri** \_\_ to get stucked

 gl as in **gli** \_\_ to go round

kr as in krikri \_\_ firmly

 tl as in **tli** \_\_ unkempt hair

 gr as in **grigri** \_\_ active

 gbr as in **gbri** \_\_ to drown somebody/thing

kpr as in **kpri** \_\_ to shoot up fresh leaves/flowers

In the literature, vowels and consonants are different in that unlike vowels, consonants do not show clear formant patterns (nasals and the semi-vowels have fainter formant patterns). However, consonants affect the formants of the vowels found in their environment (Weisser 2005, Ladefoged, 1962; Ladefoged 2003). This proved useful in this study as the absence or faintness of the formants in the spectrographs suggested the existence of consonant clusters. Where a vowel occurred between the suspected consonants, the vowel formant showed. I also measured the duration that the clusters take to be produced. The longer the time, the higher the possibility that there is a vowel between the consonants and the vice versa. Weisser (2005) intimates that fricatives have relatively long length compared to stops strong random formant patterns in specific frequency areas depending on their place of articulation. There is no specific duration that clusters take to be produced. It depends on the unique vocal tract quality of a given speaker. Furthermore, there is no exactness with spectrographic analysis. The spectrographic cues only suggest possibilities (Ladefoged: 2003).

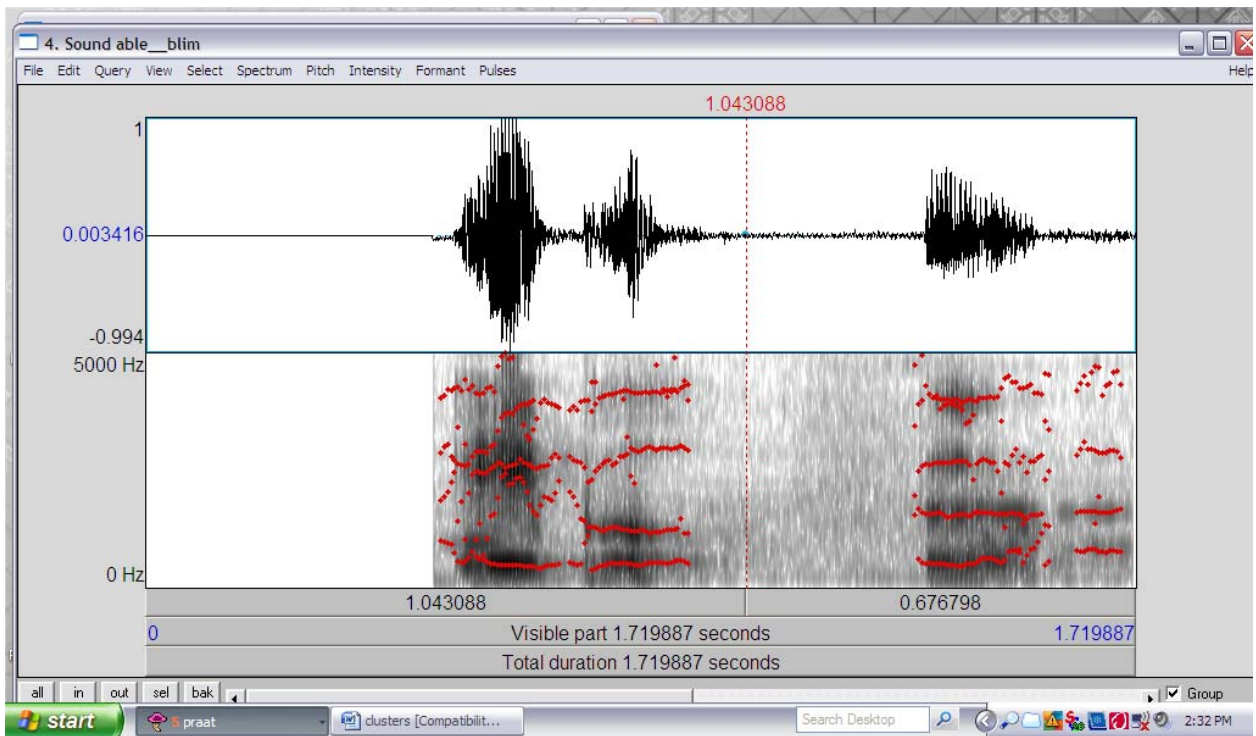
### **3. Methodology**

The subjects consisted of young males and females between the ages of twenty five and forty. They were four (4); two females and two males. The females were level 100 university students studying Ghanaian language at the University of Education, Winneba. They were twenty five, and twenty seven years of age. The two males were also Level 300 Ghanaian languages students of the same university. They were older than their female counterparts of thirty eight and forty. They subjects were all native speakers of Dagbanli. The total number of words, phrases and sentences spoken for recording were I took tokens were taken. Respondents read these words at normal pace and recorded with the PRAAT software. In order to prevent undesirable noise, I did the recording in a studio which was noise proof.

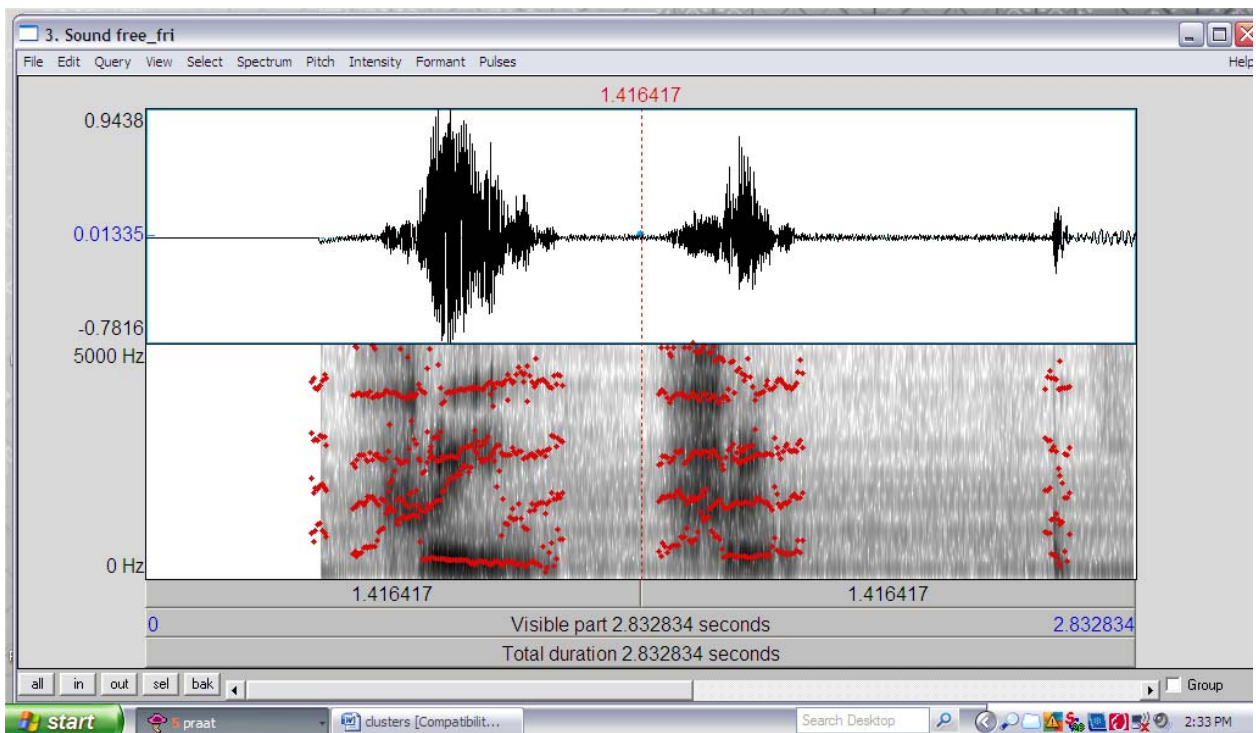
### **4. Presentation of Results**

#### *4.1 Spectrographs*

First, I present some sampled spectrographs



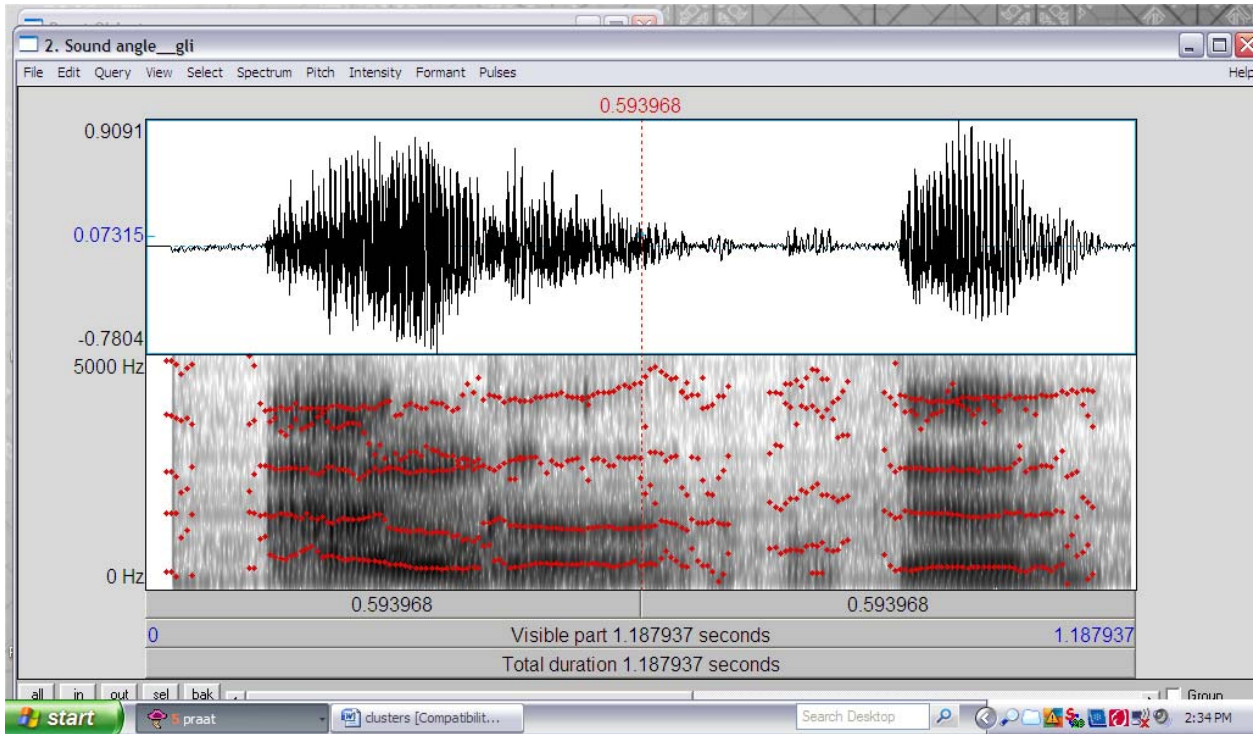
This spectrograph is that for the English word, **bleed**, and the Dagbanli word, **blim** on the right and left respectively. It is seen that the one for **blim** has clear formants even at the beginning where **bl** occur. This suggests that they do not form a cluster. The one on the right for **bleeds** has no clear formants.



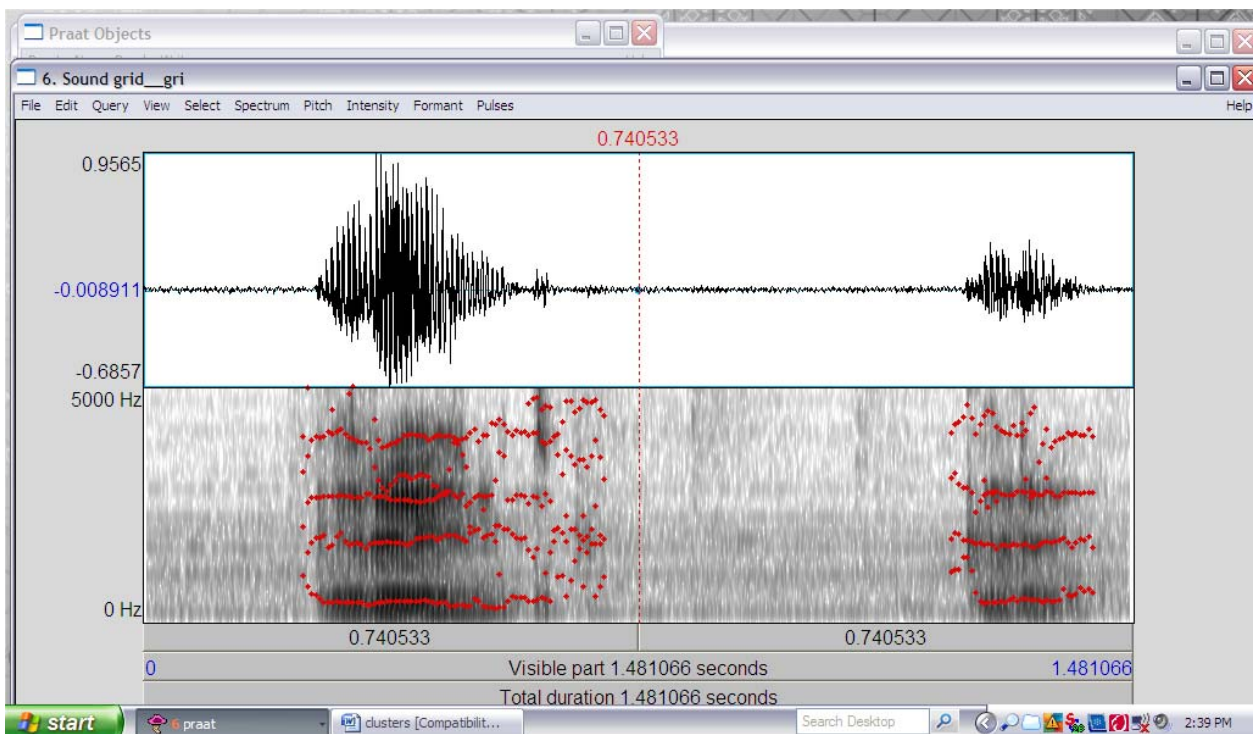
The above spectrographs for English free, and Dgabanli fri indicates no clear formants for both words at the points where the suspected clusters occur at the beginning of the graphs.



From this, fri ‘to get stacked’ has no an onset cluster.

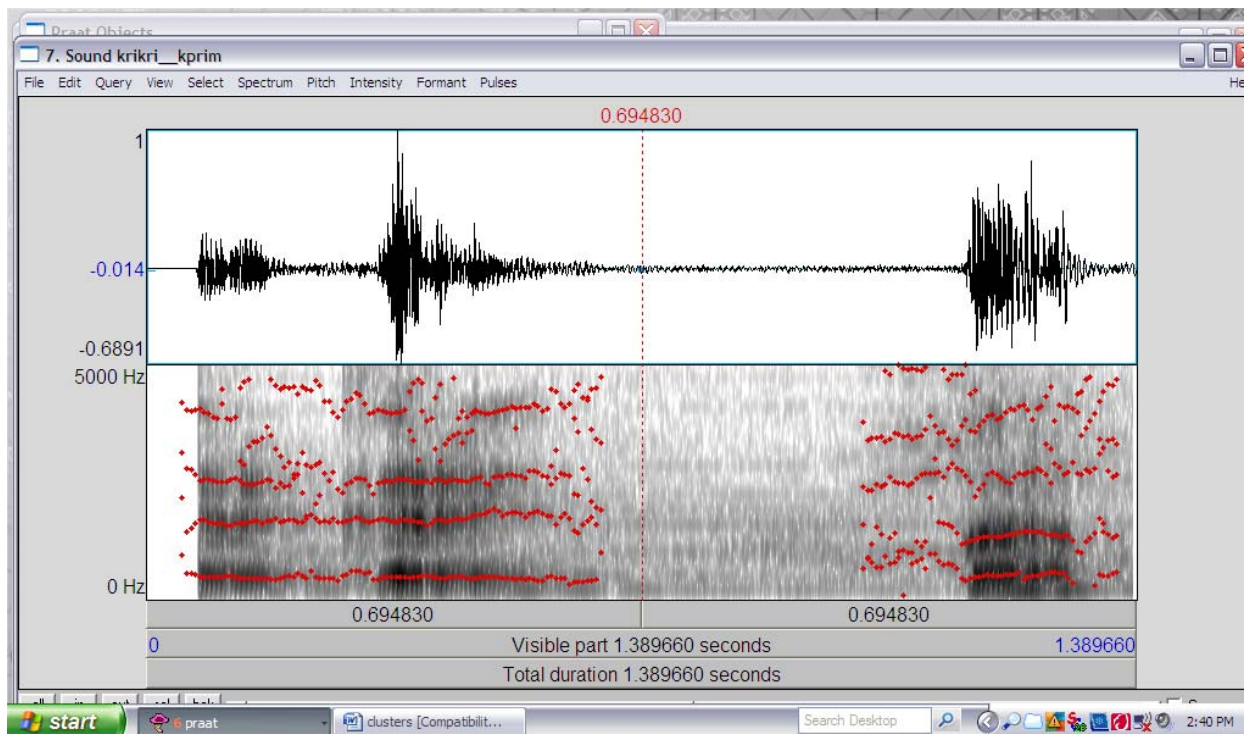


The spectrograph above represents **glim** and **gli** ‘to go round’. The graph on the right towards the end shows no clear formants but the one for **gli** ‘to go round’ does at the beginning where the cluster is suspected to occur. This suggests that the consonants do not occur successively.





The first **gri** of **grigri** ‘being active’ shows some formants but the second **gri** shows an erratic formant structure. This suggests that the second one is a cluster and the first one with a vowel between the consonants.



**Krikri** ‘firmly’ shows some formants indicating the presence of a vowel between /k/ and /r/. But that for **kpri** ‘shoot up fresh leaves/flowers’ has no clear formants. This suggests successive occurrence of consonants.

The above are but a few of the spectrographs using the formants to suggest whether there is an intervening vowel between the suspected consonants.

The next data consist of the duration of the suspected clusters that were recorded. The onsets with long durations suggest that there are vowels between them. Of course, I took notice of the durational difference among the types of consonants according to manner of articulation; plosives, affricates, and fricatives as noted earlier on.

#### 4.2 Duration of Suspected Clusters in Words in Isolation and with Other Words in Milliseconds

Suspected cluster	word it occurs	in isolation	in context
Br	bri	0.259588	0.198505
Pr	pri	0.225586	0.173348
Gr	gri	0.204034	0.164652
Gbr	gbri	0.271327	0.189832
Kpr	kpri	0.215281	0.144235
Fr	fri	0.223228	158801
Kr	krikri	0.203886	0.198997

Bl	bli	0.300956	0.236081
Pl	pli	0.206069	0.187222
Gl	gli	0.202441	0.173174
Tl	tli	0.244249	0.190341

The durational values are longer for the onsets in words produced in isolation than when they are produced alongside other words in continuous speech. This points to the fact that the vowels between them are weaker in continuous speech. Another interpretation is that the vowels in the words produced in isolation are more sonorous than when they are produced in continuous speech. The paper did not go ahead to identify the particular vowel/s concerned. This was due to the fact that this is a term paper with limited time on hand.

Beside these, the duration of a number of notable English clusters was also recorded. The short fall for this was that I didn't use native speakers of English because I did not find them given my location in Tamale, Ghana. These were;

br as in bring 0.084483m/s

pr as in print 0.080311m/s

pl as in play 0.066579m/s

Whereas the English clusters read between 0.066579m/s and 0.084483m/s the suspected onset clusters in Dagbanli had rather higher durations.

## 5. Conclusion

From the evidence found in the data, there is no clear onset cluster in Dagbanli. **Kpri**, **fri**, and **grigri** are close to be identified as clusters but there is a very weak vowel intervening the consonants in them. There are clear differences in the duration of the seemingly clusters by different speakers. This is not surprising as vocal tract space differs from person to person.

Furthermore, there is a **C** type of syllable in the form of nasals, [m n]. This appears an exception.

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## Appendixes

### Words in isolation

br as in <b>bri</b> __ to sow	bl as in <b>bli</b> __ to germinate
pr as <b>pri</b> __ to share	pl as in <b>pli</b> __ to cover
fr as in <b>fri</b> __ to get stucked	gl as in <b>gli</b> __ to go round
kr as in krikri __ firmly	tl as in <b>tli</b> __ unkempt hair
gr as in <b>grigri</b> __ active	
gbr as in <b>gbri</b> __ to drown somebody/thing	
kpr as in <b>kpri</b> __ to shoot up fresh leaves/flowers	

### Appendix b. Phrases/ Sentences they occur in natural Speech

N bri kawana - to ssow corn

Pri fali - share inheritance

Bra zeri - bera soup(a green vegetable sauce)

Fri ze ya - stucked

Grigri biegu hard day

Tua kpri ya - a buabab tree has bloomed

Kom gbri ba - they have been drown

Bli ya - has germinated

Pli yomyom – cover fast

Gli chang – turn round and go

Appendix c. The words as they occur in continuous speech in a passage

Neindoo mini Azima daa chaŋ pua ni ni be ti **bri** sima bihigu la ni. Bi daa daŋ yibu pam ka daŋ paabu. Be daa nye ka tama kuli lu n **tli** kobiri maa ni. Noonsi daa kuli **yigri** mi n **gli** na n bori ni be di tama maa. Ka be daa dii **pri** tihi maa n ti taba ka pihi zaa. Be daa zaŋ tama maa n niŋ taha ni ka zaŋ ŋa linsi **pli** nyam. Lala saha ŋɔ, tihi puma daa **kpri**-ya ka nyo vuum ka **bra** mini salinvogu bli. Di saha, niribi ayi ŋɔ suhiri daa paligi ya ka be diri dari ka vari grigri n ginda. Di ni daa ne shagi ni la zugu, kom daa puhigi ya ka pua maa lugishaŋa daa puhigi ka kom zora luguli kam zaa. Be daa koŋ puama tumbu dama, be daa kuli fri ti mi ka sarigira. Be yeli ya ni woliga ŋuni a daa gbri la kom n kpi dindali maa.