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Vowel duration in the Basque spoken in Legorreta

Introduction
General Phonetic and Phonological characteristics in the speech of Legorreta.
Vowels: The long vowels are very common.

When there is a consonant between two similar vowels, there is a tendency to not pronounce the consonant and the vowel is pronounced long: ***zahar >zaar, zuhur>xuur, nahastu>naastu, lehengusu>leengusu, lehertu>leertu****.*

In compound and derived words: ***antolatu>antolaau, nazkatu>nazkaau***.
When the consonant that is between vowels is disappeared: ***sagasti>saasti, odolki>oolki, ere>ee.***
When the definite form is added to the last vowel of the word: ***astoa>astoaa.***
When in ergative singular and plural forms the word is finished by –e, -i, -o and –u: ***otsook.***
In genitive singular and plural: ***apaizeen.***
In Innesive singular: ***eskolaan, paseoon***.
Almost in all instrumental cases: ***ikusiiz, launduuz.***
Time place plural markers: ***goizetaan.***
a + a > ea dissimilation and then ea> ee long vowel is pronounced.
After assimilations also long vowels are produced*:* ***politaago, bizkorraago****.*
Similar thing happens with verbs in impersonal and hitano form: ***nittuun, juun, nuun****.*
With demonstratives: ***oori*** (hauei)
-a> -e in i/u vowel context. In general, this change is quite common all over Basque Country but it is most common in High Navarrese, in South Guipuscoan and in Bizcay. In the speech of Legorreta is a very common phenomenon.
-i/-u + -a context, a> e. After vowel: ***sarie, belarrie, liburue***. After diphthong: ***maaie, ardagaie***.
-i/-u + consonant + a = e: ***jostune, belaune, mardule***.
A + a > -ea dissimilation: ***lorea****.*
-a +-e > -a- Almost always there is a tendency to keep the organic a.
o>u before –r: ***orduun***. Before nasal: ***nunbait*****.**
-ai/ei >i: ***beziñ.***

Consonants: The palatalization assimilation is very common.
Palatalization after i is very common although sometimes, both forms are used. ***Ibili*** and ***ibilli*****.**
Palatalization of nasal: ***soiñen***
Palatalization of t is common although sometimes both forms are used: ***zurittu, itten, gaittuk(n), matte.***
Palatalization of laterals are common although sometimes both forms are used: ***malla, salle***

Neutralization: In new borrowed Spanish words is very common: ***pazientzie***. After nasals: “omen + verb” connection most of the time the result is an affricate: ***ementzeon*** (omen zegoen).”Participle + Aux.” connection, most of the time fricative: ***ikusizon*** (ikusi zuen). “Verb + Aux.” connection most of the time the result is fricative*:* ***ikusi zoonen*** (ikusi zuenean) but sometimes affricate: ***emantzon*** (eman zuen). And after –r most of the time the result is an affricate: ***zertzea*** (zer zara).

Neutralizations that occur in sandhy between “ez” particle and auxiliary verb:
Fricative lamino-alveolar /z/ + lamino-alveolar /z/ > Affricate lamino-alveolar /tz/ ez + zaitez > ***etzaittez****.*
Fricative lamino-alveolar /z/ + nasal > in most of the cases the fricative lamino-alveolar /z/ is lost ez naiz > ***enaiz***, ez nau > ***enau*****.**

The loss of some consonants between vowels:

-Plosive bilabial /b/: ***ama(b)atenak*** but it does not loss in all cases.
-Plosive dental /d/: ***zin*** (zidan)
-Plosive velar /g/: ***deu*** (dugu), but it does not loss in all cases: ***xague*****.**
-Rothics: simple: ***be*** (bere).Double: ***aatsaldea*** (arratsaldea).

d >r: ***irie*** (idia**), *patxara*** (patxada).
Instead of /f/ is appeared /p/ like in other many dialects: ***perie*****.**

Location

Legorreta is a small village (1420 inhabitants), situated in the province of Guipuzcoa, in the district of Goierri. It is about 35 Kms away from San Sebastian, the capital of Guipuzcoa and the dialect is spoken is Eastern Guipuzcoan.

Basque is a language of considerable dialectal variety. According to the last dialectal map published by Zuazo (1998) the amount of dialects still alive are six and according to Bonaparte's classification (1869) are 25 sub dialects and 50 dialectal varieties.

Speaker

The informant is a male speaker, aged 89 years at the time of the recording. He was thus born in 1913 in Legorreta and lived all his life there. As a native speaker he represents the variety of the Eastern Guipuscoan dialect (Legorreta). In this speech, he is mainly telling us about his life.

I choose the old age informant as I think his spoken language did not vary much (he did not attend school, nor had a substantial contact with Spanish speaking neither he did travel). In contrast, he reads the daily paper and some of the words he uses are from Standard Basque.

The recording was made in a peace and quiet room.

Methodology

The spontaneous speech has been recorded on DAT tapes by a digital recorder from the Phonetics Lab at the University of the Basque Country (October 2003). In the Laboratory of the University of Stockholm, the data was transferred first from the DAT tape into a CD and, afterwards into the Cool Edit computer program where I was able to start my analysis.

The program *Sound Swell* measures the length of vowels and diphthongs as the program allows you this and labelling with the supplied oscillograms and spectrograms. Sometimes it is difficult this measurement due to the fact that the limits of each vowel are not fully defined with the surrounded consonant or vowel, so the formants of each vowel require to be accurately measured and this is not a straightforward aim despite the help of the spectrogram supplied by the program.

They are well-known problems or difficulties to set up segment boundaries A segment is defined by an initial boundary at the left side of the segment and a final boundary at the right. When vowels occur next to stop occlusions, fricatives and pauses, their boundaries are placed at the onset and offset of energy at F2 and above. Adjoining liquids and glides and other vowels, the vowel boundaries are placed at the midpoint of the formant transitions between targets.

Results

[a] Vowel. In the speech of Legorreta the duration of this vowel oscillates between 16 and 173 ms and this implies a difference of 157 ms. The average is 86,08 ms and its deviation 25, 96 ms. Also, most of the vowels last between 51 and 110 ms. which are 73 vowels and, 16 vowels are out of this range, which 1 vowel is between 11-30 ms, 4 vowels between 31-50 ms, 5 vowels between 11-130 ms, 1 between 151-170 ms, and 1 between 171-190 ms.

The average duration of /a/ vowels is higher in the speech of Legorreta than in other Basque Dialects. The highest is in Souletin dialect, which is 76,7 ms, and 9,39 ms of difference with Legorreta´s average. The lowest average duration of /a/ is in Northern High Navarrese which is 59 ms.

[e] vowel. In the speech of Legorreta, the duration of this vowel oscillates between 42 and 162 ms and this implies a difference of 120 ms. The average is 84 ms and its deviation 27, 46 ms. In most vowels the duration is between 42-120 ms. which are 74 vowels, and 6 vowels between 121-140 ms, two between 141-160 ms. and lastly, 1 vowels between 161-180 ms.

Referring to the average of /e/, in Basque dialects is lower than in the speech of Legorreta. The Labourdin dialect has the highest which is 79,9 ms and Biscayan is with the lowest, 58,1 ms. so the average duration between Labourdin /e/ and Legorreta´s is about 4 ms.

[i] vowel. In the speech of this paper, the duration of this vowel fluctuates between 42 and 140 ms which means there is a difference of 98 ms. The average is 80,92 ms and its deviation 23, 88 ms. In most of the vowels the duration is between 42-120 ms. which are 36 vowels, and 2 vowels have the duration between 121-140 ms.

The average duration of /i/ in Basque dialects is lower than in the speech of Legorreta. The Labourdin dialect has the highest which is 73,4 ms. and with the lowest High Navarrese which is 53,3 ms. In the speech of Legoreta /i/ is 80,92 ms. as a result the difference between Labourdin and the speech of Legorreta /i/ average duration is 7,52 ms.

[o] vowel. The duration of this vowel in the Basque from Legorreta swings between 43 and 173 ms which means there is a difference of 130 ms. The average is 93,38 ms and its deviation 32,42 ms. In most of the vowels the duration is between 43-150 ms. which are 34 vowels. 2 vowels have the duration between 161-180 ms, and 1 between 141-160 ms.

The average duration in /o/ like in other vowels, is higher in Basque dialects than in the speech of Legorreta. The higher duration is in Souletin dialect, which is 82 ms, and there is a difference of about 11ms. with average of the speech of Legorreta. And the lowest is High Navarrese with 56,9 ms.

[u] Vowel. The duration of this vowel in the spoken language in Legorreta varies between 46 and 148 ms which means there is a difference of 102 ms. The average is 95,16 ms and its deviation 30, 61 ms. In most of the vowels the duration is between 91-195 ms which are 6 vowels. There are 3 vowels which have the duration between 45-60 ms and other 3 between 136-159 ms. Apart from these vowels there are another 4 which have the duration between 61-90 ms and other 2 between 106-135 ms.

The analyses show how /u/ has the biggest duration with 95, 17 ms, after /o/ with 93, 38 ms, /a/ with 86,10 ms, /e/ with 84 ms and lastly /i/ with 80,92 ms. in the speech of Legorreta.

Lastly, /u/ has the highest average duration in the speech of Legorreta comparing with other vowels like in Guipuscoan. With the highest average duration of /u/ is Souletin dialect which is 85 ms and with the lowest is Northern High Navarrese with 51,8 ms.

The results show that stressed vowels have bigger duration than the unstressed ones, the difference is perceptible.

a/á. In the speech of Legorreta in stressed /a/ the average of duration is 91,58 ms and varies between 50 ms and 173 ms. In unstressed /a/ the duration average is 80,20 ms and varies between 16 ms and 139 ms.

The difference between the minimum and maximum values of duration in stressed vowel /a/ is 123 ms and the same difference is for unstressed vowel /a/.

If we compare the duration of stressed and unstressed /a/ vowels with other Basque dialects, in Biscayan dialect the average of maximum duration in stressed vowel is lower than in the unstressed and the same happen with the minimum duration, the stressed /a/ has lower duration than the unstressed one. In the rest of dialects the average duration in stressed /a/ is longer than in the unstressed one.

e/é. In stressed /e/ the average of duration is 89,82 ms and varies between 49 ms and 162 ms. In unstressed /e/ the duration average is 78,30 ms and varies between 42 ms and 150 ms. The difference between the minimum and maximum values of duration in stressed vowel /e/ is 103 ms and 108 ms for unstressed one.

If we compare the average duration in /i/ stressed and unstressed vowel in all Basque dialects, in stressed /e/ is bigger than in unstressed except in Labourdin that has bigger for stressed /e/ than for the unstressed one.

i/í. In stressed /i/ the average of duration is 91,58 ms and varies between 50 ms and 173 ms. In unstressed /i/ the duration average is 77,20 ms and varies between 42 ms and 125 ms.

The difference between the minimum and maximum values of duration in stressed vowel /i/ is 90 ms and 83 ms for unstressed one.

If we compare the average duration in /e/ stressed and unstressed vowel in Basque dialects, in Labourdin the stressed /i/ is lower than the unstressed one. Referring to the maximum and minimum duration, in Guipuscoan the minimum duration is the same in stressed and in unstressed /i/. The maximum duration is lower for stressed /i/ than for unstressed /i/ in Guipuscoan and Labourdin. In W.L.Navarrese, Labourdin and Souletin dialects the maximum durations are bigger in unstressed than in stressed one.

o/ó. In stressed /o/ the average of duration is 91,58 ms and varies between 44 ms and 115 ms. In unstressed /o/ the duration average is 94,48 ms. and varies between 43 ms. and 173 ms.

The difference between the minimum and maximum values of duration in stressed vowel /o/ is 71 ms and 130 ms for unstressed one.

If we compare the average duration in /o/ stressed and unstressed vowel in Basque dialects is higher in stressed than in unstressed except in the speech of Legorreta where the unstressed is higher than stressed.

u/ú. In stressed /u/ the average of duration is 111,57 ms and it varies between 92 ms and 148 ms. In unstressed /u/ the duration average is 84,72 ms and it varies between 46 ms and 136 ms.

The difference between the minimum and maximum values of duration in stressed vowel /u/ is 56 ms and 90 ms for the unstressed one.

In general speaking, in Basque dialects the unstressed vowel /u/ has lower duration than the stressed one. In Souletin dialect both have the same duration and in the speech of Legorreta is higher in stressed one than in the unstressed one.

As mentioned above, the stressed vowels have higher duration than the unstressed ones except in /o/ case, being the average of /o/ stressed 82,75 ms and for unstressed ones 98,48 ms.

Discussion

The results show that /u/ has the biggest duration with 95,17 ms, after /o/ with 93,37 ms, /a/ with 86,10 ms, /e/ with 84 ms and lastly /i/ with 80,92 ms. The same order of average duration is in Souletin dialect but not in Guipuscoan dialect like it was suppose to be since the dialect spoken in the speech of Legorreta is Eastern Guipuscoan. In Guipuscoan dialect /o/ has the longest duration, after /a/, /e/, /u/ and /i/.

/u/ has the biggest duration like in Souletin with 85 ms.

In general speaking, all vowels have bigger duration in the speech of Legorreta than in other Basque dialects.
In my opinion one of the reasons can be because the data is collected by spontaneous speech. This means that are some words like for example “eta” (copulative conjunction) which is used quite often in spontaneous speech, that are pronounced like “da” and this /a/ is longer than when you are recording “eta” word in not spontaneous speech. Secondly, in the speech of Legorreta the long vowels are very common in the following cases:
When between two similar vowels there is a consonant, there is a tendency to not pronounce the consonant and the vowel is pronounced long: zaar, xuur, iraazi, leertu, saasti, oolki, ee etc.
When the definite form is added to the last vowel of the word: astoaa, etxeaa.
In genitive singular and plural cases: apaizeen.
In Innesive singular:eskolaan, kopeta.
In Instrumental case: ikusiiz.
Time place plural: goizetaan.
a + a > ea dissimilation and then ea> ee long vowel is pronounced.
After assimilations also long vowels are produced: politaago, bizkorraago.
Similar phenomenon happen with verbs in impersonal and hitano form: nittuun, juun,nuun.
With demonstratives: oori (hauei).

Generally speaking, in Basque dialects the duration in stressed vowels is longer than in unstressed ones, there is an exception in the speech of Legorreta which is /o/. In this case the average duration in stressed vowel is lower than in unstressed ones. Furthermore, other exception is /u/ vowel where in Basque dialects the stressed one is shorter in duration than the unstressed one and in Souletin, both, the stressed one and the unstressed one are the same in duration. The function of stress is to make the vowel more noticeable and being the vowel longer in duration the vowel is more perceptible, in other words, when the duration is long the vowel is more manifest than when is short.

Conclusion

The results show that /u/ has the biggest duration with 95,17 ms, after /o/ with 93,37 ms, /a/ with 86,10 ms, /e/ with 84 ms and lastly /i/ with 80,92 ms.

Generally speaking, all vowels have bigger duration in the speech of Legorreta compared with other dialects in Basque.

Mainly, in all Basque dialects the duration in stressed vowels is longer than in unstressed ones, there is an exception in the speech of Legorreta which is /o/, in this case the average duration in stressed vowel is lower than in unstressed ones.

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