

# The schwa in Albanian

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## Abstract

In Albanian, the schwa as a phoneme is restricted to the Tosk variety, whereas it is described as a back, rounded vowel in the Gheg variety. The first two formants of schwa-vowels of both Tosk and Gheg speakers (within and outside the Republic of Albania) have been investigated. No differences could be found within the borders of the Republic of Albania, whereas speakers outside the borders displayed significant differences.

## 1. Introduction

### 1.1. Schwa as a phoneme

The analysis of schwa as a phoneme is tightly coupled to the phenomenon of the allophonic schwa as a result of reduction processes. Although Delattre's concept [1] of vowel centralization can probably not be upheld in its totality [2], the principles of the assumption that vowels are somehow centralized by reduction has remained unquestioned. This observation has even led to the hypothesis that the phonemic schwa is the result of vowel reduction [3]. With this line of argument goes an evaluation of the UPSID phoneme inventory [4], concluding that "/ə/ is a "paralell" vowel which exists because of intrinsic principles (probably based on vowel reduction) different from those of other vowels" (p. 251) and does not seem to interact with other vowels. As a consequence, its presence or absence should not modify the structure of the vowel system. This seems to be the case in Québécois, where the schwa has merged with [œ] [5].

The schwa, therefore, phonemic or not, has an exceptional position: It displays a high level of context-dependency [3, 6] and a huge amount of variability, see e.g. the scatter of F1/F2 values for /ə/ in Eastern Arrernte [7: p. 287]. This high context-sensitivity especially has led to the assumption that the schwa is either a vowel without target [3] or a vowel with an active gesture that is, however, overlapped by the gesture of the following full vowel [8] or a vowel underspecified for tongue position [6].

Acoustically, two main points have to be emphasized:

- Variability or change of the schwa is predominantly described along F2 [3, 5, 6, 9].
- Perception studies promote a slightly peripheral vowel for schwa; with F2-values approximately 1300 Hz [9] or approximately 1600 Hz [5].

### 1.2. Schwa in Albanian

The presence of a central vowel with phonemic status is generally considered to be a common feature of Balcan languages [10]. In Albanian, this phoneme is graphemically

symbolized as *ë*. However, schwa as a phoneme is canonically restricted to the Tosk variety (toskërishtja) of Albanian, spoken south of the Shkumbin river, whereas the Gheg varieties (gegërishtja) spoken north of the Shkumbin river within the Republic of Albania, in Kosovo and in Macedonia, exhibit a back, rounded vowel /ɒ/ instead. This rough classification of the Albanian dialects can be further subdivided [11]: Northeastern and Northwestern Gheg north of the Mat river, Central Gheg south of the Mat river and Southern and Northern Tosk approximately having the river Vjosa as demarcation line.

Former acoustic analyses of the schwa produced interesting results: According to an analysis done in 1977 [12], the following mean values are reported: F1: 460 Hz, F2: 1525 Hz. These values are about what everybody would expect of a mid-central vowel. Twelve years later [13], however, F2 has been lowered, with mean values of 1356 Hz. No changes are reported for F1.

Interestingly enough, the same tendency can be observed for the Romanian mid-central vowel [14]; In 1963, F1 exposed a mean value of 496 Hz, F2 a mean value of 1479 Hz. In 1985, mean values for F2 are reported to be 1335 Hz. There seems therefore, to be a tendency to shift the central vowel backwards.

## 2. Method

Recordings of spontaneous speech (interviews) of 7 male speakers (3 Tosk speakers, 2 Northwest Gheg speakers, 2 Northeast Gheg speakers, 2 central Gheg = Macedonain speakers) have been analyzed. The recorded speech samples were digitized at 16 kHz, 16 Bit by means of the Acoustic Workstation S\_Tools [15]. The first two formants of each central vowel were calculated by LPC, 22 coefficients and a pre-emphasis of 0.9. In total, 570 schwa-vowels have been analyzed, in both stressed and unstressed position. For the current presentation, the variation of the second formant has been investigated. On that basis, five articulatory zones have been defined:

- front:  $F2 \geq 1700$  Hz
- transition zone front:  $F2 = 1600 - 1700$  Hz
- central:  $F2 = 1400 - 1600$  Hz
- transition zone back:  $F2 = 1300 - 1400$  Hz
- back:  $F2 \leq 1300$  Hz

### 3. Results

#### 3.1. Dialectal differences

Table 1 gives the mean values, standard deviation, maximum values and minimum values of F2 of central vowels in stressed position:

Table 1: F2 in stressed position according to dialect regions

F2 (Hz)	Mean	StdDev	Max	Min
Tosk	1509	45	1841	1001
Northwest Gheg	1388	20	1757	845
Northeast Gheg	1329	46	2366	766
Central Gheg	1221	30	1897	774

As can be seen from the table, Tosk exposes a clear central vowel, whereas the vowel is articulated further back in Northwest and Northeast Gheg. Central Gheg, on the other hand, exposes a clear back vowel. The values for Northwest and Northeast Gheg conform to the values measured for 1989, whereas both Tosk and Central Gheg expose values which conform to what is supposed to be the respective norm.

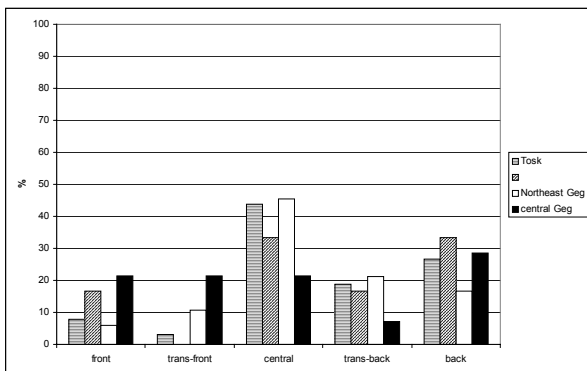
However, deviation from the mean values is rather large, and, as can be seen from the maximum and minimum values, the variation of the central vowel is incredibly high, reaching from a totally front to a completely back articulation. This great variability holds for all dialect regions.

Table 2: F2 in unstressed position according to dialect regions

F2 (Hz)	Mean	StdDev	Max	Min
Tosk	1417	27	2078	1029
Northwest Gheg	1529	38	1872	1080
Northeast Gheg	1456	39	2097	953
Central Gheg	1484	26	1955	886

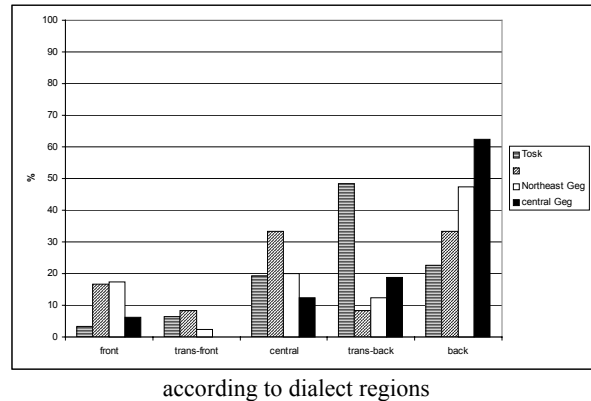
In unstressed position (see table 2), no dialectal differences can be observed at all. However, the mean values indicate a centralized articulation. Looking at the distribution of the values according to the defined articulation zones (diagram 1), a slight concentration at the central articulation zone can be observed.

Diagram 1: Distribution of F2 in unstressed position according to dialect regions



However, in stressed position, the preference for an articulation zone towards the back for Central and Northeast Gheg or towards the transition zone back for Tosk is more pronounced (see diagram 2):

Diagram 2: Distribution of F2 in stressed position

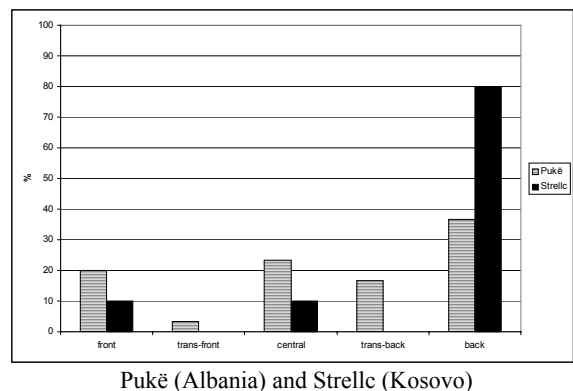


#### 3.2. The relevance of political borders

Traditionally, the region north of the Mat river and Kosovo, i.e. a region within and a region outside the borders of the Republic of Albania, are subsumed under one subdialect region: Northeast Gheg. In spite of the fact that there are only two speakers in this group, one from Strelc (Kosovo) and one from Pukë (Albania), it is worth looking at their data separately.

In stressed position (diagram 3), a clear preference for back vowel articulation can be observed for the speaker from Kosovo, this clear preference is not given at all for the speaker from Albania.

Diagram 3: Distribution of F2 in stressed position for



At first sight, a comparison with diagram 2 shows that the speaker from Pukë conforms better to the values of the speakers from Northwest Gheg, whereas the speaker from Strelc conforms more closely with the speakers from Macedonia. Indeed, on examining the differences of the mean values for speakers from the Republic of Albania with

the speakers from Macedonia and Kosovo, the differences prove significant for F2 in stressed position (table 3).

Table 3: t-distribution of F2 in stressed position

F2 (Hz)	mean	s
Rep. Albania	1460	37
Macedonia + Kosovo	1222	42

$\alpha = 0.05$        $df = 5$

On the other hand, an examination of the differences of the new means (resulting from the fact that Gheg has been re-defined as north of the river Shkumbin within the borders of the Republic of Albania) did not prove significant for Tosk and Gheg.

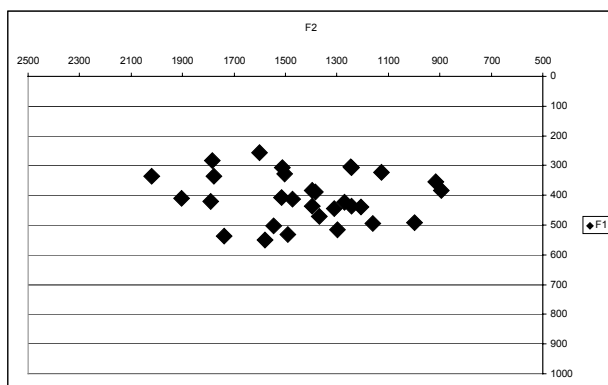
According to this data, at least two dialect regions can be assumed: Albanian spoken within the borders of the Republic of Albania and Albanian spoken outside the borders of the Republic of Albania.

In unstressed position, the vowel is articulated rather centralized in all investigated dialect regions (table 2). No dialectal differences can be observed, the examination of the differences of means did not prove significant.

### 3.3. Variability

As already stated, the schwa in Albanian as well displays a huge variability, scattering from extreme back to extreme front articulation (diagram 4):

Diagram 4: F1/F2 (Hz) scatterplot of 29 items for 1 speaker (Gheg)



For this speaker, the most extreme values calculated for F2 are 2019 Hz, which would correspond to tense [e], and 893 Hz, which would correspond to tense [o]. This suggests, in conformity with the literature (see 1.1.), high context-dependency.

#### 3.3.1. context dependency

Although a statistical analysis is still in arrears, a tentative evaluation of the data seems at least to indicate some arbitrariness with respect to schwa-articulation. Some examples:

Table 4: F2 for /ə/ in "të"

të	F2 (Hz)	translation
të jetë	2025	be: PRES:CONJ:3S
kur të vijë	1343	when he/she will come
të mbarë	1187	successful

In table 4, the first and the third item are in correspondence to the expected values; front articulation anticipated because of the following stressed front vowel [ɛ], back articulation is anticipated due to subsequent stressed back vowel [ɑ]. The second item, however, does not follow this principle, the schwa is articulated rather back, in spite of subsequent front vowel [i:].

Table 5: F2 for /ə/ in "është"

është	F2 (Hz)	translation
nuk është babi	1000	it is not the father
Ç'është ky mish	1791	what sort of meat do you call this
problem është	1245	it's a problem
problem është	1897	it's a problem

Since in *është* 'to be', the vowel of interest appears word-initially (word-final unstressed schwas are usually deleted in Albanian), the determining factor for assimilation processes should be the preceding (stressed) vowel/segment. In the first two items of table 5, the schwa behaves according to expectations: a back articulation in the first item, a front articulation due to palatality of the preceding affricate in the second item. However, a back articulation is to be observed in item 3 and a front articulation in item 4, although the phonetic context is identical!

#### 3.3.2. phonetic inconsistency in lexemes

One could assume that within at least one and the same lexeme, the articulation of the schwa displays some stability, either because the word is usually uttered in isolation – as is the case with *gëzuar* – or because of stressed position. As table 6 indicates, this is not the case either.

Table 6: range of F2 for /ə/

	range F2 (Hz)	translation
<i>gëzuar</i>	1225 – 1619	cheers
<i>thënë</i>	1237 – 1551	said

## 4. Concluding remarks, prospect and future work

### 4.1. Republic of Albania vs. Macedonia/Kosovo

With respect to the realization of the schwa, a significant difference could be observed with regard to "within" and "outside" the borders of the Republic of Albania. This has to be interpreted that within the Republic of Albania, Albanian is of course the official language, whereas in Kosovo and in Macedonia, for a long period, it has not (always) had the

same status. Moreover, the Standard variety is based on Tosk, therefore, in all official contexts like e.g. schools and media, Tosk is used. In Macedonia and Kosovo, on the other hand, the Albanian language has not been taught sufficiently at schools or used in other official contexts. Due to these circumstances, the measured values for Macedonia and Kosovo conform to what is traditionally described for the Gheg variety, whereas, interestingly enough, the Gheg variety within the borders of Albania lack this conformity.

#### 4.2. Tosk and Gheg within the Republic of Albania

Within the Republic of Albania, however, no regional differences could be observed. However, these results can not yet be interpreted in the way that the traditional dialectal divisions into Gheg and Tosk are going to be abandoned in favour of the standard (Tosk based) variety. Social status and education have not yet been considered in the present investigation and might lead to different results concerning Gheg and Tosk. The fact that the investigated speakers of Northern Albania do not realize the schwa as a predominantly back vowel, as it is supposed to be the case in the Gheg variety, might be the result of their higher level of education.

#### 4.3. What then, is the schwa?

As can be seen from many languages, the schwa exposes a high amount of variability, and, as diagram 2 indicates, central articulation is far from being the default articulation, even for the Tosk variety. It would therefore be legitimate to question the phonemic status of the schwa altogether. On the other hand, to abandon the schwa as a phoneme would not solve the problem of the high range of variability.

Following the concept of Natural Phonology in defining the phoneme as an intention [16], the question of the speakers' intention has to be raised. However, to answer this question, formal speech material (repetition of words/sentences, reading style) has to be analyzed.

Anyhow, be this phoneme as it may, it is centralized in unstressed positions.

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