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/n/ : /r/ CORRESPONDENCES IN ALBANIAN DIALECTS: UNDERSTANDING THE $n > r$
SOUND CHANGE

by

KATIE ALBANY

A master's thesis submitted to the Graduate Faculty in Linguistics in partial fulfillment of the requirements for the degree of Master of Arts, The City University of New York

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Abstract

/n/ : */r/* CORRESPONDENCES IN ALBANIAN DIALECTS: UNDERSTANDING THE $n > r$
SOUND CHANGE

by

Katie Albany

Adviser: Juliette Blevins

The Albanian language is an Indo-European language that constitutes a separate branch in the Indo-European language family. There are two major dialects, Geg and Tosk, spoken in present day Albania that are mutually intelligible. There are morpho-syntactic differences between the two dialects and shared words provide evidence for a number of sound changes applying in certain contexts in Tosk. The focus of this paper is $n > r$ sound change in Tosk applying to the nasal */n/* in an intervocalic position followed by an unstressed vowel. The lenition rule has been prolific diachronically, but stopped applying some time between the 13th and the 15th centuries, or after the Turkish occupation of Albania. Turkish loanwords that have resisted the $n > r$ sound change in Tosk provide ample evidence for this. More recent loanwords confirm this finding.

Keywords: lenition, sound change, fortition, syncope, apocope, loanwords, intervocalic, unstressed

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Abbreviations Used

Alb. Albanian

G Geg

T Tosk

PIE Proto-Indo-European

IE Indo-European

Turk. Turkish

Lat. Latin

Gk. Greek

pers. person

sing. singular

pl. plural

def. definite

indef. indefinite

The Albanian Sound System

Vowels

Orthographic symbol	Phoneme (IPA symbols)	Description
<a>	/ɑ/	similar to the vowel in English <i>father</i>
<e>	/ɛ/	similar to the vowel in English <i>pen</i> but more fronted rather than mid vowel
<i>	/ɪ/	similar to the vowel in English <i>fit</i> but longer
<u>	/ʊ/	similar to the vowel in English <i>good</i>
<o>	/ɔ/	similar to the vowel in English <i>frost</i>
<y>	/y/	similar to the German vowel <i>ü</i>
<ë>	/ə/	similar to the vowel in English <i>nerd</i>

Glides

Orthographic symbol	Phoneme (IPA symbols)	Description
<j>	/ɣ/	similar to the glide in English <i>yet</i>

Consonants

Orthographic symbol	IPA symbol	Description
	/b/	voiced bilabial stop similar to English <i>boy</i>
<c>	/ts/	voiceless dental affricate similar to English <i>tsar</i>
<ç>	/tʃ/	voiceless postalveolar affricate similar to English <i>chair</i>
<d>	/d/	voiced coronal stop similar to English <i>day</i>
<dh>	/ð/	voiced dental fricative similar to English <i>that</i>
<f>	/f/	voiceless labio-dental fricative similar to English <i>fore</i>
<g>	/g/	voiced velar stop similar to English <i>get</i>
<gj>	/gʲ/	palatalized velar
<h>	/h/	aspirated glottal sound similar to English <i>hotel</i>
<k>	/k/	voiceless unaspirated velar stop similar to English <i>keg</i> (without aspiration)
<l>	/l/	lateral coronal similar to English <i>light</i>
<ll>	/ɫ/	dark /l/ similar to English <i>ball</i>
<m>	/m/	bilabial nasal similar to English <i>man</i>
<n>	/n/	coronal nasal similar to English <i>nose</i>
<nj>	/ɲ/	palatal nasal similar to English <i>neuter</i> or the Spanish ñ

<p>	/p/	voiceless unaspirated bilabial stop similar to English <i>pot</i> (without aspiration)
<q>	/kʲ/	palatalized velar
<r>	/r/	apical coronal sound similar to English <i>fret</i> (without lip rounding)
<rr>	/R/	a trill, similar to Spanish <i>perro</i>
<s>	/s/	voiceless fricative similar to English <i>set</i>
<sh>	/ʃ/	voiceless affricate similar to English <i>shoes</i>
<t>	/t/	voiceless unaspirated coronal stop similar to English <i>top</i> (without aspiration)
<th>	/θ/	voiceless dental fricative similar to English <i>thin</i>
<v>	/v/	voiced labio-dental fricative similar to English <i>vote</i>
<x>	/dʒ/	voiced dental affricate sound
<xh>	/dʲ/	voiced postalveolar affricate similar to English <i>jacket</i>
<z>	/z/	voiced fricative similar to English <i>zebra</i>
<zh>	/ʒ/	voiced postalveolar fricative that resembles the sound in English <i>jacket</i> but more fronted

1.0 Introduction

1.1 Hypothesis

The Albanian language spoken in Albania, a country situated in the Balkans, has two major dialects: the Geg dialect spoken north of the Shkumbin river and the Tosk dialect spoken in Southern Albania. Both dialects are mutually intelligible, yet there are many phonological and morphosyntactic differences. One of the most salient phonological differences between the dialects involves rhotacism in the Tosk dialect. Often, where Geg shows /n/, Tosk has /r/ as, for example, in *bojëna* (G), *bojëra* (T) ‘colors’; *gjuni* (G), *gjuri* (T) ‘knee’; *pruni* (G), *pruri* (T) ‘brought’; *lojëna* (G), *lojëra* (T) ‘games’; and *krenë* (G), *krerë* (T) ‘heads’. Previous research has accounted for these correspondences with a sound change. However, cross-linguistically, n>r does not appear to be a common sound change. This thesis attempts to understand when, how and why it occurred in the history of the Albanian language.

There has been some research on the Albanian language by Eqrem Cabej, Eric Hamp, Stuart Mann, Gustav Meyer, and Vladimir Orel among others. Even though there have been attempts to show the phonological triggering environment for the n > r sound change (Mann, 1938), Albanian historical linguistics can benefit from more research on this topic. In this paper I explore Mann’s hypothesis of n>r sound change and explore other potentially significant phonological factors, such as the heaviness of the syllable and the vowel quality that have been overlooked.

1.2 Objectives

My objectives for this paper are:

1. To situate the Albanian language as an Indo-European language summarizing phonological and morphological evidence for its classification
2. To give a brief description of the phonology of modern Albanian and differences between the two major Albanian dialects, Geg and Tosk.
3. To examine the conditioning factors of the n>r sound change.
 - a. To explore the phonetic basis of rhotacism in the Tosk dialect.
 - b. To show parallel sound changes.
 - c. To investigate exceptions to the rule and try to explain them.

1.3 Phonological Assumptions and Notations

All Proto-Albanian reconstructions will be noted with an asterisk and I will be using single quotes for word glosses. Proto-Albanian reconstructions are mostly taken from B. Demiraj, 1997. Some reconstructions are taken from B. W. Fortson VI, 2010 and V. Orel, 1998.

2.0 Background Information on the Albanian Language

Albanian is the language spoken primarily in Albania, a relatively small country located on the West of the Balkan Peninsula. Even though there are a variety of dialects that exhibit fairly insignificant differences, such as vowel quality, there are two mutually intelligible, major dialects: the Geg dialect and the Tosk dialect, which show phonetic, phonological and morpho-syntactic differences. The Shkumbin river serves as a geographical demarcation line that separates the two dialects. The Geg dialect is spoken in Northern Albania, Turkey, Macedonia and Kosova and other parts of former Yugoslavia (Forson IV, 2010, p. 446). Two varieties of the Tosk dialect, Arbëresh and Arvanitika, heavily influenced by the mainstream language, are spoken by the Arbëresh in Southern Italy and by a segment of the population in Greece respectively (“Albanian”). There is a possibility that the Albanian settlements in Italy and Greece happened between the thirteenth and fifteenth centuries (Fortson IV, 2010, p. 446).

a) Dialectal differences between Geg and Tosk dialects

There are phonological and morphological differences between the two major Albanian dialects but the dialects are mutually intelligible. Some of the morpho-syntactic differences between the two dialects are seen in the verb forms for future tense where in the Geg dialect includes the infinitive marker *me* as in *kam me shkue* ‘I will go’ and in the Tosk dialect the infinitive marker is not present as in *do të shkoj* ‘I will go’. The Albanian infinitive marker *me* ‘to’ in the Geg dialect lacks its counterpart in the Tosk dialect (Joseph, Costanza and Slocum). The diphthong /ue/ in the Geg dialect is reduced in the Tosk dialect to /oj/, a vowel and a glide. Some examples of those changes are seen in *me punue* (G) *të punoj* (T) ‘to work’, *me lexue* (G) *të lexoj* (T) ‘to read’, *me mësuë* (G) *të mësoj* (T) ‘to learn’, *me gëzue* (G) *të gëzoj* (T) ‘to enjoy’,

The rule above states that a [+high] V [-high] V diphthong in the coda position in Geg undergoes a sound change which yields [-high] V [+sonorant] C, a [-high] vowel and a glide, in the Tosk dialect with an intermediate representation where /e/ goes to /i/ first before it changes to a glide /y/. For instance, the diphthong [ue] in *me nxitue* ‘to hurry’ undergoes vowel lowering for the high vowel /u/ and vowel raising for the mid vowel /e/ resulting in the Tosk [oj] in *të nxitoj* ‘to hurry’.

Another sound change between the two dialects is the sound change found in [+nasal]C +V in the Geg dialect and the corresponding [+nasal] C + C + V in the Tosk dialect as seen in words like *naj* (G) *ndaj* (T) ‘split’. There are two possible analyses for the sound change that can be posited here. The first considers the possibility of consonantal cluster reduction where the underlying form contains a consonant cluster which is reduced by dropping the second consonant in the cluster. The alternate sound change theory proposes the epenthesis of an extra consonant following the initial nasal consonant in onset position in Tosk. This phenomenon can be observed in the resulting consonant clusters mb-, nd- in the Tosk dialect which exist as single consonants, only the nasal m- and n- in onset position in the Geg dialect. The Geg dialect shows a conservative attitude towards sound preservation. This can be seen in the preservation of /n/ in **gheimon* > *dimën* (G) ‘winter.’ The nasal undergoes a sound change in Tosk resulting in *dimën* (G) > *dimër* (T) (Fortson IV, 2010, p. 449). Another example of the preservation of the original *PIE sound is seen in **g^whermo-* > *zjarm* (G) ‘fire’, which in Tosk dialect undergoes loss of nasalization resulting in *zjarm* (G) > *zjarr* (T) (Fortson IV, 2010, p. 450). There are *PIE-derived words in the Albanian language that attest to the possibility of epenthesis as an explanation for the consonant clusters. For instance, *ndjerë* (T) and *njer* (G) ‘until’ are derived from **m(e)-g^hri* ‘at, till’ (Demiraj, 1997). In this case, the bilabial nasal /m/ has changed to the

coronal nasal /n/ and there is a y-epenthesis before the mid vowel /e/ yielding **m(e)-g^hri > njer* (G). For these reasons, the analysis that is pursued here is consonant epenthesis in Tosk where a consonant is epenthesized after the nasal consonant in word-initial position, and the epenthesized consonant assimilates to the place of the articulation of the preceding consonant which produces *njer* (G) > *ndjer* (T). Since the glide is present in both Geg and Tosk, the glide-epenthesis in *njer* (G), *ndjer* (T) comes before consonant epenthesis. The sound changes in this case are depicted through the sound change chain below:

$$*m(e)-g^{h}ri > njer (G) > ndjer (T)$$

The m>n sound change is followed by the glide-epenthesis /y/ before a mid vowel. In Tosk, the consonant epenthesis rule applies and yields the /nd/ consonant cluster. The existence of a word like **m(e)-g^hri* with derivations without a consonant cluster in onset position in Geg and with a consonant cluster in the onset position in Tosk provides evidence for the consonant epenthesis theory. This confirms that the consonant epenthesis theory is correct. The rule also applies when the nasal is followed by a liquid. In this case the nasal + liquid consonant cluster is broken up and a new consonant is epenthesized which assimilates to the place of articulation of the first consonant in the consonant cluster. Some examples supporting consonant epenthesis are: *nroj* (G) > *ndroj* (T) ‘change’, *mroj* (G) > *mbroj* (T) ‘defend’, *nreq* (G) > *ndreq* (T) ‘fix’, *mjell* (G) > *mbjell* (T) ‘to plant’ (Mann, 1948). The rule for the sound change above can be stated as:

$$\begin{array}{ccc}
 C & > & C C & & / [\text{_____} C \\
 [+nasal] & & [+nasal][+obstruent] & & [+sonorant]
 \end{array}$$

The following data show that the consonant-epenthesis rule also applies when the nasal in word-initial position is followed by a back vowel. Further evidence is furnished by *naj* (G) > *ndaj* (T)

‘split’, *maj* (G) > *mbaj* (T) ‘carry’, *mush* (G) > *mbush* (T) ‘to fill’, *mas* (G) > *mbas* (T) ‘after’, *nokush* (G) > *ndokush* (T) ‘anyone’ (Mann, 1948). Depending on the place of the articulation of the nasal, the epenthesized consonant can be either a coronal /d/ or a plosive /b/. The data above show that the rule applies when the nasal in word-initial position is followed by a [+back] vowel, such as /u/, /a/ or /o/. The consonant epenthesis rules can be stated by the following rules:

Rule 1 addresses the case when a nasal C is followed by a [+back] vowel in word-initial position in Geg and the application of the consonant-epenthesis rule yields CCV, a nasal followed by an obstruent followed by a back vowel, in Tosk:

$$\begin{array}{l}
 C \quad > \quad C C \quad / \text{ [______ V} \\
 [+nasal] \quad [+nasal] \quad [+back] \\
 [\gamma\text{place}] \quad [\gamma\text{place}] [\gamma\text{place}] \\
 [\beta\text{voice}] \quad [\beta\text{voice}] [\beta\text{voice}]
 \end{array}$$

Rule 2 captures the case of the CC consonant cluster, a nasal followed by a sonorant consonant - either a liquid or a glide. The epenthesized obstruent breaks up the consonant cluster and assimilates to the voicing and place of articulation of the preceding nasal.

$$\begin{array}{l}
 C \quad > \quad C \quad C \quad / \text{ ______ C} \\
 [+nasal] \quad [+nasal] [+obstruent] \quad [+sonorant] \\
 [\gamma\text{place}] \quad [\gamma\text{place}] [\gamma\text{place}] \\
 [\beta\text{voice}] \quad [\beta\text{voice}] [\beta\text{voice}]
 \end{array}$$

The first rule states that a nasal consonant and a [+back] vowel in word-initial position in Geg yields a nasal consonant, an obstruent and a back vowel in Tosk through consonant epenthesis. The epenthesized consonant assimilates to the existing consonant's place of articulation and voicing. So, in the case of bilabial nasal /m/ in *maj* (G) and *mbaj* (T) 'carry', the epenthesized consonant in Tosk assimilates to the place of articulation of the bilabial nasal and surfaces as the bilabial voiced stop /b/ instead of the bilabial voiceless stop /p/. However, in the case of *naj* (G) > *ndaj* (T) 'split' the epenthesized consonant is the coronal /d/ as it assimilates to the place of articulation of the coronal nasal /n/.

In the second rule, the motivation for a consonant cluster in the onset position clarifies that the CC cluster consisting of a coronal or bilabial nasal and a sonorant, a liquid or a glide, in Tosk is broken up by the epenthesis of a consonant that matches the place of articulation of the preceding nasal consonant. The [+coronal]/[+bilabial]C [+sonorant]C consonant cluster is broken up and the epenthesized consonant assimilates to the nasal consonant's place of articulation and voicing yielding a CCC sequence, such as *mroj* (G) > *mbroj* (T) 'defend'.

Besides the sound changes mentioned above, there are other phonological sound changes between the two dialects. Both the voiceless and voiced velars in Geg are usually palatalized in Tosk in word-initial position. An observation to be made is the preservation of the velar /k/ in Geg and its palatalization to /k^y/ in Tosk in the conditioning environment of a palatalizing vowel /e, i, y/ or glide /y/. The [+voice] velar /g/ in the Geg dialect is palatalized to /g^y/ in the Tosk dialect preceding a front vowel, such as in *gisht* 'finger' in Geg and *gjisht* 'finger' in Tosk. Similar examples of palatalization can be seen in the voiceless velar /k/ which is palatalized to /k^y/ in Tosk. Both sound changes can be seen in the following words taken from both dialects:

kjaj (G) > *qaj* (T) ‘cry’, *kjo* (G) > *qo* (T) ‘this’, *kjysh* (G) > *qysh* (T) ‘how’, *gisht* (G) > *gjisht* (T) ‘finger’, *kenë* (G) > *qenë* (T) ‘been’, *shkyj* (G) > *shqyj* (T) ‘tear’ (Mann, 1948).

The palatalization rule capturing the above sound change can be stated as follows:

C	>	C	/[_____i/e/y
[+velar]		[+velar]	
			[+palatal]
[γvoice]		[γvoice]	

The palatalization rule above states that in the case of a velar and a palatalizing vowel in word-initial position in Geg, in Tosk there is a tendency for the velar to palatalize. For example, in *gisht* (G) > *gjisht* (T) ‘finger’ the voiced velar changes to a palatalized velar in the Tosk dialect when followed by a palatalizing vowel. Sometimes palatalization is assisted by the presence of a glide. For example, in *kjo* (G) > *qo* (T) ‘this’ the voiceless velar /k/ is palatalized to /q/ when followed by the glide /y/. Palatalization of a velar /k, g/ when followed by /i, e, y/ is a well-documented phenomenon in a number of languages.

Other sound changes from the Geg to the Tosk dialect are seen in the fronting of back vowels in heavy syllables and in the loss of nasality in the Tosk dialect. The fronting/raising of back vowels /a/ and /o/ in a heavy syllable to the schwa position /ə/ in the Tosk dialect can be seen in words such as *bána* (G) > *béra* (T) ‘I did’. The preservation of nasality in vowels in Geg even after the nasal is lost is seen in the word *shtâsë* ‘animal’, while nasality is lost in *shtasë* in Tosk. The Albanian word for ‘animal’ has evolved in interesting ways in both dialects. The Old Geg form is *shtânsë* which has emerged in Modern Geg as *shtâsë* where nasality is retained in

the nasalized vowel even after the loss of the nasal consonant. In contrast, in the Tosk word *shtasë*, the features of the nasal are lost completely. The following diagram shows the evolution of the word *shtansë* in both dialects starting with their derivation from *PIE word **steh₂* ‘to stay’ (Demiraj, 1997). Watkins (2011) lists an extended form with a nasal **stə-n-t* ‘stand’ which accounts for the presence of the nasal in the derivations.

**steh₂/ *stə-n-t* > *shtânsë* > *shtâsë* (G) > *shtasë* (T) ‘animal’

The preservation of nasality in Geg after the loss of the nasal is also seen in **penk^we* > *pesë* ‘five’ (Demiraj, 1997). The voiceless sibilant /s/ in *pesë* is a reflex of **k^w*. There are a number of inherited words that show **k^w* > *s* sound change in their derivations, such as **k^wers-* > *sorrë* ‘crow’ (Demiraj, 1997). Another sound change in the derived word *pesë* is the loss of the coronal nasal /n/. The Albanian word for ‘five’ retains nasality in the intervocalic mid-vowel /e/ in Geg, but nasality is lost in the non-nasal mid-vowel /e/ in Tosk (Orel, 1998, p. XV). The word derivations are as follows:

**penk^we* > *pêsë* (G) > *pesë* (T) ‘five’

A significant difference between the two major Albanian dialects is the change from a nasal in Geg to a rhotic in Tosk in intervocalic position in words like *bânë* (G) and *bêrë* (T) ‘done’. This sound change is the focus of the present paper.

2.1 A Brief Overview of Albanian as Part of the Indo-European Language Family

The Albanian language constitutes a separate branch in the Indo-European language family (Fortson IV, 2010, p. 447). It was among the last branches added to the family in the second half of the 19th century thanks to Franz Bopp, a distinguished German linguist. Bopp

published his own research in 1854 with evidence that Albanian was part of the Indo-European language family, but that it did not bear any affinity to the other languages in the European continent. This view was shared by Gustav Meyer, an Austrian professor of historical studies, a few years later (Jacques, 1995).

The frequent conquests and invasions have resulted in a number of loanwords entering the lexicon at the detriment of the native lexicon. After Albania became part of the Roman Empire after the second century BC, the Albanian lexicon changed considerably (Fortson IV, 2010, p. 446). Latin exerted a major influence on the Albanian language, as evidenced by a significant number of loanwords from Latin existing in the modern day Albanian lexicon. The Albanian language is first attested in writing around 1500 A.D. in the Western Mediterranean (See Appendix A). Evidence for its origin as an Indo-European language comes from words related to nature, agriculture, or the human body, such as **hues* > *vathë* ‘sheep-hold’, **uer-ǵʰ* > *urth* ‘ivy’, **ǵembʰ* > *dhëmb* ‘tooth’ (Demiraj, 1997).

a) Phonological and Morphological Attestation of the Albanian Language

There exist other means of attesting to the ancient origin of the Albanian people and the language. Ptolemy of Alexandria, a famous geographer, mentions an Illyrian tribe by the name of Albanoi at about 150 A.D. The territory inhabited by the tribe stretched from *Durrës* to *Kruja* in present day Albania. Written documents show that the Albanian language must have been developed enough not to be influenced to a great extent by Greek and Latin, two other ancient contact languages. In both cases Greek and Latin loanwords date back to a period before the Christian era, as Greek loanwords are of the Doric Greek dialect and Latin loanwords, such as *ar*

<*aurum* (Latin) ‘gold’ were introduced into Albanian with the first Roman conquest about 229 BC (Fortson IV, 2010, p. 446).

1. Phonological evidence for the existence of the Albanian language

The prevailing hypothesis is that Latin borrowings entered the Albanian lexicon with the Roman conquest of 229 BC (Fortson IV, 2010) and Greek borrowings entered the Albanian language between the 4th and 6th centuries A.D. (Jacques, 1995). The latter is supported by the fact that the ancient Greek borrowings are known to be spoken in the Doric dialect, such as *mokër* < *makhana* (Doric) ‘millstone’ or *drapër* < *drapanon* (Doric) ‘sickle’. There are more than 300 names of ancient cities, rivers, lakes, and mountains that were mentioned in ancient Greek and Roman written documents that are still used in Albanian; those names include *Durrachium*, and *Apollonia* (Jacques, 1995).

2. Morphological evidence for the existence of the Albanian language

The Albanian lexicon shows many borrowings, but its morphology and grammar have remained intact. Albanian has five case inflections for nouns: nominative, genitive, dative, accusative and ablative. Albanian nouns have an indefinite form and a definite form where a suffix distinguishes the definite form of the noun from the indefinite form as seen in *mal* (indef.) ‘a mountain’ and *mali* (def.) ‘the mountain.’ Nouns are split into masculine *gjuri* ‘the knee’, feminine *bleta* ‘the bee’ and neuter genders *ujëra* ‘waters.’ The dative and the genitive share the same endings. The PIE locative plural **-su* is contained in the plural ending *-sh* in *malesh* ‘from mountains.’ The plural ending *-e* found in *male* ‘mountains’ is a reflex of the PIE **-oi* (Fortson IV, 2010, p. 453).

The present and aorist forms in Albanian verbs reflect PIE constructions. The perfect participle is formed according to the IE perfect stem. Similar to PIE, Albanian distinguishes in voice between mediopassive and active. The vowel alternations between tenses in *mbjell* ‘I plant’ and *mbolla* ‘I planted’ resemble the PIE ablaut: the *-o-* of aorists in *mbolla* goes back to *-e-* in past tense. There are three athematic presents found in **h₁esmi->jam* ‘I am’, **kapmi>kam* ‘I have’, and **keh₁mi>them* ‘I say.’ PIE 1st and 3rd person singular endings **-mi* and **-ti* are found in *them* ‘say’ and *thotë* ‘says’. PIE suffixes **-me*, **-te*, and **-nt(i)* as seen in *thamë*, *-të*, and *-në*. Albanian verb forms like *paçim -i -in* show continuation of the PIE optative **-ih₁-*. In addition, thematic aorists with zero-grade of the root are found in **k^wle->kle* ‘she was’ (Fortson IV, 2010, p. 453-4).

b) Regular sound correspondences from *PIE to Albanian

Phonological evidence includes regular correspondence for both consonants and vowels. For a complete phonological inventory of *PIE see Appendix B.

1. Consonant reflexes

There were various outcomes for stops, sibilants, liquids, nasals, velars or the vowels. There is evidence in the language that shows that voiced aspirates fell together with voiced stops (Fortson IV, 2010, p. 449) as seen in the following words:

Table 1: Voiced aspirates and voiced stops (Fortson IV, 2010)

*PIE	Alb.	gloss
*bh _{idh} -ta	besë	‘truce’
*en-dhog ^w h-eie	ndez	‘I kindle’
*ghor-dho	gardh	‘fence’

When *d(h)- was in onset position the resulting sound was [ð] in some cases. For example, *deh₃-> *dha* ‘gave’. This sound change is found mostly in sandhi contexts (Fortson IV, 2010, p. 449).

Voiceless *p and *t were lost mostly in consonant clusters; otherwise, they were preserved as seen below:

Table 2: Outcomes for *p and *t (Fortson IV, 2010)

*PIE	Alb.	gloss
*pek ^w -	poqa	‘I cooked’
*torse-ie-	ter	‘I dry’
*supno-	gjumë	‘sleep’ (noun)

The Albanian reflexes of the velars have given rise to controversial proposals: for some linguists Albanian reflexes show that the plain velars and the labiovelars fell together, for others Albanian shows distinct reflexes for all the three velars when the plain velars and

labio-velars are palatalized. Different from the other satem languages, in certain contexts palatal velars developed as non palatal (Fortson IV, 2010, p. 449).

The following shows how *k* was a development from **k* and **k^w* and *g* was a development from **g*, **g^w*, **gh*, and **g^wh*:

Table 3: Outcomes for **k*, **g*, **k^w*, **gh*, **g^wh* and **g^w* (Fortson IV, 2010)

*PIE	Alb.	Gloss
<i>*kap-mi</i>	kam	‘I have’
<i>*k^wom</i>	kë	‘whom’
<i>*leig-</i>	ligë	‘disease’
<i>*dheg^wh</i>	djeg	‘burn’
<i>*ghordho-</i>	gardh	‘fence’
<i>*on-g^wh₃-</i>	ngrënë	‘eaten’

Similar to Castilian Spanish and Old Persian, PIE palatal velars developed as dentals, as seen in **keh₁-mi* > *them* ‘I say’ and **gombh-o* > *dhëmb* ‘tooth’ (Fortson IV, 2010, p. 449). A later development is that plain velars and labiovelars **k^w* and **g^w* were palatalized in the phonological environment of palatalizing vowels (e, i) or the glide (j). For example, **k* resulted in a sibilant in **penk^we* > *pesë* ‘five’ and **g* resulted in a voiced sibilant in **g^whermo-* > *zjarr* ‘fire.’ The palatalized velar was depalatalized when followed by a lateral, such as in **glu-no* > **glu-no* > *gju* ‘knee’ (Fortson IV, 2010, p. 449).

The sibilant **s* had the following outcomes: **s* > /ʃ, θ, ɖʒ/ g^j, h, ∅/. The most frequent is /ʃ/ as seen in **sek^w-* > *shoh* ‘see’. The /θ/ reflex is seen in **sus* > *thi* ‘pig’. The /ɖʒ/ g^j/ outcome is

seen in *sérpent> *gjarpër* ‘snake’, *solo-> *gjallë* ‘whole’ or in *sup-no> *gjumë* ‘sleep’. The /h/ outcome is seen in *selk>*heq* ‘pull’. Moreover, *s>h> ɤ in the coda position is seen in words like *mus > *mi* ‘mouse’. The *gⁱ* outcome is thought to be found mostly in the onset position when the following vowel is stressed. Consonant clusters *s^hk developed as *h*, such as in *s^hkieh₃ > *hie* ‘shade’. Loanwords from Greek and Latin with *s* in any position were borrowed with *sh*, such as Gk.*prason* > *presh* ‘leek’, Lat.*scala* > *shkallë* ‘ladder’ (Fortson IV, 2010, p. 450).

Liquids and nasals were preserved for the most part as seen in the following:

Table 4: Outcomes for *m, *n (Fortson IV, 2010)

*PIE	Alb.	Gloss
*mus	mi	‘mouse’
*h ₂ melg-	miel	‘milk’
*nos	na	‘we’
*ghor-dho	gardh	‘fence’

The trilled /r/ resulted from certain clusters as seen in *uren->*rrunjë* ‘yearling lamb’ and in borrowings, such as Lat. *infernum* > *ferrë* ‘hell.’ The dark /r/ was the outcome of the light /l/ in intervocalic position as found in *olena> *llanë* ‘elbow’ (Fortson IV, 2010, p. 451).

The outcome for syllabic liquids was liquid followed by a vowel, which was often /i/ but at times it was lowered to /e/ as seen in *drkwo->*drekë* ‘meal’ and *ghyzdo-> *drithë* ‘grain.’ The outcome for syllabic nasals was the low back vowel /a/ with the loss of the nasal as found in *(e)ptmta > *shtatë* ‘seven’ (Fortson IV, 2010, p. 451).

The outcome for the glides was that they lost their sonority and turned to consonants. $*j$ was hardened to g^j as in **enjose->ngjesh* 'I gird.' The front glide $*u$ turned to the voiced labio-dental v as seen in **uoseje> vesh* 'I dress' (Fortson IV, 2010).

There are almost no reflexes for laryngeals in Albanian. The only evidence is found in the root aorist *dha* 'she gave' and *dham* 'we gave' coming from **dh₃-t* and **dh₃-me* where a vocalized laryngeal is preserved. **RH* sequences had two different reflexes and it has been proposed that the triggering environment for each outcome is the presence or absence of an accented vowel, namely *aRa* when accented and *Ra* when not accented, such as can be seen in **p_lh₂-uo >parë* 'first' (Fortson IV, 2010, p. 451).

2. Vowel reflexes

Short PIE vowels and long PIE vowels have different outcomes in Albanian, with long PIE vowels undergoing unusual changes. Short vowels underwent syncope when they were found in unstressed syllables, as is the case with **en* in PIE derivatives **eng^wh₃>ngrënë* 'eaten', **eng^wh₃>ngroh* 'warm', and *nip< *népo(t)* 'grandson' (Fortson IV, 2010).

The short back vowels **a* and **o* became *a* as seen in **kapmi> kam* 'I have', **nok^wt->natë* 'night.' The short mid vowel **e* was mostly preserved as in **penk^we>pesë* 'five.' In some cases it became part of a diphthong through the breaking of the high front vowel /i/ as in **bher>bie(r)* 'I carry,' and in other phonological conditioning environments a glide /j/ is epenthesized before **e* as in **h₁esmi>jam* 'I am.' The short vowels **i* and **u* are preserved as in **sinos > gji* 'bosom' and **supno > gjumë* 'sleep.' However, the short high vowel **i* was lowered when the following syllable contained a mid or low vowel as in **duigha > degë* 'branch' (Fortson IV, 2010, p. 451)

The Albanian reflexes for long PIE vowels present more challenges. Long vowels were shortened. Long **i* and **u* became *i* as seen in **pī-* > *pi* ‘drink’ and **mūs* > *mi* ‘mouse.’ In Latin loanwords **ū* was fronted to *y* as in *iūnctūra* > *gjymptyrë* ‘joint.’ In a heavy syllable **e* and **a* became *o* as in **māter* > *motër* ‘sister’ and **pleh1-to* > *plotë* ‘full.’ In unstressed syllables, **ō* became *e* and **ā* became *ë* as in **nōs* > *ne* ‘we’ and **nepotjā* > *mbesë* ‘granddaughter’ (Fortson IV, 2010, p. 452).

The diphthongs **au* and **eu* became *a* and *e* as in **pleus-* > *plesht* ‘flea’ and **saus-nio* > *thanj* ‘dry.’ The diphthongs **ei* and **oi* became *i* and *e* as in **gheimon* > *dimër* ‘winter’ and **stoigh-o* > *shteg* ‘path’ (Fortson IV, 2010, p. 452).

c) Satem vs. Centum

Linguists are confident with regards to phonological reconstruction and the inventory of the phonemes of Proto-Indo-European. Concerns have been raised, however, about their phonetic interpretation. The PIE phonemic inventory shows a language rich in stops but poor in fricatives. Appendix D shows the evolution of PIE stops in different languages. Of particular interest is to notice how the PIE velars are categorized according to the place of articulation in velars, palatals, and labiovelars as seen in the table below adapted from L. Longerich, 1998.

Table 5: Phonemic inventory of PIE velar reflexes (Longerich, 1998)

Velar	Palatal	Labiovelar
k g	k ^y g ^y	k ^w g ^w
kh gh	kh ^y gh ^y	kh ^w gh ^w

The evolution of velars defines major groups within the IE family: satem languages and centum languages. In the satem group of languages, the palatals surface as sibilants and coronal affricates and the labiovelars have plain or pure velar reflexes. The satem languages include Indo-Iranian, Baltic, Slavic, and Armenian. Linguists are divided in two camps when they consider the status of Albanian within the PIE language family. There are linguists who posit that it's a satem language and there are other linguists who consider it a centum language. So far, there has been no conclusive evidence to support either theory.

2.2 Modern Albanian

Even though Albanian is officially spoken in Albania, it is also spoken in neighboring countries such as Greece, Macedonia, Kosovo and parts of Southern Italy, such as Sicily and Calabria (see Appendix C). The two main dialects of the language are Geg and Tosk, geographically located in the North and the South, respectively, and separated from each other by the Shkumbin river. The geographic origin of the language is hard to ascertain as the first attestation in the form of a written record is a short baptismal formula dating from 1462 and the first book to have survived is the *Meshari* or the *Missal* of Gjon Buzuku written in the old Geg dialect dated 1555. The first book to have survived written in the Tosk dialect dates to 1592. Even though the written documents in Old Albanian are scanty, they attest to a fully developed language with its own morphology, syntax and phonotactics as distinct from the other languages of the Balkans. The existence of the language is shown in a letter dated to 1332 (Fortson IV, 2010, p. 447-8). The language up to the 18th century is known as Old Albanian. Modern Albanian starts with the 19th century and the Albanian literature thrived only after Albania won its independence in 1912. The official language spoken in Albania consists mostly of the Tosk dialect with the Geg dialect mixed in (Fortson IV, 2010, p. 446).

a) Modern Albanian vowel and consonant inventory

The Albanian vowel system contains /a, e, i, o, u, y/ and the following diphthongs: /ia, ie, au, oi, ue, ua, ai, eu/ (Fortson IV, 2010).

The Albanian consonant inventory contains the voiced /b/, /d/, /g/ and voiceless /p/, /t/, /k/ counterparts for stops; it contains the glide /y/ and the laryngeal /h/; it also contains a rich inventory of fricatives, the voiced /v/, /z/, /ð/, /ʒ/ and the voiceless: /f/, /s/, /θ/, /ʃ/; also, it contains the alveolar affricates /ts/ and /dz/, the alveo-palatal affricates /tʃ/ and /dʒ/, and the palatal affricates /kʲ/ and /gʲ/ which have the same realization in the Geg, the Northern dialect, as /tʃ/ and /dʒ/. The nasals include /m/, /n/, and /ɲ/ and the liquids include the apical tap /ɾ/, the trill /R/, light /l/ and dark /ɫ/ (Fortson IV, 2010). The following table shows consonants categorized according to the manner of articulation.

Table 6: Albanian consonants and their place of articulation

Stops						Affricates				Fricatives						Nasals			Liquids				Gl.	Lary.		
p	b	t	d	k	g	ts	dz	tʃ/kʲ	dʒ/gʲ	f	v	θ	ð	s	z	ʃ	ʒ	m	n	ɲ	ɾ	R	l	ɫ	j	h

b) Modern Albanian rhotics

Similar to Romance languages, the Albanian language has an apical alveolar tap/flap /ɾ/ and a trill /R/ that are clearly distinguishable acoustically; the articulatory gestures involved in their production are the same and the only difference is that /R/ requires more vibrations to produce. Both sounds can be found word-initially, such as in **h₁reg^w* > *re* (T, G) ‘cloud’ and

**r(e)Hp* > *rrapë* (T, G) ‘radish’ (Demiraj, 1997). Both the tap and the trill can be found intervocalically, but they don’t form minimal pairs, such as in **prh₂-u-* > *parë* (T, G) ‘first’ and **b^hh₂u-ro-* > *burrë* (T, G) ‘man’ (Demiraj, 1997). Different from the trill, only the tap is found in consonant clusters either following or preceding a plosive, a stop or a velar, such as in **b^hreh₁u-* > *brumë* (G, T) ‘dough’, **derk-* > *dritë* (G, T) ‘light’, **(s)Krep-* > *krap* (G, T) ‘crag’, **uerǵ^h-* > *zyjerdh* (G, T) ‘to wean’, and **gwerH-* > *hangar* (G) > *hëngra* (T) ‘eat’ (Demiraj, 1997). Both the tap and the trill are found in word-final position, such as in **ǵemH-* > *dhandërr* (G) > *dhëndërr* (T) ‘son-in-law’ and **g^wrH-i-* > *gur* (G, T) ‘stone’ (Demiraj, 1997). Since /r/ is always realized as a trill and doesn’t seem to engage in the n>r sound change, for the purposes of this paper, it doesn’t hold any special relevance and will not be addressed. This discussion is interested only in the derivation of /r/ in Albanian words. In most cases, the trill /r/ is found in borrowings from contact languages. Words like *arrë* ‘nut’, *barrë* ‘load’, *berr* ‘small cattle’, *derr* ‘pig’ are loanwords from Greek (Demiraj, 1997).

Different from the tap/flap /r/, the Albanian trill /r/ is sometimes the outcome of certain consonant clusters, as can be seen in the Latin borrowing **infernum* > *ferr* ‘hell’ (Fortson IV, 2010, p. 451). The **rn* cluster changed to *rr* in **uer-neh₂* > *verrë* ‘alder’, **b^horeh₂* > *barrë* ‘load’ (Demiraj, 1997) or **bhorna-* > *barrë* ‘load’ (Orel, 1998, p. 19), and in Latin loanwords, such as *carrus* > *qerre* ‘cart’, *rebus* > *rrevë* ‘lot’, *radius* > *rreze* ‘rays, radius’, *sparus* > *shparr* ‘kind of oak’, *rotula* > *rrotull* ‘around, small wheel’, *ruga* > *rrudhë* ‘wrinkles’, *ripa* > *rripë* ‘stonewall’, *infernum* > *ferr* ‘hell’, *forno* > *furrë* ‘oven’ (Orel, 1998). In Latin loanwords word-initial /r/ became a trill /r/ as the words were borrowed into the Albanian language as seen in *rarus* > *rrallë* ‘rarely’, *ordine* > *rregull* ‘order’, *rema* > *rrem* ‘paddle’ (Orel, 1998, XVIII). Some of the

loanwords with the trill /r/ are Slavic loanwords, such as *rrëgallë* ‘ravine’, *oborr* ‘yard’, *rrogos* ‘reed mat’, *rrapatem* ‘get tired’ (Orel, 1998).

However, most often the situation with **r > rr* in PIE derived words is somewhat more complex as can be observed in the data presented in the table below:

Table 7: Inherited Albanian words with **r > rr* reflexes (Demiraj, 1997)

*PIE	Geg	Tosk	gloss
*Hrot-o	rrath	rreth	‘wheel’
*mer-s	morr	morr	‘louse’
*u(e)r(e)h ₂ d-	rranjë	rrënjë	‘root’
*ureh ₂ ǵ ^h	rrodhe	rrodhe	‘thorn’
*k ^w ers-	sorrë	sorrë	‘crow’
*uer(H)-	varrë	varrë	‘wound’
*uerneh ₂	verrë	verrë	‘alder’

The data above show that the trill /r/ is sometimes the result of –rs or –rh/rn- consonant clusters, where the consonant cluster undergoes assimilation if preceded by the mid-vowel /e/. The features of the rhotic spread through progressive assimilation to the following consonant resulting in a false geminate. The rule for progressive assimilation can be stated as:

$$rs/rn > rr \quad / e \underline{\quad}$$

The word **mer-s* undergoes progressive assimilation which changes the cluster –rs to –rr. So, the sound change is captured by the following **mer-s > merr > morr* ‘louse’. Both **mer-s > morr*

and **k^wers* > *sorrë* ‘crow’ have undergone vowel lowering where the mid vowel /e/ is lowered to the back, low vowel /o/. The progressive assimilation rule is applied before the vowel-lowering rule in order to have **mer-s* > *morr*. The intermediate representation *merr* undergoes vowel-lowering yielding *morr* ‘louse’. Other words where the **sr* and **rs* and **sw* clusters changed to *rr-* are *djerr* ‘barren’, *rrymë* ‘current’, *vjehërr* ‘mother-in-law’ (Orel, 1998, XXII).

In word-initial position, the trill /ʀ/ is a reflex of the **ur-* syllable. Words like **ues* > *vesh* ‘wear’, **ued-* > *vjedh* ‘steal’ (Demiraj, 1997) show that in onset position the back, high vowel /u/ is strengthened into the voiced, labio-dental fricative /v/, which is listed as one of the reflexes of **u* in word-initial position in Fortson IV (2010) and can be observed in such words as **uen(H)g* > *vang* ‘rim’, **uel(H)-* > *valë* ‘wave’ (Demiraj, 1997). This goes to support the possibility of /u/ being perceived as a consonant in onset position not only when it’s followed by a vowel but also when it’s followed by a rhotic, as can be seen in words like **ureh₂g^h* > *rrodhe* ‘thorn’ or **u(e)r(e)h₂d-* > *rrënjë* ‘root’ (Demiraj, 1997), **urmi-* > *rrimë* ‘rainworm’ (Orel, 1998). The word *rrimë* shows an illegal pairing of the high, front vowel with a trill, a combination uncommon in most languages derived from Latin (Recasens, 2002, p.346). The motivation is mostly articulatory, since for the articulatory production of the trill, the tongue has to retract to make a constriction at the back of the mouth and then it needs to protract for the production of the high, front vowel /i/. *u* > *v* sound change is documented in other languages, such as *wine* (English) and *vino* (Italian) both derived from **u(e)iH-(o)n-* (Demiraj, 1997). The strengthening rule of the **u* > *v* sound change can be written as follows:

$$*u > v / [____ C / V$$

$$[+rhotic]$$

In order for the sound change to result in a trill, however, the word has to undergo another sound change. The rule for regressive assimilation can be written as follows:

$v\tau > /r/$ $/[\underline{\hspace{1cm}}]$

After the back vowel /u/ becomes consonantal and changes to the labio-dental fricative /v/, the word has an intermediate representation *vr-*. Then regressive assimilation applies spreading the features of the rhotic to the labio-dental fricative, yielding the trill sound /r/. So, the derivation is as follows: **ureh₂g^h > vreh₂g^h > rreh₂g^h > rrodhe* (G, T) ‘thorn’. The other two sound changes **e > o* and **g > dh* are already documented in the language (Fortson IV, 2010).

c) Stress patterns in modern Albanian

Stress pattern is not easy to define in Albanian words. Stress does not shift because of word inflections and it does not change between the two dialects, Geg and Tosk (Trommer & Grimm, 2004). There are cases when the pattern is predictable as well as when the application of word stress seems haphazard. The following table shows words with varied stress patterns.

Table 8: Stress patterns in modern Albanian words (Mann, 1948)

Geg	Tosk	gloss
máse	mbáse	‘perhaps’
marój	mbarój	‘finish’
kollovár	kollovár	‘husband living in wife’s home’
kolíbe	kolíbe	‘cabin’
riní	riní	‘youth’
kapéle	kapéllë	‘hat’

Stress in Albanian words varies with the number of syllables in the word and syntactic derivation. Most often bi-syllabic words and some tri-syllabic words show a penultimate stress, such as *púnë* ‘work’, *gjúmë* ‘sleep’, *shúmë* ‘many’, *úrë* ‘bridge’, *mírë* ‘good’. However, stress falls on the last syllable when the word contains the low back vowel /o/ followed by a glide word-finally, such as *punój* ‘I work’, *lexój* ‘read’, *vrápój* ‘run’ or when the final closed syllable contains a high vowel, /i/ or /u/, such as *mësim* ‘lesson’, *punim* ‘work as noun’, *dikúr* ‘some time’, *gjymim* ‘thunder’ (Trommer & Grimm, 2004). Words with a low, back vowel /o/ or /a/ followed by a rhotic /r/ in word-final position have the stress on the final syllable, such as *ditór* ‘daily’, *punëtór* ‘worker’, *ditár* ‘diary’, *udhëtár* ‘traveler’. Some Turkish loanwords have final stress, such as *hatá* ‘catastrophe’, *dynjá* ‘people’, *sevdá* ‘pleasure’. If the final vowel in an open syllable is a back or mid vowel, such as /e/, /ə/ or /o/, stress is always penultimate, such as in *njoftíme* ‘news’, *puníme* ‘works’, *gëzíme* ‘joys’, *bírko* ‘son’. Low and mid vowels tend not to be stressed in open final syllables, such as in *dárë* ‘tongs’, *híje* ‘shadow’, *hérë* ‘time’, *héra* ‘early’, *hóqa* ‘took away’, *hápa* ‘steps’ (Trommer & Grimm, 2004).

d) n > r sound change in Albanian Tosk

In this paper I will explore the n>r sound change as a specific sound change (lenition) in the Tosk dialect of Albanian. Traditionally this sound change is accounted for by a Tosk innovation of n>r sound change in weakening environments. A preliminary observation is that there are similar words in both dialects that differ in the presence of /n/ vs. /r/ intervocalically, such as in the reflexes of the *PIE word **per-* for ‘brought’ having a phonological realization as *pruni* in Geg and *pruri* in Tosk (Demiraj, 1997). In this paper, I will explore the directionality of the change, some possible diachronic explanations and if the sound change is phonetically natural.

3. n>r Sound Change in Albanian Tosk

The Albanian Tosk sound change $n > r$, or rhoticism, has been prolific in the past, as evidenced by the number of words illustrating the change in the Tosk dialect. What's salient within the context of $n > r$ sound change in Tosk is that it is found intervocalically, and mostly when the following vowel is not stressed as illustrated by the following derivations.

**denk > dánë (G) > dárë (T) 'tongs' (Demiraj, 1997)*

The derivation above shows how the coronal nasal /n/ is preserved in Geg, but it has lost its nasalization in Tosk, as it has changed from a nasal into a rhotic /r/. The inherited word has a velar word-finally which is lost. Word-final positions are prime articulatory positions for deletions to happen across languages. The $n > l$ sound change where an alveolar nasal changes to an alveolar lateral is much more common. This is attributed to perception: an acoustic similarity between the alveolar nasal and the alveolar lateral (Recasens, 2002). Nasal rhoticism has an intermediate representation with a nasalized tap, since nasality often does not delete with the nasal as is seen in inherited words in Albanian. Even though $n > r$ sound change is uncommon, it may be found in some languages in an intervocalic position, or before a voiced consonant, such as in Italian *autunno > auturno* 'autumn', in Occitan *monicu > morgue* 'monk', *ordine > urdre* 'order', in Spanish *sanguine > sangre* 'blood', *homine > hombre* 'man', in Andalusian Spanish *me[h]on > mejor* 'better', *vingen > virgen* 'virgin' (Recasens, 2002, p. 345).

The following is a limited set of words where *n* and *r* correspond intervocalically in the two Albanian dialects. The words have been marked for stress:

Table 9: n > r sound change in Albanian Tosk (Mann, 1948; Orel, 1998 +)

Alb. Geg	Alb. Tosk	gloss
péni	péri	‘string’
gjúni	gjúri	‘knee’
báni	béri	‘did’
i thánë	i thárë	‘dry’
érëna +	érëra	‘wind’ pl.
barëna +	barëra	‘grass’ pl.
elbëna +	elbëra	‘barley’

All the words above show n > r sound change in Tosk. Some preliminary observations that can be made are: all the words have the coronal nasal /n/ in an intervocalic position and they have either a penultimate or antepenultimate stress pattern. That means that in all cases the nasal is followed by an unstressed vowel. The word *báni* (G) > *bérë* (T) has undergone vowel raising where the low, back vowel /a/ is raised to the mid schwa-like vowel /ë/.

The following analysis looks at Albanian words inherited from *PIE and Latin and a few Greek loanwords with /n/ or /r/ in intervocalic positions in order to explain the directionality of the sound change. This analysis focuses on Latin for two reasons: the first reason is that Latin loanwords show evidence of n > r sound change in Tosk, and secondly, because Latin exerted major influence on the Albanian lexicon after the Roman conquest of Albania (Fortson IV, 2010). Furthermore, it investigates the possibility of the sound change in Tosk when the nasal /n/ is in word-initial or word-final position in order to rule out other triggering environments for n >

r sound change in Tosk. The analysis moves on to cases when /n/ appears to be in an intervocalic position, but it has an underlying representation where the nasal is part of a consonant cluster. An overview of consonant clusters with -n in intervocalic and word-initial positions is provided to explain consonant-epenthesis as a phonological process that applies in certain contexts in Albanian Tosk. A close examination of Turkish loanwords is offered to explain why the n > r rule in Tosk doesn't apply, even though the nasal /n/ is in an intervocalic position and the following vowel is unstressed.

3.1 Data showing evidence for the sound change

The n>r sound change in Tosk is found in modern Albanian words that have been derived from Proto-Albanian as well as in some loanwords that have been borrowed into Albanian from other languages, such as Latin, Greek and Turkish. As will be explained later on, only the loanwords that entered the Albanian lexicon prior to the Turkish occupation have undergone the n > r intervocalic lenition process.

a) Albanian inherited words

The following table shows some inherited words in Albanian and their outcome in both Geg and Tosk.

Table 10: Inherited words with n>r sound change in Tosk (Fortson IV, 2010; Orel, 1998 +)

*PIE	Geg	Tosk	gloss
*doru	druńi	druńi	‘wood’
*d̥rno- +	druńi	druńi	‘wood’
*eh ₃ l-	llańë	llëřë	‘elbow’
*al-ena +	llańë	llëřë	‘elbow’
*ǵheimon-	dímën	dímër	‘winter’
*knid-	thëni	thëri	‘louse’
*ur̥ano- +	vrańët	vrëřët	‘cloudy’
*uen- +	uni’	uri’	‘hunger’

The data above show that *n* in *PIE reconstructed forms is preserved in Geg but is lost in Tosk, as in *ǵheimon- > *dimën* (G) > *dimër* (T) ‘winter’ and *knid- > *thëni* (G) > *thëri* (T) ‘louse’. In almost all the cases given intervocalic /n/ is followed by an unstressed vowel. The derivation for *uen > *uni’* (G) > *uri’* (T) ‘hunger’ is an exception as intervocalic /n/ is followed by a stressed vowel. A fuller analysis for this exception is given in the section on exceptions. The fact that the Tosk *n* > *r* sound change is evident in some Albanian words of *PIE origin is very revealing about the status of the dialectal split in the Albanian language.

b) Loanwords

The following table shows that *n*>*r* sound change has applied to some Latin or Greek borrowings:

Table 11: Latin or Greek loanwords with Tosk n>r sound change (Mann, 1938; Orel, 1998 +)

Latin/ Greek	Geg	Tosk	gloss
<i>arēna (L)</i> +	raña	rěřě	‘sand’
<i>vīno (L)</i>	veñě	veřě	‘wine’
<i>grānum (L)</i>	gruñi	gruřě	‘wheat’
<i>krónos (G)</i> +	kreñě	kreřě	‘heads’
<i>florín (L)</i>	floríni	floríři	‘gold’
<i>femina (L)</i> +	féměn	féměr	‘female’

Slavic loanwords, such as *zakóni (G)* > *zakóni (T)* ‘custom’, do not show that n > r sound change rule has applied, even though it has an intervocalic /n/ followed by an unstressed vowel (Orel, 1998).

3.2 Analysis

Based on the observations made thus far, a preliminary analysis of the conditioning environment for the n > r sound change would look something like the following:

n > r / \acute{V} _____V

[-stress]

The rule above states that n > r sound change in Tosk applies when the nasal /n/ is found in an intervocalic position and the following vowel is unstressed. The rule for the n > r intervocalic sound change applies to words like *pěni (G)* ‘string’ and *gjuñi (G)* ‘knee’ as they have an intervocalic /n/ and the following syllable is not stressed, both triggering conditions specified by

the rule. After the $n > r$ sound change rule applies, the resulting intervocalic sound in both words is a rhotic. The $n > r$ sound change rule applies as expected for *péni*, *gjuáni* yielding *péri*, *gjuári* in Tosk. Again, as expected, the rule does not apply to words like *puniím* (work) where the nasal is in an intervocalic position but the following vowel is stressed. So, the word *puniím* (G) $>$ *puniím* (T) preserves the nasal in Tosk.

Further examinations of Albanian reveal that $n > r$ sound change can be viewed as intervocalic lenition. As can be seen from the table below, there is no evidence of an $n > r$ sound change in onset or in coda positions. Both /n/ and /r/ can be found in onset or coda positions and words shared by both dialects preserve their /n/ in those positions:

Table 12: Albanian –n- in word-initial and word-final positions in both dialects (Mann, 1948)

Alb. Geg	Alb. Tosk	gloss
natë	natë	‘night’
neśme	neśër	‘tomorrow’
nuk	nuk	‘not’
nis	nis	‘begin’
man	man	‘berries’
pun	pun	‘job’
lun	luán	‘play’
luań	luań	‘lion’

a) The outcome of intervocalic *-nC-* and *-jn/jm-* clusters

The following set of data shows that the *n>r* sound change doesn't apply to cases where /n/ is in a consonant cluster in Albanian words, since the rule applies only in intervocalic positions. This shows that /n/ resists lenition when it's not in an intervocalic position. In the words listed below /n/ is followed by another [+coronal] or [+dorsal] consonant. In those cases /n/ is preserved in the Tosk dialect. This can be seen in words such as:

Table 13: Albanian words with *-nC-* clusters in both dialects (Mann, 1948)

Alb. Geg	Alb. Tosk	gloss
lańdë	lëndë	'matter'
kańgë	këńgë	'song'
kand	kënd	'corner'
*kno	këndo	'sing'
mańga	mëńga	'sleeve'
dańgu	dëńgu	'bundle'
lańgu	lëńgu	'liquid'

There are two possible analyses for the presence or absence of /ë/ in *kno* (G) and *këndo* (T) 'sing'. It can be a case of schwa-epenthesis or it can be a case of vowel syncope where unstressed schwa is deleted. The derivations for the Latin loanword *cannétum* > *knet* (G) > *kënetë* (T) 'marsh' (Orel, 1998) give reason to believe that schwa-epenthesis is the correct analysis. The back vowel /a/ undergoes unstressed vowel syncope in Geg which yields *knet*. Then it undergoes schwa-epenthesis in Tosk to break up the /kn/ onset cluster. Mann's lexicon of

1948 contains only a few words with /kn/ in onset position and they are all Geg variations.

Words like *knell* (G) vs *këndell* (T) ‘refresh’, *knir* (G) vs *këndir* (T) ‘smother’, *knet* (G) vs *kënet* (T) ‘marsh’ (Mann, 1948) show that they underwent vowel epenthesis to break up the /kn/ consonant cluster and this sound change is captured by the following rule:

ø > ë / k _____ n

/kn/ consonant clusters are uncommon in word-initial position in most languages. It’s phonetically unnatural to have a dorsal and a coronal in a sequence in word-initial position in Albanian. The production of the kn- cluster involves a number of articulatory gestures. As the speech producing apparatus prepares for the production of the velar /k/, the tongue retracts to produce air constriction at the back of the mouth; then the tongue needs to extend quickly to the front of the mouth for coronal constriction for /n/, and the velum lowers to produce nasality. The coordination of such articulatory gestures is hard, especially in rapid speech. In Tosk, after the schwa-epenthesis rule above applies to *knell* (G), it yields *knell* (G) > *kënéll* (T).

Words like *knell* (G), *knir* (G) also undergo a consonant epenthesis rule in Tosk. There are two possibilities here: either /d/ was there and was deleted in the Geg dialect, or it was epenthesized in the Tosk dialect. Since the word *knet* > *kënet* does not have an epenthesized stop following the nasal, it’s plausible to assume that this is a case of consonant epenthesis in a particular phonological environment. In both *knell* (G) and *knir* (G), /n/ is followed by V +liquid. The quality of the following vowel does not seem to be a factor in consonant epenthesis since both *knet* and *knell* have a mid vowel following the nasal, and even though the schwa-epenthesis rule applies to both of them, only *knell* undergoes consonant epenthesis. So, the conditioning

phonological environment is the presence of the vowel followed by a liquid in word-final position.

Once the schwa-epenthesis rule applies, /n/ is in an intervocalic position. The question arising in this situation is: once the schwa-epenthesis rule applies and /n/ is in an intervocalic position, why doesn't the $n > r$ sound change rule apply? The answer lies with the heaviness of the following vowel. All the words above show a word-final stress, which means that in all of them /n/ is in intervocalic position followed by a heavy syllable. Hence, the $n > r$ sound change rule does not apply as it applies only when /n/ is in an intervocalic position followed by an unstressed syllable. Previously, we saw the consonant epenthesis rule apply to nasal + stop and nasal + coronal consonant clusters in word-initial position. The following words with /n/ in intervocalic position followed by a heavy syllable in Geg have a coronal stop following the coronal nasal /n/ in Tosk.

Table 14: Consonant epenthesis in words with intervocalic –n- followed by a stressed vowel in Tosk (Mann, 1948)

Geg	Tosk	gloss
munó	mundó	'try', 'can'
lěno	lěndo	'hurt'
měno	měndo	'delay'
aní	andaǰ	'all right', 'therefore'
ynyǰ	yndyǰ	'fat'

The data above show that in the case of /n/ in intervocalic position followed by an accented vowel, the n>r sound change rule does not apply. There are two possibilities here. One possibility is that the underlying form is the Tosk form with the consonant cluster /nd/ intervocalically and after the deletion of the coronal stop, the word has an intervocalic /n/ in the Geg dialect. The other possibility is that the underlying form has an intervocalic /n/ in Geg and, after the consonant epenthesis rule applies, it acquires another coronal consonant in Tosk. There are a few words derived from *PIE that do not have a consonant cluster, but have a consonant cluster intervocalically in Tosk. For example, *mund* (T) ‘can’ has the following derivation:

**meh₂K-* > *munó* (G) > *mundó* (T) ‘can’ (Demiraj, 1997)

Since the reconstructed *PIE form for ‘can’ does not have a consonant cluster, it is safe to assume that this is a case of consonant epenthesis in the phonological triggering environment of intervocalic /n/ followed by a stressed syllable. The d-epenthesis rule can be stated as follows:

$$n > nd \quad /V _____ \acute{V}$$

nC-clusters in borrowings also block the intervocalic n>r lenition rule from applying. The Latin word *ANTAS* is borrowed in both Albanian dialects as *anë*. It appears that the word underwent t-deletion, which is phonetically natural since /t/, a [-voice] coronal, between a nasal and a schwa would find itself in an impossible position, both requiring voicing. It’s hard for the articulatory gestures to vibrate to produce voicing for the nasal, then to stop vibrating to produce the voiceless coronal, and finally to vibrate once more to produce the vowel. Plus, the gestures of adjacent sounds overlap and voicing is anticipatory, so sandwiched between a sonorant and a sonorous, the voiceless stop /t/ would be perceived as /d/. In this case the coronal in the Latin loanword underwent lenition or deletion through a t-deletion rule formulated as follows:

t > Ø /Vn_____V

The rule states that the coronal /t/ is deleted in the environment of being preceded by a nasal and followed by a vowel. So, after the t-deletion rule applies, it yields *antas* > *anas*. The vowel-raising rule produces a > ë sound change, where the back vowel /a/ is changed to the mid-vowel /ë/ yielding *anas* > *anës*. The word-final s-deletion rule applying to Latin loanwords yields *anës* > *anë*.

Why does the coronal delete rather than the nasal? In most languages, the nasal is preserved. Even when the nasal deletes as we saw with *shtâzë* (G) ‘animal’ and *pêsë* (G) ‘five’, the nasality feature is still preserved. There are a number of Latin loanwords that undergo consonant cluster reduction through deletion of the voiced or voiceless coronal following the nasal in Geg, such as *candella* > *knell* ‘candle’, *cantare* > *kno* ‘sing’ (Orel, 1998). The fact that *anë* ‘side’ preserves the nasal in Tosk demonstrates that t-deletion rule must have applied after the n>r sound change rule in Tosk.

A synchronic observation worth making comes from morphology and verb inflection. The data set below show that the 3rd person singular of verbs in the past tense surfaces with an intervocalic nt-cluster, while the 2nd person plural of verbs in the present tense appears to have an /n/ intervocalically in both dialects:

Table 15: Albanian words with fake intervocalic –n- and -nt-clusters in both dialects

3rd pers. sing. In Geg and Tosk	gloss	2nd pers. pl. in Geg and Tosk	gloss
punońte	‘worked’	punońi	‘work’
luftońte	‘fought’	luftońi	‘fight’
lexońte	‘read’	lexońi	‘read’
besońte	‘believed’	besońi	‘believe’

As mentioned previously, the $n > r$ sound change rule does not apply to consonant clusters. As expected, in verb forms like *punonte* ‘worked’, the consonant cluster blocks the rule from applying because the nasal /n/ is followed by a consonant, not a vowel. It is verb forms like *punońi* ‘you work’ that are of a particular interest. Since /n/ appears to be intervocalic and the following vowel is unstressed, both triggering conditions for the $n > r$ sound change rule, the rule should have applied, but since it didn’t, it is safe to assume that something else must have prevented the lenition rule from applying. Both the first and the third person present tense plural forms for the above verbs shed some light as they have a glide preceding the nasal:

Table 16: Albanian words with *-jn-* and *-jm-* clusters in both dialects

1 st pers. pl. in Geg and Tosk	2 nd pers. pl. in Geg and Tosk	3 rd pers. pl. in Geg and Tosk	gloss
punójmë	punóni	punójnë	‘work’
luftójmë	luftóni	luftójnë	‘fight’
lexójmë	lexóni	lexójnë	‘read’
besójmë	besóni	besójnë	‘believe’

The glide in *punójnë* ‘they work’ increases the sonority of the weak vowel in the coda. The glide in pre-nasal position can prepare the vocal cords to vibrate longer and by doing so it can strengthen the sonority of the nasal, thus making up for the loss of sonority in the coda. Verb forms like *punóni* ‘you work’ must have also had a glide in a pre-nasal position, hence they’re derived from *punójni*, but they must have undergone glide deletion as the glide is phonetically unnecessary in the immediate environment of a high vowel. A [+high] vowel such as /i/ is high in sonority and it can boost up the nasal, so there is no need for extra sonority. Plus, it would most likely not be perceived and what is not perceived, usually is deleted. Thus, the j-deletion rule in words like *punóni* can be written as:

$j > \emptyset$ / ____n/mV#

[+high]

The rule above states that the glide in a *-jn-* or *-jm-* cluster is deleted when /n/ is followed by a high vowel. So, the underlying forms for *besóni*, *lexóni*, *luftóni* have a *jn-* consonant cluster intervocally, *besójni*, *lexójni*, *luftójni*. After the j-deletion rule applies, it yields *besóni*,

lexóni, luftóni. As expected, the j-deletion rule would not apply to word forms where /n/ is followed by a schwa or a [-high] vowel, as seen in *besójně, luftójně, lexójně*.

b) The outcome of intervocalic /r/ in both loanwords and inherited words

There doesn't seem to be any rhotic to nasal sound change between the two dialects in *PIE derived forms or in Latin or Greek loanwords. As is shown by the Latin borrowings, the words with an intervocalic /r/ in Latin loanwords preserve the /r/ in both dialects. For instance, *ADORARE* is borrowed into both the Geg and Tosk dialects as *adhuroj* 'adore' (Orel, 1998). In this particular instance, the word *ADORARE* underwent a few other changes, such as vowel raising before a [+sonorant] consonant. The vowel raising rule can be written as below:

$$\begin{array}{ccc} \text{V} & > & \text{V} & / \text{ ______ } \text{C} \\ [-\text{high}] & & [+high] & \quad [+sonorant] \end{array}$$

Other sound changes involve a number of lenition processes, such as the /r/ > j sound change or a liquid to glide dissimilation process or lenition, as well as d > ð intervocalic sound change where a coronal stop is lenited into a fricative. Another sound change *adoráre* > *adhuroj* has undergone is the unstressed vowel apocope where e > Ø, that is /e/ is deleted in word-final position.

Also, there are no words surfacing with an intervocalic /n/ in the Tosk dialect, that surface with an intervocalic /r/ in the Geg dialect.

The following are some Latin borrowings that have retained /r/ intervocalically in both dialects:

Table 17: Latin loanwords with intervocalic -r- in both dialects (Whitaker, 1993-2007)

Latin	Geg	Tosk	gloss
<i>declare</i>	deklaroj	deklaroj	‘declare’
<i>hora</i>	óra	óra	‘hour’
<i>despero</i>	dëshpëroj	dëshpëroj	‘sadden’
<i>aurum</i>	ári	ári	‘gold’
<i>desiderium</i>	dëshiroj	dëshiroj	‘desire’

The presence of /r/ in both dialects and its lack of engaging in sound change is also supported by a few Albanian words derived from Proto-Indo-European.

Table 18: Inherited words with intervocalic -r- in both dialects (Demiraj, 1997)

*PIE	Geg	Tosk	gloss
*d ^h uor, *d ^h ur	dërë	dërë	‘door’
*g ^h esr	dorë	dorë	‘hand’
*g ^w rH-i-	guři	guři	‘stone’, ‘rock’
*h ₂ ner	njeri	njeri	‘human being’
*u(e)r(u)	urë	urë	‘bridge’
*b ^h loh ₁ -ro	blërë	blërë	‘green’

Just like with the Latin borrowings, words with an /r/ intervocalically preserved the /r/. The *PIE derived data listed above furnish further evidence for the unidirectional nature of the sound

change rule of intervocalic lenition. The analysis so far has confirmed that the only possible direction for the sound change is from the nasal to the rhotic, or $n > r$ sound change in Tosk.

c) $n > r$ as a diachronic sound change

As Albanian is a language that contains a large number of words borrowed from Latin, it is easy to study the changes those words underwent diachronically in the process of being borrowed into the language. The territory presently known as Albania used to be part of the Roman Empire and, as early as the 3rd century BC, there were trade routes running through Albania connecting the West with the East. Via Egnatia was the most famous trade route that was instrumental in the exchange of goods between the East and the West. Originally built as a military road, it also served social and economic functions by increasing the contact of Romans and their language, Latin, with the Illyrian tribes (Jacques, 1995). Its influence is evident in a number of words that entered the Albanian language through those centuries. For instance, the word *Lat. vino* ‘wine’ is an interesting word. Even though the word for ‘grapes’ in Albanian *rrush* bears no resemblance to its Latin counterpart, which shows that it’s not a Latin borrowing, the word for wine carries a striking affinity. The word is borrowed in the language as *vino* > *venë*. In the Geg dialect it has preserved the nasal *vino* > *venë* in Geg, while in Tosk it has undergone intervocalic lenition *venë* > *verë* ‘wine’.

Besides the $n > r$ sound change in the Tosk dialect, the loanword *vino* > *venë* also underwent vowel lowering of the stressed high vowel in both Geg and Tosk, which is captured by the following rule:

$V[+high] > V[-high] / \text{_____} C [+nasal]$

The rule above simply states that a high vowel such as /i/ lowers when followed by a nasal consonant. Since the vowel change is consistent in both dialects, the vowel change rule must have preceded the n>r sound change. It is not clear when the word entered the Albanian language, but the fact that it shows n>r sound change is evidence that it must have happened after the Geg and the Tosk dialects split.

The analysis of the data so far has shown that n>r sound change in Albanian dialects is a diachronic process. A word like *floriri/ florini* in Tosk and Geg respectively is of particular interest for a number of reasons (Mann, 1938). Florins were first minted in Florence in 1252. When Frederick II assumed control of Southern Italy he resurrected a Latin gold coin which inspired other places in Italy to mint their own coins. Around 1252 Florence produced its own gold coins, known as *fiorini d'oro* or gold florins. They became famous for their weight at about 3.5 grams and the high quality of gold. They were so much in demand that in 1504 Florence issued double florins (de Avila-Martel, 2015). It's not clear when they were introduced in Albania, but the fact that the n > r phenomenon didn't happen with Turkish loanwords indicates that florins must have been used in Albania as currency for the first time after 1252 and no later than 1450 (Mann, 1938).

The following is a set of words borrowed from Turkish with intervocalic nasal /n/:

Table 19: Turkish loanwords with intervocalic –n- in both dialects (Mann, 1948)

Turk. Loanwords	Geg	Tosk	gloss
dyqan	dyqańi	dyqańi	‘store’
divan	divańi	divańi	‘couch’
tigan	tigańi	tigańi	‘pan’
jaran	jarańi	jarańi	‘young man’
asllan	asllańi	asllańi	‘brave man’
bina	bina’	bina’	‘building’
bedeni	bedeńi	bedeńi	‘frame’
xhenet	xheneť	xheneť	‘hell’
dynym	dynyńm	dynyńm	‘measure’

The $n > r$ lenition rule should not apply to words like *xheneť*, *bina’*, *dynyńm* since in all those words intervocalic /n/ is followed by a stressed syllable. In words like *bedeńi*, *tigańi*, *asllańi*, *jarańi*, *divańi*, *dyqańi* the rule should have applied as in all those words /n/ is in an intervocalic position followed by an unstressed vowel, a triggering environment for $n > r$ lenition rule. Since the $n > r$ lenition rule fails to apply to Turkish loanwords, but it has applied to *PIE-derived word forms, the only reasonable deduction to be made is that $n > r$ sound change rule in Tosk is a diachronic process that stopped being productive at some point. The question being raised here is: when did it stop being productive?

The word *florin* borrowed from Florence in Albanian through trade and the exchange of goods between the two countries sheds light on when the lenition rule stopped applying. Since

the lenition rule fails to apply to Turkish loanwords, as the data set above confirms, then *florin* must have entered Albania before the Turkish invasion of 1450. In Italian they were known as *fiorini d'oro*, so the word *fiorini* has undergone final unstressed vowel apocope resulting in *fiorin*. It's possible that the lateral liquid /l/ was a result of misperception. Liquids and vowels are both sonorous. In this case the high vowel /i/ following a voiceless labio-dental fricative can be perceived as a glide /y/ and liquids and glides have similar articulation gestures, in terms of the place of constriction and the fact that in both cases the tongue doesn't produce complete obstruction of the air flow. The only difference is that in the production of the lateral liquid, air escapes along the sides of the tongue first before escaping via the mouth.

Having undergone $i > y > l$ -sound change and unstressed word-final vowel apocope, it is plausible to state that the word *florin* was borrowed as *florini* in Geg, but changed to *floriri* in Tosk after undergoing $n > r$ lenition rule. Thus, *florin* has the following derivations:

florin > *florini* (G) > *floriri* (T) (Mann, 1938)

From the crucial fact explained above and the lack of application of the $n > r$ sound change in Turkish loanwords, it can be deduced that all the words that underwent $n > r$ sound change in Tosk were borrowed into Albanian before the 15th century. A quick look at old borrowings supports this hypothesis. *Neuen* in Old Latin has been borrowed into Albanian as *nandë* in Geg and *nëntë* in Tosk (Orel, 1998). As expected, the first /n/ is preserved because it's in word-initial position and the second /n/ is also preserved because it is borrowed as part of a consonant cluster. Yet, in other borrowings from Latin where /n/ is neither in a word-initial position, nor part of a consonant cluster, the $n > r$ sound change rule is clearly observable in Tosk. For example, the Latin word *aréna* 'sand' is borrowed in Geg as *raña* and in Tosk as *rëra*

(Mann, 1938). In the Tosk dialect, it has undergone $n > r$ sound change and vowel raising from /a/ to /ë/. Also, the old Latin loanword *gránum* ‘wheat’ has been borrowed in Geg as *grúni* and as *grúri* in Tosk (Mann, 1938). In the word *gruni*, intervocalic /n/ is followed by an unstressed vowel, the triggering environment for $n > r$ sound change rule to apply in Tosk, and, as expected, it applies and yields *gránum* > *grúni* (G) > *grúri* (T). The other sound changes observed in the derivations are the vowel raising rule that changes $a > u$ before the nasal and the vowel-fronting rule that yields $u > i$ following the nasal /n/. The word Lat. *venénum* > *vner* (G) > *vrer* (T) ‘poison’ looks like an exception in its derivations, where /n/ does not appear to be intervocalic. However, the underlying representation of the loanword derived from Latin *venenum* has /n/ intervocalically, since it’s intervocalic in the Latin word, and the $n > r$ sound change rule applies before the vowel-deletion rule that yields *vner* (G) > *vrer* (T) (Orel, 1998). The intervocalic lenition rule has also applied to the Latin borrowing *vírginem* > *vírgjin* (G) > *vírgjën* (T) ‘virgin’ (Orel, 1998, p. 508). Similar to the word for ‘poison’, the nasal /n/ is underlyingly in an intervocalic position followed by an unstressed vowel, and the lenition rule has applied as expected. The derivations for Latin *christíanus* > *krështën* (G) > *krështër* (T) ‘Christian’ (Orel, 1998, p. 184) furnish further evidence for the application of the rule to /n/ in an intervocalic position in the loanword. Greek loanwords have also undergone $n > r$ sound change in Tosk as can be seen in Gk. *kronos* which was borrowed as *krénë* in Geg and *kréré* ‘heads of livestock’ in Tosk (Orel, 1998). The vowel changes here are: vowel-raising yielding $o > e$ before the nasal and $o > ë$ in word-final position.

d) The formulation of $n > r$ lenition rule in Tosk

So, the intervocalic lenition sound change we have been discussing so far can be written as:

n > r / V_____V
 [+nasal] [-nasal] [-stress]

Yet, this rule is not complete because it does not account for the intermediate representation where /n/ retained some of its nasality before its lenition. Even though lenition is a common process in a number of languages, the n > r sound change is not common in other Indo-European languages. Lenition itself, however, is a common phenomenon that happens in languages intervocalically or in the coda position. For example, in English the flapping of /t/ or /d/ happens intervocalically. The result is that the consonant assumes a higher sonority. There is a case in English where the coronals /t, d/ have a tap allophone /ɾ/ and Skaer and Aniya (2008) show in their study by analogy that since *n* is a coronal and shares the same place of articulation with the other coronals /t/ and /d/, it should also have a nasalized tap allophone. Words like ‘writer’, ‘rider’ and ‘liner’ are examples of such phonological process. Phonemically, there is a move to consider those cases as allophones, where the consonant has two different articulations, one in a leniting position and another in non-leniting positions. Intervocalic alveolar flapping is a well-known case in some languages (Skaer and Aniya, 2008). In the case of Albanian, synchronic surface representations of the words that have undergone sound change in Tosk show the change is phonemic, rather than allophonic. It is more acceptable to look at them as phonemes since they are found in minimal pairs and the change is reflected in orthography as well. Yet, there must have been a time when those two sounds were not so phonemically distinct.

In the case of the lenition rule, a more acceptable representation of n > r sound change in Albanian Tosk that accounts for intermediate representations as well involves two steps:

Hence, the intermediate sound /r̃/ is a coronal articulated with a lowered velum. With the gradual strengthening of the [+continuant] feature, it is expected that nasalization grows weaker until it's no longer perceptible. Yet, for the change to have happened, a possible explanation is that there must have been an intermediate representation where /r̃/ a [+nasal] rhotic was perceived as denasalized /r/ by listeners.

The following data contain some Albanian words that show n > r sound change intervocally in Tosk, when /n/ is followed by an unstressed vowel:

Table 20: Some Albanian words with n>r sound change in Tosk (Mann, 1948)

Geg	Tosk	gloss
zañi	zëri	'voice'
truñi	truiri	'brain'
arbëni	arbëri	'Albania'
të tañë	të tërë	'all'
tërshaña	tërshërë	'oats'
i gjeñë	i gjeërë	'wide'
i shkuñtëni/i shkuñtni	i shkuñtëri	'shorty'
lëkuñë	lëkurë	'skin'
ashtëna/ ashtna	ështëra	'bones'
bríni	bríri	'horn'
híni	híri	'ashes'

The data above show n > r intervocalic sound change in Tosk. As expected, the lenition rule applies as in all the Tosk words above /n/ is intervocalic and is followed by an unstressed vowel. The quality of the following vowel does not seem to influence if the rule applies or not as it can be either high -i, low -a or mid -ə. Words like ‘shorty’ and ‘bones’ have two representations in Geg: *shkúrtëni* and *shkúrtni*, *áshtëna* and *áshtna*. There are two possibilities here: either schwa is deleted or schwa is epenthesized. The word for ‘bones’ is inherited from **ost(i)* (Orel, 1998) or **h₂ost(h₂-)* (Demiraj, 1997). Both reconstructed forms postulate the presence of a suffixed vowel, either /i/ or /e/. The derivations of the inherited word can be

- 1) **ost(i)/ *h₂ost(h₂-)* > *ashtëna (G)* > *ashtna (G)* > *eshtëra (T)* ‘bones’ or
- 2) **ost(i)/ *h₂ost(h₂-)* > *ashtna (G)* > *ashtëna (G)* > *eshtëra (T)* ‘bones’.

The presence of /i/ or /e/, depending on the reconstructed form, in the inherited word supports the theory of schwa deletion, demonstrated by the derivations in 1). In both cases, *ashtëna* and *shkurtëni*, the schwa undergoes deletion. The schwa-deletion rule can be stated as:

$$\text{ë} > \text{ə} \quad \backslash \text{t} \underline{\quad} \text{n}$$

In Geg, the mid, schwa-like vowel /ë/ deletes if it’s between the voiceless coronal /t/ and the coronal nasal /n/. Both *shkúrtëni* and *áshtëna* fulfill the requirements for the schwa-deletion rule to apply. In both cases, the mid vowel /ë/ is preceded by the stop /t/ and the nasal /n/. So, after undergoing the schwa-deletion rule, *shkúrtëni* and *áshtëna* yield *shkúrtni*, and *áshtna*. Other sound changes are **o > a*, a known reflex for **o* (Fortson IV, 2010) and **s > sh*, another known sound change occurring when s- is followed by the coronal t- as seen in a number of Albanian words and Latin and Slavic loanwords (Fortson IV, 2010). For the n > r sound change rule to apply in Tosk, the schwa-deletion rule has to apply after the intervocalic lenition rule, because if

the schwa-deletion rule applies first, the nasal /n/ will no longer be in an intervocalic position, thus schwa-deletion would bleed the lenition rule. So, the correct derivation is:

**ost(i)/ *h₂ost(h₂-)* > *ashtëna (G)* > *eshtëra (T)* ‘bones’

Then, it undergoes the schwa-deletion rule in Geg, yielding *ashtëna* > *ashtna*. In Tosk, the word undergoes /a/ > /e/ vowel-raising which yields *ashtëna (G)* > *eshtëra (T)*.

The large influence of the Latin loanwords in the Albanian lexicon complicates the analysis of *PIE derivatives. Rather than being PIE words, they could also be Latin borrowings, since we’ve already shown that the n>r sound change rule was very productive before it stopped sometime between the 13th and the 15th century. Most Latin words, such as Lat. *frenum* > *frënë (G)* > *frërë (T)* ‘bridle’ (Orel, 1998) borrowed into the language up to the 15th century give conclusive evidence for the application of the intervocalic lenition rule in Tosk. What we know for certain is that the rule stopped being productive after the 15th century as is evident from the Turkish borrowings. The following data set shows words of possible *PIE or Latin origin that demonstrate n > r sound change in Tosk.

Table 21: Inherited words or Latin loanwords with n > r sound change in Tosk

(Demiraj, 1997; Fortson IV, 2010 +)

*PIE or Latin?	Geg	Tosk	gloss
*h ₂ hmen or nome	émëni	émëri	‘name’
*serp or <i>serpente</i>	gjarpëni	gjarpëri	‘snake’
*gheimon +	dímëni	dímëri	‘winter’
*denkh	dañë	darë	‘tongs’
*ǵhuonos	zañi	zëri	‘voice’
*ueiHon or <i>vino</i>	veñë	verë	‘wine’
*(s)keuh ₁	lëkuñë	lëkurë	‘skin’
*ol-en-	llañë	llëre	‘elbow’
*h ₁ (e)dun-eh ₂	dhúnë	dhurë	‘injury’, ‘violence’

It’s clear that the word for ‘name’ has a Proto-Indo-European derivation as the initial vowel comes from syllabic * η . Likewise, the chance for the Albanian word *zani* for ‘voice’ to be derived from Latin *voce* is close to none. There are certain environments that might induce nasalization; for the word *zani* to be derived from *voce*, it would have to undergo radical changes in both consonant and vowel features. In this case, a *PIE inheritance seems more plausible, since the sound change from an aspirated voiced velar to a voiced sibilant is documented in the language (Fortson IV, 2010) and the derivation is phonetically and phonologically more natural than an affricate to a nasal sound change. The word for ‘snake’ has two possible derivations: either Latin *serpente* > *gjarpër* or **serp* > *gjarpër*. The palatal affricate *gj-* is one of the reflexes of **s* as can be seen in **selpos* > *gjalpë* ‘butter’ and **supno* > *gjumë* ‘sleep’ (Fortson IV, 2010,

p. 449). Most Latin borrowings show $s > sh$ sound change, rather than $s > gj$ sound change, such as Lat. *scala* > *shkallë* ‘ladder’ (Fortson IV, 2010). Thus, **serp* > *gjarpër* is the most plausible deduction.

If the data from *PIE-derived words are correct, they show that the $n > r$ sound change was indeed a very fruitful and productive phonological process, that somewhere around the 15th century became suddenly blocked and ceased to work after the Turkish occupation of Albania. We’ve seen this already in a number of Turkish borrowings. Also, the lenition rule has not applied to Slavic words borrowed later into the Albanian lexicon, such as *zakóni* (*G*) > *zakóni* (*T*) ‘habit’ (Orel, 1998, p. 519).

Other evidence that confirms that the $n > r$ intervocalic lenition rule in Tosk when the nasal /n/ is followed by an unstressed vowel in Tosk is not active synchronically comes from more recent loanwords. A later borrowing is the Italian word *mina* > *minë* (*G*) > *minë* (*T*) ‘mine’. Mines have been used in submarines since mid-19th century, while land mines are a more recent invention dating from the beginning of the 20th century (“Mine”, 2015). They were most likely introduced in the Albanian language in late 19th or beginning of the 20th century, or during WWI at the latest, since Albania was one of the countries in the Balkans that came under the Italian occupation. Even though the nasal /n/ is in an intervocalic position followed by an unstressed vowel, a triggering environment for the $n > r$ lenition rule to apply in Tosk, in the word *minë* (*G*, *T*) it has not applied. The surface representations in both Geg and Tosk are *minë* (*G*) > *minë* (*T*). This example furnishes further evidence that the process of lenition is no longer active synchronically. Indeed, it stopped sometime before the Turkish occupation of Albania in the 15th century, as it has already been proved by the analysis.

3.3 Typological parallels of the n > r sound change

Nasal epenthesis or nasal loss are phenomena that have been observed in a number of languages. A number of studies have explored either nasal epenthesis or nasal syncope. For instance, Henderson (1949) showed that in Western Ossetic a nasalized vowel followed by a fricative can alternate with vowel followed by a nasal followed by a fricative, such as /insojnə/ alternates with /îsojnə/. Doke (1928) shows that in Ila the nasal /m/ is deleted before a fricative. So, there are sentences like /valam bala/ ‘they go past me’, but also /valā sempula/ ‘they carry me’. There is also a dialectal variation between Ila and Lundwe where the word for kidney has a nasal in Lundwe /i:nsa/ which is reduced to a nasalized vowel in Ila /î:sa/. Tucker and Ashton (1942) show nasal syncope before a voiced fricative /z/ in Swahili that is realized in a nasalized vowel, such as in the word for numbness /gã:zi/ and /ga’nzi/. Chilean Spanish also shows vowel+nasal > nasalized vowel sound change. For instance, the word for ‘goose’ /ganso/ in Spanish, in Chilean Spanish is /gãso/. Thurneysen (1946) shows nasal deletion before -s with a compensatory lengthening on the vowel in Old Irish. So, PIE word for month *mens-os is ‘month’ in English and /mís/ in Old Irish. Prokosch (1939) shows how /n/ deletes before *x* in Gothic, and before *s* and *f* in Norse. For instance, the word for ‘take’, in Germanic is /fanxana/, in Gothic is /fa:xan/ and in Old Norse is /fa:/. The word for us in Gothic is /uns/, while in Old Norse it’s /o:s/.

In their study, John Ohala and M. Grazia Busa (1995) explore the phenomenon of nasal loss before voiceless fricatives as a result of a perceptual error on the part of the listener. They argue that nasal loss and spontaneous nasal epenthesis are inverse phenomena. The same phenomenon is observed in the English derivation /goose/ < *gans and the spontaneous nasalization of the vowel in the Hindi word for ‘snake’ /sãp/ < Sanskrit *sarpa*. The voiceless

fricative produces an acoustic effect on the adjacent vowels very similar to nasalization, and the listener can epenthesize /n/ in that phonological environment. Inversely, when there is a nasal present next to a voiceless fricative, the listener may perceive it as a “spurious” element and ignore it. Their results showed that listeners were not able to detect the nasal in a vowel-nasal environment when it was followed by a voiceless fricative /s/ or /θ/, but they were able to perceive it when the nasal was followed by a stop /t/.

Research in other languages has shown that it is more common than previously anticipated to find n > l substitutions in first language acquisition. An example of this are n>l substitutions among Dutch speakers (Gilbers, 2001). A [+lateral] liquid has a much higher frequency in [+nasal] consonant alternations. For example, in Cantonese [n] and [l] are in free variation word-initially. Rhotic/nasal alternations are much more infrequent, yet they are found in other languages such as Rotokas in the East Papuan family of languages where /r/ is a trill and there is no /n/, but /r/ is /n/ in the Aita dialect, in Kaingang of the Macro-Ge where /r/ is a flap and /n/ is a stop, in Santali of the Austro-Asiatic>Munda family where /r/ is a retro flap and /n/ is a retro stop/flap and n>r in an intervocalic environment V ___ V, in Aramaic of the Afro-Asiatic>Semitic family where /r/ is a trill and /n/ is a stop and there is an r>n sound change. In a language like Kamula of the Trans-New Guinea family, /n/ is found intervocalically while /r/ is found only in *tr*- clusters and never word-initially (Abrego-Collier, 2013).

3.4 Phonetic basis of the sound change

Sound change happens for various reasons, but when it does happen the focus is on if it's phonetically and phonologically natural. Not all sound change is phonetically or phonologically natural. John Ohala (2011) explores the aerodynamic voicing constraint, a constraint that has

been recognized for a long time phonetically and phonologically, which posits that it's hard to maintain voicing in obstruents, especially fricatives. In order to produce fricatives, air accumulates in the mouth increasing oral pressure and once it reaches subglottal pressure, it's impossible for vocal folds to vibrate to produce voicing. If sound change appears to be spontaneous, it's important to look into the motivation behind such sound change. Most often sound change is attributed to contact, perception, production, chance, or environmental triggers that condition the sound change.

In all the cases mentioned in the previous section, the $n > r$ sound change in Tosk is a natural process since both consonants are alveolar consonants, or coronals. The place of articulation is almost the same, however, their manner of articulation is different. Nasals require the lowering of the soft palate to produce nasality, while r - is more economical as it involves only the rapid movement of the tip of the tongue against the roof of the mouth. Lenition is a natural process: an intervocalic consonant or a consonant in a coda position is weakened. The lenition rule proposed here works intervocalically. Also, there doesn't seem to be a phonological motivation for the sound change, especially in the cases when the change produces an rVr sequence, as is seen in the Tosk word for 'sand' -- *rërë*. There is definitely an increase in sonority, but it's also puzzling why the rule of dissimilation, which avoids identical segments in a word as explained below, seems to be blocked in Albanian Tosk words like *rërë*, while in other Indo-European languages the rule applies and avoids identical segments in a word, such as in words like 'gove(r)ner' or 'February' pronounced as [fɛbju,eri] (Hall, 2007). Yet, in Albanian words like *rëra* 'sand', *tërshëra* 'oats' are perfectly acceptable.

3.5 Exceptions for the n>r sound change and some possible explanations

There are a number of words in Albanian Tosk, such as *dimër* / *dimëri* ‘winter’, *femër* / *femëra* ‘female’ that show the lenition rule has applied since the underlying representation of the words is the one ending in the [-high] vowel, rather than the closed syllable seen in *dimër*. The n>r sound change rule applies to Geg words *dimën* and *femën* as their underlying representation has a vowel following the nasal *dimën(i)* and *femën(a)* and yields *dimër(i)* and *femër(a)*. The Albanian word *qen* ‘dog’ could have been derived from **kwon* > *qen* ‘dog’ or from Latin *canis* > *qen* ‘dog’. Previous analyses, such as Mann(1938), have pursued the Latin derivation and have concluded that *qen* is an exception. The following analysis will pursue the *PIE derivation. Watkins (2011) gives the derivation of a suffixed zero-grade form **kwon-to*. The *PIE word **kwon-to* has the following derivation **kwon-to* > *qen (G)* > *qen (T)* ‘dog’. The intervocalic lenition rule does not apply since the nasal /n/ is not in an intervocalic position. The underlying representation has the consonant cluster –nt- in intervocalic position and we’ve already seen in the previous sections that the n > r sound change in Tosk does not apply to consonant clusters. So, even though *qen* / *qeni* seem to be similar to *femën* / *femëna*, they are not, as the nasal /n/ in *qeni* has an underlying representation with an –nt- consonant cluster as evidenced by *qentë* ‘dogs’. Likewise, the n > r sound change rule in Tosk does not apply to **dhe(i)-* > *dhen (G)* > *dhen (T)* ‘sheep’ (Orel, 1998). Similar to *qentë*, *dhen (G)* > *dhen (T)* have an underlying representation with the -nt- consonant cluster *dhéntë*, so the lenition rule does not apply in Tosk.

An exception is seen in the Albanian word *mëni* > *mëri* ‘hatred’ which has undergone n > r sound change in Tosk with /n/ in an intervocalic position followed by a stressed vowel. This is unexpected as words like *lëno* ‘hurt’, *munó* ‘can, try’ where /n/ is in an intervocalic position and the following vowel is stressed undergo d-epenthesis which yields the following in Tosk: *lëndó*,

mundó. It's possible that *mëni* didn't always have a syllable-final accent. The word is either a loanword from Latin *manía* or a Greek borrowing *mania'* (Orel, 1998, p. 263). In Latin, the accent falls on the high, front vowel /i/, while in Greek it's the word-final back vowel /a/ that is stressed. Since the rule has applied, it is a stronger possibility that it's a Greek loanword. In this case the word has undergone a few sound changes.

Gk. *mania'* > *mëni'* > *mëri'* 'hatred'

The Greek loanword has undergone word-final vowel apocope, a common phenomenon in most languages, which accounts for the loss of the low, back vowel /a/ in word-final position.

V > ∅ / _____ #

The rule above states that an unstressed vowel in word-final position is deleted. Usually, the deleted vowel is an unstressed vowel, while in this case the vowel is stressed. So, the word-final vowel apocope cannot apply before another rule applies that changes the stress pattern in the word. The stress pattern will change as this can be explained by the fact that there are no words in the Albanian lexicon in both dialects ending in a diphthong with stress on the second vowel. Albanian word-final diphthongs have the following stress pattern V'V, a stressed vowel followed by an unstressed vowel, as evidenced by *me ndihmué* (G) 'to help', *riniá* (G, T) 'the youth', *shtëpiá* (G, T) 'the house', *shoqniá* (G) > *shoqëriá* (T) 'the friendship', *begatiá* (G, T) 'the bounty' and so on. The word *shoqniá* (G) has undergone schwa-epenthesis in Tosk yielding *shoqëriá*. Since the rule is not expected to apply when /n/ is followed by a stressed vowel, but in this case it has applied, this situation is similar to what is seen in the Greek loanword *mania'* (Watkins, 2011). The word derivation Gk. *mania'* > *mëni'* (G) > *mëri'* (T) 'hatred' shows a change in the stress pattern in both dialects besides n > r sound change in Tosk.

The word must have an intermediate representation where the high vowel /i/ is unstressed for the intervocalic lenition rule to apply. The sound change from /a/ to /ë/ is captured by the vowel fronting/raising rule mentioned earlier and evidenced by words, such as *bana* (G) > *bëra* (T) ‘did’. The word undergoes a sound change rule which changes the low, back vowel /a/ to the mid vowel /ë/. The intermediate representation after the vowel fronting rule applies is as follows:

Gk. *mania'* > *mënia'* (G)

The nasal /n/ fulfills both conditions for the lenition rule to apply as it is in an intervocalic position and the following vowel is unstressed. It is plausible to assume that n > r sound change applied first yielding *mënia'* (G) > *mëria'* (T). Then word stress is adjusted to match the Albanian word stress pattern. Since the stress pattern is the same in both Albanian dialects, it's no surprise that it has happened in both. The stress reassignment rule shifts the stress from the final vowel to the penultimate yielding *mënia'/mëria'* > *mëniá'/mëriá'*. At this point, the final vowel apocope rule applies in the accusative form yielding *mëni'* (G) > *mëri'* (T).

The word for ‘hunger’ is of interest since it shows that n > r sound change rule has applied in the case of intervocalic /n/ followed by a stressed vowel. The word has the following derivation:

**uen-* > *uni'* (G) > *uri'* (T) ‘hunger’

Orel (1998) gives a Sanskrit derivative with the stress on the vowel preceding /n/ in Skt. *vanati* (p. 489). Similar to *mëni'* (G) > *mëri'* (T) derived from Gk. *mania'*, *uni'* (G) > *uri'* (T) must have undergone n > r sound change before the stress has shifted to the vowel in word-final position. So, the underlying representation of *uni'* has the stress on the high, back vowel /u/, *úni*. The

lenition rule applies since the /n/ fulfills both conditions for the rule to apply in Tosk: it's intervocalic and is followed by an unstressed vowel.

Latin loanwords like Lat. *cánna* > *kanë* (G) > *kanë* (T) 'reed', *cannetum* > *knet* (G) > *kënetë* (T) 'marsh' appear to be exceptions since the nasal /n/ is in an intervocalic position followed by an unstressed vowel, both required conditions for the lenition rule to apply. However, the Latin words have a geminate, and the geminate blocks the application of the n > r sound change rule in Tosk (Orel, 1998, p. 168).

The word *mungu* (G) > *murgu* (T) 'monk' shows that the rule has applied even though the nasal /n/ appears to be in a consonant cluster. The word for 'monk' in Albanian is, however, a Latin loanword with the following derivations *Lat. monachus* > *muñgu* (G) > *múrgu* (T) (Orel, 1998) and the nasal /n/ is in an intervocalic position followed by an unstressed vowel in the Latin loanword. The word has undergone vowel-raising that has yielded /o/ to /u/ sound change *monachus* > *munachus* and unstressed vowel syncope. However, for n > r sound change rule to apply in Tosk, the unstressed vowel syncope has to follow the lenition rule. Thus, after the intervocalic lenition rule applies and yields *munachus* (G) > *murachus* (T), the unstressed vowel syncope rule yields *munachus* > *munchus* (G) and *murachus* > *murchus* (T). The voiceless, velar /k/ undergoes fortition which strengthens the consonant followed by a sonorant and that yields the voiced, velar /g/ in its stead. The fortition rule can be formulated as follows:

k > g / C _____
 [+sonorant]

Both /n/ and /r/ are sonorants as one is a nasal and the other is a liquid, so the fortition rule applies. After the fortition rule applies to /k/ following /n/ in Geg and /r/ in Tosk, it yields

munchus > *mungus* and *murchus* > *murgus*. Lastly, word-final –s deletes as it is common for sounds to drop in the coda position in most languages and most Latin loanwords show deletion of word-final –s. After the s-deletion rule applies, it yields *mungu* (G) and *murgu* (T).

Summary and Conclusion

In this paper I have shown that the n>r sound change in Tosk is a phonetically and phonologically natural process that is triggered when *n* is in an intervocalic position, followed by an unstressed vowel. Even though the n > r sound change is a much more uncommon phenomenon than other sound changes, loss of nasalization is seen in other languages as shown in this paper, such as Dutch, Albanian and others. The Albanian Geg word *shtâzë* derived from *shtanzë* and yielding the Tosk form *shtazë* without nasalization shows that there is a tendency in the Tosk dialect towards denasalization. The Albanian n>r intervocalic sound change is an diachronic, intervocalic lenition rule that continued to be productive in the Albanian language up until the 15th century. Words like *florin* > *floriri* shed light on until when n > r sound change rule applied to intervocalic –n- followed by an unstressed vowel in Tosk words. Failure of n > r sound change rule to apply to Turkish loanwords furnishes evidence proving that the rule is a diachronic rather than a synchronic process. In the cases of fake intervocalic –n- the rule fails to apply because the underlying representation of the word doesn't have –n- in a intervocalic position. For example, words like *qen* (G, T) 'dog' and *dhen* (G, T) 'sheep' fall into this category as in their underlying representation they do not resemble *femën* 'female' or *dimën* 'winter' which have intervocalic –n- in their underlying representation *femëna* (G) > *femëra* (T), *dimëni* (G) > *dimëri* (T), but they have an –nt- consonant cluster *qentë* and *dhentë*. In the case of Latin loanwords, such as *canna* > *kanë* (G, T), n>r sound change rule fails to apply in Tosk because the geminate blocks the application of the lenition rule. In loanwords with stress patterns

uncommon in the language, loanwords undergo stress readjustment after the $n > r$ sound change rule applies. This analysis shows some consideration for cases of intervocalic $-n-$ followed by a stressed vowel in Tosk. More research should be done to ascertain if consonant epenthesis is consistent in such cases.

Appendix A

Table 1.1 *IE languages by date and place of first attestation.*

Date	Northern Europe	Western Mediterranean	Eastern Mediterranean	Iran / Central Asia / India
1800 BC			Old Hittite (ANATOLIAN)	
1400 BC			Mycenaean Greek (GREEK) Mittani (INDIC)	
500 BC		Latin (ROMANCE) South Picene (SABELLIAN) VENETIC Lepontic (CELTIC) MESSAPIC	PHRYGIAN THRACIAN MACEDONIAN	Old Persian (IRANIAN)
1 AD	LUSITANIAN			
500 AD	Rune inscriptions (GERMANIC)		ARMENIAN	
1000 AD	Old Church Slavonic (SLAVIC)			TOCHARIAN
1500 AD	Old Prussian (BALTIC)	ALBANIAN		
2000 AD	NURISTANI			

Source: James Clackson. *Indo-European Linguistics*

Appendix B

Table 2.4 *Phonological inventory of PIE.*

Consonants				
Stops				
Labial	Dental	Palatal	Velar	Labio-velar
*p	*t	*kʰ	*k	*kʷ
(*b)	*d	*gʰ	*g	*gʷ
*bʰ	*dʰ	*gʰ	*gʰ	*gʷʰ
Fricatives				
	*s			
'Laryngeals'				
			*h ₁ , *h ₂ , *h ₃	
Resonants				
Nasals				
*m	*n			
Continuants				
	*r, *l, *y, *w			
Vowels				
short	*e, *o, (*a)			
long	*ē, *ō, (*ā)			

Source: James Clackson

Appendix C



General Albanian Dialect Map

(c) 2009 Robert Elsie & Josef Gross

- 1 Northwest Gheg
- 2 Northeast Gheg
- 3 Central Gheg
- 4 Southern Gheg
- 5 Transitional dialects
- 6 Northern Tosk
- 7 Lab Tosk
- 8 Cham Tosk
- 9 Arvanitic Tosk
- 10 Italo-Albanian Tosk

Table 2.5a Comparative IE phonology: stops.

PIE	Hittite	Sanskrit	Avestan	Greek	Latin	Gothic	Old Church Slavonic				Armenian	Tocharian
							Slavonic	Lithuanian	Irish			
*p	p	p	pf	p	p	fb	p	p	p	hwø	p	
*b	bp	b	bβ	b	b	p	b	b	b	p	p	
*b ^h	bp	bh	bβ	ph	fb	b	b	b	b	b	p	
*t	t	t	tθ	t	t	pd	t	t	t	t'y	tc	
*d	dt	d	dð	d	d	t	d	d	d	t	tsś	
*d ^h	dt	dh	dð	th	fdb	d	d	d	d	d	tc	
*k'	k	ś	s	k	c	hg	s	s	š	s	kś	
*g'	gk	j	z	g	g	k	z	z	ž	c	kś	
*g ^h	gk	h	z	kh	hg	g	z	z	ž	jz	kś	
*k	k	kc	kc	k	c	hg	kč	kč	k	k'	kś	
*g	gk	gj	gj	g	g	k	gžz	gžz	g	k	kś	
*g ^h	gk	gh	gj	kh	hg	g	gz	gz	g	g	kś	
*k ^w	ku	kc	kc	kpt	qu	hwg	kč	kč	k	k'č'	kś	
*g ^w	ku	gj	gj	gb	guu	q	gžz	gžz	g	k	kś	
*g ^w h	ku	gh	gj	phthkh	fguu	gb	gžz	gžz	g	gʲ	kś	

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