STUDIES IN CLASSICAL AND MODERN ARMENIAN PHONOLOGY

by

MARTIN JAKUB MACAK

(Under the Direction of Jared Klein)

ABSTRACT

This dissertation offers a comprehensive review of the current literature on the historical sound changes that underlie the diachronic development of the Armenian sounds from their Proto-Indo-European origin. Additionally, it presents novel analyses of the following six phonological or morphophonological phenomena: (i) The original phonological distinction between the two Armenian historical laterals, լ <l> and ղ <ł>, is analyzed in terms of voicing contrast. (ii) The fate of the inherited final nasals in the classical language is argued to be fully predictable based on the duration of the preceding inherited vowels. (iii) The non-realization of a word-final palatal glide is explained as a morphophonological process that targets specific suffixes. (iv) The non-realization of the aorist augment is analyzed as a metrically conditioned zero allomorphy. (v) The affricate dissimilation in the aorist subjunctive (/^{o}ts^{h}-its^{h}-/ AOR-SUBJ-) is interpreted with reference to the prosodically conditioned reduction of /i/ in the subjunctive suffix. Finally, (vi), modern Armenian plural allomorphy is analyzed in terms of the interaction between morphophonological REALIZATION and ALIGNMENT requirements and syllabic well-formedness in the framework of *Optimality Theory* (Prince and Smolensky 1993/2004).

INDEX WORDS: Armenian, Classical Armenian, Historical phonology, Comparative linguistics, Proto-Indo-European, Optimality Theory, Morphophonology, Reconstruction, Voiceless lateral, Feature Economy Principle, Monosyllabic, Syllable-count, prosody, Weak Bracketing, Overlapping feet, Allomorph selection, Phonologically conditioned zero allomorphy

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DEDICATION

To my beloved wife, April Michelle Macáková, née Brooks, for her love and support.

בית והון נחלת אבות ומיהוה אשה משכלת׃

Ջտունս եւ զստացուածս բաժանեն հարք որդւոց. եւ ի Տեառնէ իմաստուն կին առն׃

Wealth and riches come from ancestors; A prudent wife comes from THE LORD.

(Proverbs 19:14; translation mine)

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May GOD bless and repay you all!

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ABBREVIATIONS

LANGUAGES

Alb. Albanian

CA Classical Armenian

CLuw. Cuneiform Luwian

Dor. Doric Greek

Fr. French

Gk. Greek

Goth. Gothic

Hitt. Hittite

Hom. Homeric Greek

Lat. Latin

Latv. Latvian

Lith. Lithuanian

MIran. Middle Iranian

MLG Middle Low German

MP Middle Persian

MParth. Middle Parthian

Myc. Mycenaean Greek

NEA modern Eastern Armenian

OA Old Armenian

OAv. Old Avestan

OCS Old Church Slavonic

OE Old English

OFr. Old French

OHG Old High German

OIc. Old Icelandic

OIr. Old Irish

OIran. Old Iranian

ON Old Norse

OP Old Persian

Parth. Parthian

PGm. Proto-Germanic

PIE Proto-Indo-European

RCS Russian Church Slavic

SCr. Serbo-Croatian

Skt. Sanskrit

TB Tocharian B

Ved. Vedic

YAv. Young Avestan.

SEGMENTAL PHONOLOGY

C consonant

V vowel

U [+high] vowel

T voiceless stop

T^{h} voiceless aspirated stop

D voiced stop

$D^{ɦ}$ voiced breathy stop

D̤ murmured stop

P stop

O obstruent

S sibilant

F fricative

R resonant

L liquid

G glide

N nasal

B labial

K velar

$K^{ʷ}$ labio-velar

[±cont] feature [continuant]

HISTORICAL PHONOLOGY

φ/β voiceless/voiced bilabial fricative (or approximant)

μ nasalized bilabial fricative

θ/ð voiceless/voiced dental (or alveolar) fricative (or approximant)

$θ^{ʲ}/ð^{ʲ}$ palatalized voiceless/voiced alveolar approximant

$θ^{ʷ}$ labialized voiceless alveolar approximant

◌̯ consonantal or semi-vocalic segment

◌́ (PA) intensity stress

◌́ (PIE) pitch accent.

MORPHOLOGY

A accusative

Ab. ablative

act. active

aor. aorist

caus. causative

D dative

def. definite article

denom. denominative

dimin. diminutive

du. dual

G genitive

I instrumental

impf. imperfect

inf. infinitive

impv. imperative

iter. iterative

L locative

med. medio-passive

N nominative

pl. plural

pres. present

red. reduplicant

sg. singular

subj. subjunctive

them. thematic vowel

OTHER

→ "serves as a stem of" or "is phonologically realized as"

← "is derived from" or "is a phonological realization of"

>/< "becomes or is derived from by regular phonological change"

>→/←< "becomes or is derived from by a combination of phonological and grammatical change"

= "corresponds to" or "is identical to"

≈ "in the relevant details corresponds with"

dial. dialectal

mss. manuscripts

PN personal name

TN toponym

INTRODUCTION

This dissertation contains seven studies that venture into the phonological and morphophonological diachrony and synchrony of the Armenian language. These are introduced in the following order.

Chapter 1 serves as a reference for those interested in the history of the phonological inventory of Classical Armenian (CA). It also functions as a reference source and as a comprehensive review of the currently authoritative literature on the historical sound changes that underlie the diachronic development of the Armenian sounds from their Proto-Indo-European (PIE) origin. Its novelty lies in the fact that it traces the possible diachronic sources of the individual sounds of Armenian (e.g. ւ /w/ < *-n{K$^{\underline{u}}$-}, *-t{o/r-}, *-p-, *-b^{h}-, *-ōm-, *-C{T-}, *-$\hat{k}${r-}) rather than reconstructed segments of PIE to their Armenian reflexes (e.g. *w > գ *g*, ւ *w*, Ø) as is currently the practice in historical phonologies of the language. These two approaches are academically equivalent but evidently fulfill distinct purposes. This chapter may therefore be informally described as a kind of 'etymological' dictionary of the Armenian phonological segments.

Chapter 2 concerns the original phonological values of the two Old Armenian laterals. PIE */l/ split into two Armenian phonemes represented by լ and ղ in the traditional Mesrobian orthography and conventionally transliterated as <l> and <ł>, respectively. The traditional

analysis posits that the two original lateral phonemes contrasted in terms of secondary articulation, i.e. clear/front/palatal լ <l> (*)/l(j)/ (or */ʎ/) vs. dark/back/velar(ized) ղ <ł> (*)/ɬ/.

I argue that such a contrast finds support neither in the Armenian etymological data nor in the diachronic phenomena related to the two phonemes. The two laterals do not undergo typical diachronic developments observed in languages where they have documented historical values; namely, dark laterals typically vocalize and palatal laterals may be reflected by other palatal or front segments. Moreover, the distinction between the two laterals is only present in the inherited lexicon. The borrowed lexicon recognizes only ղ <ł> (traditionally pronounced [ʁ]) as a lateral segment. I argue that this is because OA ղ <ł> represented a typical voiced lateral approximant, while OA լ <l> represented a type of lateral not present in the source inventories.

It is proposed that the two phonemes originally contrasted in terms of laryngeal configuration, i.e., OA լ <l> and ղ <ł> originally represented a voiceless (aspirated) alveolar lateral */l̥(h)/ and a voiced alveolar lateral */l/, respectively. The phonemic distinction in voicing is shown to account for an exhaustively broad range of phonological and philological phenomena that are inadequately explained, if not completely inexplicable, under the traditional assumption of a front—back secondary articulation distinction, including the pattern of the distribution of the two phonemes in the Armenian native and borrowed lexicon and the diachronic trajectory of the two original laterals from PIE to modern Armenian.

Chapter 3 analyzes the diachronic fate of inherited final nasals in the classical language and argues that the preservation of final PIE nasals is predictable based on the duration of the

preceding inherited vowels. Virtually all previous analyses refer to monosyllabicity as one of the conditioning factors responsible for the preservation of the original final nasals. Nevertheless, all of the monosyllables previously adduced in support of the reference to syllable-count originally contained a long nucleus, e.g. քան *kʻan* (= Lat. *quam*, Oscan **paam**) < PIE *k^{u}ām (*/k^{u}-eh_2-m/ or */k^{u}e-h_2-m/); շուն *šown* (= Gk. κύων, Ved. *śvā́*, OIr. *cú*, Lith. *šuõ*, Toch. *ku*) < PIE *$\hat{k}_{\underline{u}}$ōn, տուն *town* 'house' (= Hom. δώ) < PIE *dōm (< **/dom-s/ × **/dom-m/); etc. Additionally, there is at least one securely reconstructed monosyllabic form which originally contained a short vowel and which does not preserve the nasal, cf. ի ~ յ- *i* ~ *y*- 'in' (= Gk. ἐν, OLat. *en*, Goth. *in*) < PIE *(h_1)ĕn.

I argue that the conditioning factor responsible for the preservation of the attested Armenian final nasals was the duration of the vowel that preceded the original word-final nasals: the inherited final nasals were lost after original short vowels, while the nasals in inherited final syllables are preserved after original long nuclei. The assumption that nasals after long vowels (PIE *-ōN, *-ēN, *-īN, *-ūN, *-āN) and syllabic nasals (PIE *-m̥, *-n̥) were both preserved in Proto-Armenian but nasals after short vowels were not (PIE *-ŏN, *-ĕN, *-ĭN, *-ŭN, *-ăN) may be explained by reference to the presence or absence of the nasal feature in the original nuclei, i.e. PIE = PA */-ōN/ → *[-õː(N)], */-CN/ → *[-C$\underset{\circ}{\text{N}}$] whereas */-ŏN/ → *[-o(N)]. Such a distribution relies on a synchronically and diachronically well-established observation that long vowels are phonetically more prone to become nasalized, exhibit nasality contrast, or diachronically preserve nasalization than short ones (e.g. Hajek and Maeda 2000).

The distribution of the attested final nasals based on the original length of a preceding vowel is also shown to account for the previously puzzling inflectional abnormality of certain suffixes that inflect as *n*-stems in all cases but NOM.ACC. SG; e.g. **աղջիկ** *aǰǰ-ik* 'girl-DIM' (< PIE *-Kŏn-Ø -DIM-NOM.ACC.NEUTER) vs. **աղջկան** *aǰǰ-k-an* 'id. GEN.SG' (< PA *-kn̥- < *-Kn̥-).

Chapter 4 gives brief overviews of the theoretical frameworks and concepts utilized in the analyses following it. Four out of six chapters of this dissertation are concerned with the interaction of morphology with binary footing (FOOTBINARITY) and/or wellformedness of syllabic structure (ONSET and NOCODA) in the framework of *Optimality Theory* (Prince and Smolensky 1993/2004). This chapter introduces the representational concepts behind the *Prosodic Hierarchy* (Selkirk 1978, 1986, 1995, 2004), basic morphophonological assumptions behind the mechanism of *General Alignment* (McCarthy and Prince 1993), and the so-called *Weak Bracketing* approach to the representation of metrical structure (Hyde 2001, 2002, 2008, 2014), which argues for improperly bracketed ('overlapping') feet that are allowed to share syllables.

Chapter 5 deals with the traditional pronunciation of CA word-final palatal glide **-յ** *-y*, which is left unpronounced in all polysyllables and (monosyllabic) verbs but exceptionally pronounced in monosyllabic nouns; e.g. **քահանայ** *kʿahanay* 'cleric' — [kʰɑ.hɑ.ˈnɑ], **կայ** *kay* 'remains' — [ˈkɑ], on the one hand, but **հայ** *Hay* 'Armenian' — [ˈhɑj], **կայ** *kay* 'station' — [ˈkɑj], on the other (cf. Godel 1975: 24). I argue that the final dropped glide may be identified with specific morphological suffixes that are synchronically subject to syllabic wellformedness. For instance, the final glide in OA **հայ** *Hay* [ˈhɑj] is part of the root morpheme (i.e. OA /hɑi̯-o-/

ROOT-THEMVOWEL) but an independent suffix in OA կայ *ka-y* *[ˈkɑ-j] (i.e. ROOT-PRES.3SG). The traditional pronunciation reflects the fact that OA /kɑ-j̰/ was later reanalyzed as /kɑ-Ø/ 'exist-PRES.3SG'. Because the verbal ending stood in opposition to the other endings within the paradigm, its covert surface (non)realization was functionally recoverable.

Based on a historical pattern reflected in the borrowed lexicon, this analysis also shows that the final glide in polysyllables such as քահանայ *kʿahanay* is to be analyzed as an independent morphological element, namely a nominalized adjective suffix, i.e. /k^{h}ɑhɑnɑ-i-/ 'priest-NOMINAL.ADJ', employed to designate characteristics of persons or materials. Because the overall semantic and syntactic (adjectives behave like nouns) import of the suffix was minimal, its phonological presence was functionally expendable.

This was, however, not the case with OA abstract noun suffix */-i/, the absence of which would have had serious semantic consequences, cf. կայ *ka-y* [ˈkɑ-j] 'standing, station'. A constraint-based analysis is proposed in which morphophonological constraints that enforce overt realization of specific morphemes (MAX-BASE, REALIZE MORPH) interact with constraints enforcing syllabic wellformedness (ONSET and NOCODA).

The non-realization of the aorist augment, in Chapter 6, is analyzed as a metrically conditioned zero allomorphy. Currently, it is assumed that the Armenian augment ե- *e-* is selected by the aorist indicative forms which would otherwise end up as monosyllables; cf., բերէք *ber-ēkʿ* 'ye carried' vs. եբեր *e-ber* '(s)he carried'. I argue that the aorist augment is a morphological prefix which is present underlyingly in all aorist indicative forms (cf. Vaux 1998: 123f.). The overt realization of the aorist prefix ե- *e-* (REALIZE MORPH) is subject to

phonological principles enforcing wellformedness of the prosodic and metrical structure, specifically, the preference for binary footing (FTBIN), the dispreference for stressed final syllables (NONFINALITY), and distance-sensitive alignment of syllable heads with the right edge of prosodic words (ALL-HEADS-RIGHT).

The prehistoric penultimate stress system of Armenian is analyzed as the result of the domination of NONFINALITY over RIGHTMOST, which assigns word-stress to the rightmost syllable in prosodic words. The historical final stress is thus simply understood as the demotion of NONFINALITY below RIGHTMOST due to the loss or reduction of final atonic rhymes.

In Chapter 7, I interpret the affricate-dissimilation in the aorist subjunctive with reference to the prosodically conditioned reduction of /i/ in the subjunctive suffix. It has been traditionally assumed that the subjunctive forms of the Old Armenian monosyllabic weak aorist stems in *-ց- -cʿ-* [-ts^{h}-] are exceptionally exempt from the dissimilation of affricates seen regularly in stems that are polysyllabic, i.e. *-ցց- -cʿcʿ- > -սց- -scʿ-*; e.g. *սիրեսցես sir-es-cʿ-e-s* [si.ɾɛs.ˈts^{h}ɛs] 'thou shalt love', *ստասցիս stas-cʿ-is* [əs.tɑs.ˈts^{h}is] 'thou shalt get' vs. *լացցես lacʿ-cʿ-es* (traditionally pronounced) [lɑts^{h}.ˈts^{h}ɛs] 'thou shalt weep'.

I argue that the traditional generalization referring to syllable-count is based on the much later, traditional pronunciation of the Classical Armenian orthography. Written forms such as *լացցես lacʿ-cʿ-es* originally reflected surface forms with an unwritten medial schwa, i.e. *[lɑ.ts^{h}ə.ˈts^{h}ɛs], in which the absence of the dissimilation seen in polysyllabic stems such as OA *ստասցիս stas-cʿ-is* [əs.tɑs.ˈts^{h}is] was phonologically predictable: the two non-continuants

dissimilated only when in contact (cf., e.g. *կսկիծ ks-kic* 'sharp pain' ← */kits-kits-/, cf. *կծանեմ kc-an-e-m* 'I bite'; *բարբառ bar-baṙ* *[bɑɹ.bɑr] 'speech' ← */bɑṙ-bɑṙ-/; etc.).

The reason the two affricates were not in contact in monosyllabic stems was due to prosodic well-formedness, specifically FOOTBINARITY. The original pronunciation is a relic of a period with final syllables still present. An optimality-theoretic analysis (Prince and Smolensky 1993/2004) is proposed in which alignment specified for the aorist stem requires that the stem be aligned with a right edge of a prosodic foot. This morpho-phonological alignment is optimally satisfied only in stems with more than one syllable, i.e. *[(ˌəs.tɑs)$_{FT}$(ˈts^{h}i.sə)$_{FT}$]$_{PW}$ (from an underlying */stɑ-ts^{h}-its^{h}-i-si/ before the reduction of unstressed high vowels) since in monosyllabic stems, it would lead to a suboptimal parse with a degenerate foot, i.e., the parse *[(lɑ.ts^{h}ə)(ˈts^{h}ɛ.sə)$_{FT}$]$_{PW}$ (with a misaligned aorist stem) was preferred over the suboptimal even if properly aligned **[(.lɑs.)$_{FT}$ (ˈts^{h}ɛ.sə)$_{FT}$]$_{PW}$ (both candidates correspond to the underlying */lɑ-ts^{h}-its^{h}-ɛ-si/ ROOT-AOR-SUBJ-THEMV-2SG).

In Chapter 8, the selection of modern Armenian plural allomorphs is analyzed as a phonologically conditioned allomorphy in terms of parsing optimization. The selection results from the interaction between the surface prosodic structure of the plural form at the level of a PROSODIC WORD (PW) and the phonological shape of the allomorphs themselves in the framework of *Optimality Theory* (Prince and Smolensky 1993/2004; McCarthy and Prince 1995b).

All of the above analyses utilize the so-called *Weak Bracketing* approach of Hyde (2001, 2002, 2008, 2014), which argues for improperly bracketed ('over-lapping') feet, in which feet are

(under specific computational restrictions) allowed to share a syllable node. This approach was originally employed to avoid a set of erroneous predictions that arise under *Weak Layering* and *Proper Bracketing* (cf. Itô and Mester 1992), such as the *Odd-parity Parsing Problem* (see Chapter 4), and the inability to generate the observed asymmetries between trochaic and iambic metrical systems.

The analyses presented in this dissertation not only provide additional evidence for the relevance of binary feet in morphophonological phenomena but also explicitly support the arguments originally expressed in Kager (1996) that advocate for a constraint-based model of the interface between phonology and morphology.

CHAPTER 1

A HISTORICAL PHONOLOGY OF CLASSICAL ARMENIAN

1.1. Introduction

Armenian is a living branch of Indo-European with fairly rich inscriptional and substantial textual attestation. The earliest inscriptions in *Old Armenian* (OA) date from the period after the creation of the Armenian alphabet by **Մեսրոպ Մաշտոց** *Mesrop Maštocʿ* in ca. 406 CE. The textual attestation of the so-called **գրաբար** *Grabar* (lit. 'literary [language]'), or *Classical Armenian* (CA) in its broad sense, consists of more than 30,000 extant manuscripts dated from 862 (*Gospels of Queen Mlkʿē*) to ca. 1700 (Stone et al. 2002: 42[159], 118; Stone 2006: 467f., 487f.).

The terms OA and CA are often used interchangeably. This is when the term CA is used in its narrow sense to refer to the form of OA codified before ca. 450 CE, the period of the so-called *Golden Age* (**Ոսկեդար** *Oske-dar*) reflected in the Bible translation and the writings of the earliest Armenian authors such as **եզնիկ** *Eznik* and **կորիւն** *Koriwn* (ca. 406 – ca. 450). The distinction between this "classical" form of the language and that of the later manuscript tradition was first recognized by the Viennese Mekhitarist grammarians Č‘aləxean and Aytənean (1885). The extant CA manuscripts exhibit traits classified by J̌ahowkyan (1969) as *Post-CA* (ca. 450 – ca. 700) and *Pre-Middle Armenian* (ca. 700 – ca. 1100); however, Jungmann and

Weitenberg (1993: 4) point to the insufficiency of the linguistic criteria used for this conventional periodization. The term *Middle Armenian* is synonymous with *Medieval Cilician* (ca. 1100 – ca. 1350) which coexisted with CA as a literary language (cf. Karst 1901). The intermediate stage between OA and modern Armenian vernaculars spoken in Armenia proper up to ca. 1700 is conventionally referred to as *Medieval Armenian* (cf. Weitenberg 1995: 7).

The synchronic details of phonetics and phonology conventionally associated with CA in its broad sense are treated in sections 1.2. to 1.7. This is followed by a treatment of the diachronic sources of CA segmental phonology in sections 1.8. to 1.10.

1.2. Alphabet

The ordering and shape of the bulk of the characters is apparently inspired by the Greek cursive alphabet (Feydit 1982: 36ff.). The uncial form of the script, or ***երկաթագիր*** *Erkat'-a-gir* 'Iron script', is attested in the inscriptions and earliest monuments up to ca. 1200 CE. From early on, the uncials were used mixed with the minuscules. This full set was presumably referred to as ***ɓոլորգիր*** *Bolor-gir* 'whole script', but this term was later narrowed down to refer to just the minuscules. This type set has been used in printing since ca. 1500 CE (Stone 2006: 503ff.).

Table 1.1: The Armenian alphabet

α	β	γ	δ	ε	ζ	η	ϑ	ι	ϰ	λ	μ	ν	ξ	ο	π	ϱ	σ	τ	υ	φ	χ
Ա	Բ	Գ	Դ	Ե	Զ	Է	Ը	Թ	Ժ	Ի	Լ	Խ	Ծ	Կ	Հ	Ձ	Ղ	Ճ	Մ	Յ	Ն
a	*b*	*g*	*d*	*e*	*z*	*ē*	*ə*	*t'*	*ž*	*i*	*l*	*x*	*c*	*k*	*h*	*j*	*ł*	*č*	*m*	*y*	*n*
Շ	Ո	Չ	Պ	Ջ	Ռ	Ս	Վ	Տ	Ր	Ց	Ւ	Փ	Ք	Օ	Ֆ						
š	*o*	*č'*	*p*	*ǰ*	*r̄*	*s*	*v*	*t*	*r*	*c'*	*w*	*p'*	*k'*	*ō*	*f*						
ա	բ	գ	դ	ե	զ	է	ը	թ	ժ	ի	լ	խ	ծ	կ	հ	ձ	ղ	ճ	մ	յ	ն
a	*b*	*g*	*d*	*e*	*z*	*ē*	*ə*	*t'*	*ž*	*i*	*l*	*x*	*c*	*k*	*h*	*j*	*ł*	*č*	*m*	*y*	*n*
շ	ո	չ	պ	ջ	ռ	ս	վ	տ	ր	ց	ւ	փ	ք	օ	ֆ						
š	*o*	*č'*	*p*	*ǰ*	*r̄*	*s*	*v*	*t*	*r*	*c'*	*w*	*p'*	*k'*	*ō*	*f*						

1.3. Orthography and transliteration

The transliteration of Armenian orthography in this chapter follows the principle of one-to-one correspondence recommended by Schmitt (1972) with minor modifications of certain characters (*ē* instead of *ê* and *ō* instead of *ô*). The phonetic transcription follows IPA (2005).

The orthography of CA is often characterized as phonemic (cf. Benveniste 1966: 24); however, this ideal is complicated by the distribution of the representations ու *ow*, վ *v*, and ւ *w* for /u/ (1.3.1., 1.4.6.); իւ *i* and յ *y* for /i/; and by the alternation of ռ *ī* for ր /r/ before ն /n/ (1.5.1.).

1.3.1. The digraph ու *ow* represents the phoneme /u/ (cf. Gk. ου), which is most readily seen in the transcription of foreign names, e.g. Յիսուս *Yisows* [hi.ˈsus] 'Jesus' (1.4.7.) rendering Gk. Ἰησοῦς. Crucially, ու *ow* transcribes an entity which behaves phonologically just like իւ *i* with respect to the regular vocalic alternations (due to pretonic reduction, 1.6.3.): եմուտ *e-mowt* traditionally pronounced [jɛ.ˈmut] '(s)he entered' : մտի *mt-i* [mə.ˈti] 'I entered', cf. ելիք *e-likʿ* [jɛ.ˈlikʰ] '(s)he left' : լքի *lkʿ-i* [lə.ˈkʰi] 'I left'.

1.3.2. The grapheme է *ē* renders the phoneme /ē/ (1.4.2.), which represents a relatively recent outcome of the monophthongization of the PA diphthong *ɛi̯ (1.10.2.1.).

1.3.3. A wedge (ˇ) indicates a palatal articulation of the corresponding non-palatal grapheme, e.g., ǰ (ջ) renders /ʤ/, the palatal counterpart of an alveolar affricate j (ձ) /ʣ/, etc.

1.3.4. A left half-ring indicates aspiration: tʿ (փ) /tʰ/, čʿ (չ) /ʧʰ/, cʿ (ց) /ʦʰ/, pʿ (փ) /pʰ/, and kʿ (ք) /kʰ/; the omission of the diacritic indicates unaspirated voiceless consonants (1.5.).

1.3.5. Both օ *ō* and ֆ *f* are post-CA additions; օ /ō/ continues CA աւ /aw/ (1.10.2.), while ֆ /f/ made its way into Armenian via borrowing, e.g. ֆրեր*ք frer-kʿ* 'crusaders' < OFr. *frere* 'brother(s)'.

1.3.6. The most frequent ligatures used in Armenian texts are և for եւ *ew* and ﬓ for մն *mn*. Less frequent ones are ﬔ for մի *mi*, ﬕ for մե *me*, ﬖ for վն *vn*, and ﬗ for մխ *mx*.

1.4. Traditional pronunciation

As CA became fixed as a literary language, its pronunciation gradually drifted away from that of the originally spoken OA and came to reflect that of the evolved spoken vernacular. Today, a scholar of CA is exposed to the traditional pronunciation, which represents phonological accretions essentially spanning a period from ca. 800 up to the immediate precursors of the modern Armenian standards (cf. Minassian 1976: 25; Weitenberg 1995: 4).

1.4.1. The mid vowels ե /e/ and ո /o/ are word-initially pronounced with a homorganic onglide, i.e. [jɛ-] and [vɔ-] (< *[ᵘɔ-]), respectively, except in enclitics: ես եմ *es=em* [ˈjɛ.sɛm] 'I am'. The early explicit spellings Յեսսէ *Yessē*, Յեփթայեայ *Yepʿtʿayeay*, or Յեքոնիա *Yekʿonia* rendering Gk. Ἰεσσαί, Ἰεφθάε, and Ἰεχονίας, respectively suggest that the 'pre-yodization' was not a feature of OA (cf. Ենովք *Enovkʿ* rendering Ἐνωχ). Therefore, spellings such as Երուսաղէմ *Erowsałēm* or Երեմիա *Eremia* (Gk. Ἰερουσαλήμ, Ἰερεμίας, respectively) likely represent high-frequency words orthographically redacted at a later period (Ritter 1996: 19).

1.4.2. The vowels է /e/ and է /ē/ (< *eį̄; 3.2.) are both pronounced as [ɛ]; however, word-initially, է- *ē-* does not receive an onglide: ես /es/ [ˈjɛs] 'I', but էշ /ēš/ [ˈɛʃ] 'donkey'. Some modern dialects of Armenian also represent the original opposition in non-initial stressed syllables, in

which the original /e/ "breaks" into [jɛ], while the original /ē/ remains [ɛ] (Adjarian 1909: 2). This feature is already present in the Armenian-Latin glossary of Autun (ca. 1100 CE), our earliest document testifying to significant dialectal divergence: *III · eriec* (CA **երեք** *ere-kʿ* [jɛ.ˈrɛkʰ] 'three'), *facies · eriesc* (CA **երես** *eres-kʿ* [jɛ.ˈrɛ.səkʰ] 'face'); but *presbiter · eresc* (CA **երէց** *erēcʿ* [jɛ.ˈrɛʦʰ] 'elder'), etc. (cf. Weitenberg 1983).

1.4.3. The graphemic sequence **ոյ** *oy* is ambiguous. As a diphthong, i.e., when it alternates with a pretonic **ու** [u] (6.3.), **ոյ** /oy/ is pronounced [uɪ̯], e.g. **լոյս** *loys* [ˈluɪ̯s] 'light' : **լուսոյ** [lu.ˈsɔ]; otherwise, **ոյ** *oy* is a sequence of **ո** *o* and **յ** *y*, e.g. **խոյ** *xoy* [ˈχɔj] 'ram' : **խոյի** [χɔ.ˈji].

1.4.4. Traditionally, **ղ** /ɬ/ is the voiced counterpart of **խ** /x/, i.e. uvular fricative (or approximant) [ʁ] (or [ʱ]). Speaking for the uvular place of articulation are the later, post-CA, renditions of a foreign uvular plosive [q] by **ղ** /ɬ/: Azer. *Qarabağ* [qarabɑɣ] 'Karabakh' > **Ղարաբաղ** *Łarabał* [ʁɑ.rɑ.ˈbɑʁ] (Job 1995: 295[15]); Arab. [qurʔaːn(u)] 'Quran' > **Ղուրան** *Łowran* [ʁu.ˈrɑn]. The voiceless uvular fricative **խ** /x/ [χ] frequently alternates with **ղ** /ɬ/ even in the earliest texts: **ածուղ** *acuł* ~ **ածուխ** *acux* 'coal' (cf. Martirosyan 2010: 19-20). However, in the alphabet (1.2.), **ղ** *ł* stands in the place of Greek λ, and in the earliest loans, it is used to render a voiced alveolar lateral approximant *[l] (Hübschmann 1897 [=1972]: 327): **եկեղեցի** *ekełecʿi* 'church' < Gk. ἐκκλησία, **Ելիշէ** *Ełišē* < Syr. *Eliša'*, **Երուսաղէմ** *Erowsałēm* 'Jerusalem'. There are, however, a few exceptions to this generalization: (no doubt very early) Middle Iranian **Պահլաւ** *Pahlav* (also **Պալհաւ** *Palhav*) 'Parthian', **դահլիճ** *dahlič* 'hall; closet', and (the majority of) the biblical names in **-էլ** *-ēl*, e.g., **Շ(ա)մուէլ** *Š(a)mowēl* 'Samuel' (Sköld 1927: 781, 788).

Vacillation between ղ *ł* ~ լ *l* in numerous loans begins ca. 600 (Sköld 1927: 783): ողոմպիադ *ołompiad* ~ ոլոմպիաթ *olompiatʻ* < Gk. Ὀλυμπιάδ- (cf. Hübschmann 1897: 368).

1.4.5. The phoneme ռ /r̄/ is pronounced as a trilled alveolar [r]; the pronunciation of ր /r/ falls between an alveolar flap [ɾ] and a palato-alveolar approximant [ɹ] (except before ն /n/, 1.7.). Phonological evidence suggests that /r̄/ patterns as a [- cont] (or [- approximant]), while ր /r/ patterns as a [+cont] (or [+approximant], cf. /r/ → [ɹ] in Tehran Armenian [Hacopian 2003:73-78])**:** (i) ր /r/ is used to render a foreign [+cont] alveolar *[ð], e.g. Հրեայ *Hreay* 'Jew' < Syriac *īhūδāyā*, սպարապետ *sparapet* 'general' < Iran. *spāda-pati- (cf. Pahl. *spāhpat*), տիպար *tipar* 'example; type' < Gk. τυπάδ-; (ii) ր /r/ fully assimilates to a following [+cont] segment, e.g. պարհել *parhel* ~ պահել *pahel* 'to observe' *[pɑ(ɹ).ˈhɛl]; արժան *aržan* *[ɑ(ɹ).ˈʒɑn] 'worthy' : dial. աժան *ažan* 'cheap'; (iii) ր /r/ tends to be (acoustically?) enhanced into a fricative before a [- cont] segment: երթալ *ertʻal* 'go' : dial. եշթալ *eštʻal*; մարդ *mard* 'man' : dial. մաշթ *maštʻ* (cf. Feydit 1982: 52); similarly, the seemingly aberrant 2sg. reduplicated aor. subj. of առնե- *ar̄-n-e-* 'do', արասցես *ar-as-cʻ-e-s* ← */ar-ar-cʻ-e-s/ 'thou shalt do'; (iv) ռ /r̄/, in turn, dissimilates before another [- cont], e.g. բարբառ *bar-bar̄* 'dialect' ← */bar̄-bar̄/; (v) Loanwords with a trilled geminate [rː] are rendered by means of ռ /r̄/, not *րր /rr/; e.g. քառք *kʻar̄-kʻ* < Lat. *carrus* [karːus] 'wagon'; փառք *pʻar̄-kʻ* 'glory' < MIran. *farːah- (MP *farrah*); the orthographical geminate *րր /rr/ is traditionally pronounced in two distinct articulations, e.g**.** տարր *tar-r* [ˈtɑ.ɾər] 'element'.

1.4.6. The graphemes վ *v* and ւ *w* are in complementary distribution: վ *v* occurs word-initially and after ո *o* while ւ *w* occurs elsewhere: վաւաշ *vawaš* 'lewd', վեւ *vew* (the name of the letter) վ *v*; cf. բերանով *beran-o-v* 'mouth'-them.-Isg. but ձեռաւ *jeṙ-a-w* 'hand'-them.-Isg.

There is also a special digraph ***ով*** *ov* for orthographical Gk. ω: ***Մովսէս*** *Movsēs* ‘Μωσῆς’, ***Յակովբոս*** *Yakovbos* ‘Ἰάκωβος’. The digraph ***ու*** *ow*, which represents /u/ [u] (1.3.1.), also renders [v] (< *[w]) when post-consonantal after the reduction of the ‘weak’ vowels /u/ or /i/ (1.6.3.), e.g. ***անիւ*** *aniw* [ɑ.ˈniv] ‘wheel’ : ***անուոյ*** *anow-o-y* [ɑn.ˈvɔ] ‘id. (GDAbsg.)’ < PA */ɑniβ̯-ɔ-i̯ɔ/; ***թուել*** *t‘ow-e-l* [tʰə.ˈvɛl] ‘to count’, denom. of ***թիւ*** *t‘iw* [ˈtʰiv] ‘number’. On the other hand, ***ւ*** *w* represents an allomorph of the stem morpheme /-i-/ in the original *-i(i̯)o-stem declension, e.g. ***գինի*** *gin-i* ‘wine (NAsg.)’ : ***գինւոյ*** *gin-w-oy* [gin.ˈvɔ] ‘id. (GDAbsg.)’< PA */ɣᵘɛi̯n-i̯ɔ-i̯ɔ/. An orthographical ***ու*** *ow* may also indicate the sequence /-uu̯-/ from PIE *-uu̯- (1.9.6.12.) or PA *-uβ̯- (< *-ubʰV-, *-ōbʰV-, *-upV- or *-ōpV-; 9.6.6., 9.6.7.) or from PA *-ɯu-/*-uɯ-/ (< *-mō-/*-ōm-; 9.6.8., 9.6.9.), e.g. ***անուն*** *an-own* [ɑ.ˈnun] ‘name’ < PA */anuu̯-n/ (< *H̥nó-mn̥), cf. ***անուան*** *anow-an* [ɑn.ˈvɑn] ‘id. (GDLsg.)’ ← */anuu̯-an-/; ***մեղու*** *meł-ow* [mɛ.ˈʁu] ‘honey (Isg.)’ < PA */mɛl-u-β̯i/, (ultimately from *medʰu-bʰi). The traditional pronunciation treats postvocalic word-final ***-ւ*** *-w* as [-v], exactly as is the case with ***-ով*** *-o-v* [-ɔv]. Word-final ***-իւ*** *-i(-)w* is traditionally pronounced [-iv], e.g. ***բանիւ*** *ban-i-w* [bɑ.ˈniv] ‘word (Isg.)’. Pre-consonantal ***իւ*** *iw* is pronounced as a rising diphthong [i̯u], e.g. ***ձիւն*** *jiwn* [ˈʣi̯un] ‘snow’, ***իւղոյ*** *iwł-oy* [i̯u.ˈʁɔ] ‘oil (GDAbsg.)’, etc. These facts suggest that ***ւ*** *w* and ***վ*** *v* represented /u/ when syllabified consonantally as a bilabial OA *[w] (> CA [v]), while ***ու*** *ow* represented either a vocalic [u] or an underlying sequence /Uu̯/ → *[(ə)w].

1.4.7. Word-initial ***յ-*** *y-* is pronounced the same way as ***հ*** *h*, i.e. as a voiceless glottal fricative [h]. However, the evidence of the dialects that underwent Adjarian’s law demonstrates that ***յ-*** *y-* was formerly a “breathy” *[ɦ] (< OA *[j]). The traditional formulation of Adjarian’s

law states that a vowel becomes fronted after a (word-initial) voiced obstruent (cf. Vaux 1992). The conditioning segments have been more recently redefined as 'breathy' (Garret 1998) or [+spread vocal folds, - stiff vocal folds] which also subsumes *[ɦ]. The fronting had occurred before the dialects merged the pronunciation of */h-/ (from CA հ /h/) and */ɦ/ (from CA յ- /y-/ *[j]) into the voiceless [h]: Ɫarabaɫ *händi* [hændi] 'in the pasture' < *[ɦændi] < *[ɦɑndi], cf. OA յանդի *y-and-i* *[jɑn.ˈdi] 'in'-'field'-Lsg. (Martirosyan 2010: 74). Medially, -յ- *-y-* is realized as a palatal glide [j]: նայիմ *nay-i-m* [nɑ.ˈjim] 'I observe', այլ *ayl* [ˈɑjl] 'other'. In final position, -յ *-y* ceased to be pronounced except in monosyllabic nouns and adjectives: գոյ *goy* [ˈgɔ] 'exists', արքայ *arkʿay* [ɑr.ˈkʰɑ] 'king', but Հայ *Hay* [ˈhɑj] 'Armenian', խոյ *xoy* [ˈχɔj] 'ram'. By convention, յ *y* is not written in CA after ու *ow*, ե *e*, and ի *i*, cf. աղայի *ał-a-j-i* 'grind'-them.-impf.-1sg. but բերեի *ber-e-i* 'carry'-them.(-impf.)-1sg.; աղայ *ał-a-y* 'grind'-them.-3sg. but հեղու *heł-ow* 'fills, flows'-them.(-3sg.).

1.4.8. The graphic sequence եա *ea* is ambiguous. It may represent an underlying sequence (*)/ɛ-i-ɑ/, e.g. մարգարեանամ *margare-an-a-m* [mɑr.gɑ.rɛ.jɑ.ˈnɑm] 'I prophesy', denominative of մարգարէ *margarē* 'prophet' ← */ᵒeį#/ (3.2.); բերեաք *ber-e-akʿ* [bɛ.rɛ.ˈjɑkʰ] < */bɛr-ɛ-į-ɑkʰ/ 'carry'-them.-impf.-1pl. (recall that -յ *–y* is not written after ե *e*). In such instances եա *ea* reflects a pretonic (unstressed) ե /e/, which in the later manuscript tradition (ca. 1100) tended to be redacted to է /ē/; thus, բերէաք *berēakʿ* for earlier բերեաք *bereakʿ* and մարգարէանամ *margarēanam* for earlier մարգարեանամ *margareanam*. In other contexts, եա *ea* represents a composite (coalesced) phoneme (*)/i-ɑ/ (> /ea/), which is under stress pronounced as a rising diphthong [i̯ɑ] and subject to vocalic alternations (6.3.), e.g. քրիստոնեայ

kʿristoneay [kʰə.ɾis.tɔ.ˈn̪ɑ] ‘(a) Christian’ ← */ᵒ-ni-ai/; cf. քրիստոնեական *kʿristone-a-kan* ‘Christian-’, i.e. [kʰə.ɾis.tɔ.nɛ.jɑ.ˈkɑn] ← */ᵒ-ni-ɑi-ɑ-kɑn-/, in which the underlying /ea/ (from the “leftmost” */-i-ɑ-/) is reduced pretonically to [ɛ] (cf. later քրիստոնէական *kʿristonēakan* ‘id.’).

1.5. Phonemic inventory

The Armenian phonological system is characterized by a three-way VOT (voice-onset time) opposition of stops in all positions including word-finally, where this phenomenon is typologically rare (Hacopian (2003). This opposition is phonologically best conceptualized as “marked” /D/ : /T/ vs. “unmarked” /Tʰ/ based on phonological control of the laryngeal features (Vaux and Samuels 2005). The /D/ : /T/ opposition is characterized by control of the VOT: in /D/ (or [D̤] in some varieties), the VOT is negative; in /T/, voicing is simultaneous with the release. The significant VOT, i.e. aspiration, in /Tʰ/ is thus a phonetic result of the lack of specification for laryngeal control.

That the so-called ‘aspirated’ series is “unmarked” can be additionally seen from: (i) the patterns of neutralization, including intervocalic and post-/r/ devoicing of /D/ to [Tʰ]: NEA /grabar/ [gə.ɾɑ.ˈpʰɑɾ] ‘the literary language’, /ordi/ [vɔɾ.ˈtʰi] ‘son’, /ergel/ [jɛɾ.ˈkʰɛl] ‘to sing’. Conversely, processes in which /Tʰ/ might be analyzed as “neutralized” into *[D] or *[T] do not occur; (ii) the last point is also evident in the diachronic distribution of stops within Armenian dialects. While the diachronic reanalysis of the control of the laryngeal features in both */T/ and */D/ series results in an array of stop inventories, all dialects uniformly preserve the continuity of the PA */Tʰ/ series, which is therefore diachronically “stable”; and in no dialect has it merged into the other series. In contrast, the other series not infrequently merged into it (cf. Pisowicz

1976: 73-86); (iii) the degree of aspiration on /T^{h}/ is subject to phonetic variation in the varieties in which /T/ is realized "with a concomitant tightening of the glottis" (cf. Fortson 2010: 394), i.e., the phonological opposition and its respective realization is /T/ [T^{ʔ}] vs. /D/ [D] vs. /T/ [T^{h}]~[T].

Because of their realization in some Armenian dialects, an ejective articulation of the voiceless occlusives has been plausibly argued to go as far back as OA (Fleming 2000, Holst 2009: 24ff.). Whether it was inherited from PIE (cf. especially Kortlandt [2003: 20-25, 126-128; 2010: 57-61]) remains controversial. In the NEA system of stops, it is by no means a norm but seems to be a feature of at least the voiceless affricates /c/ [ʦ^{ʔ}] (ծ) and /č/ [ʧ^{ʔ}] (ճ) (Khachatrian 1996: 187).

Table 1.2: The phonemic inventory of Classical Armenian

Obstruents:	**voiceless**	**voiced**	**aspirated**
Stops	/p/ պ	/b/ բ	/pʿ/ փ [p^{h}]
	/t/ տ	/d/ դ	/tʿ/ թ [t^{h}]
	/k/ կ	/g/ գ	/kʿ/ ք [k^{h}]
Affricates	/c/ ծ [ʦ]	/j/ ձ [ʣ]	/cʿ/ ց [ʦ^{h}]
	/č/ ճ [ʧ]	/ǰ/ ջ [ʤ]	/čʿ/ չ [ʧ^{h}]
Fricatives	/s/ ս	/z/ զ	
	/š/ շ [ʃ]	/ž/ ժ [ʒ]	
	/h/ հ		
	/x/ խ [χ]		
Resonants:			
Liquids		/l/ լ [l]	/ɬ/ ղ [ʁ] < *[l]
		/r/ ր [ɾ] < $^{(*)}$[ɹ]	/r̄/ ռ [r]
Nasals		/m/ մ	/n/ ն
Glides		/w/ վ, ւ [v] < *[w]	/y/ յ [h-] < $^{(*)}$[ɦ-] < *[j-]

Vowels:

Monophthongs /i/ *ի* /u/ *ու*

/e/ *ե* [ə] *ը* /o/ *ո*

/a/ *ա*

Diphthongs /ē/ *է* [ɛ] < *[eį̆] /oy/ *ույ* [uį̆] /ea/ *եա* [i̯ɑ]

Traditionally also *ayայ* *awաւ* (~ Post-CA /ō/ *օ*) *ewեւ* *իwիւ* [iv] ~ [i̯u] < *[iu̯]

1.6. Prosody

The fundamental phonological processes contributing to CA prosody are: (i) *vowel epenthesis*, or the insertion of [ə] which mediates syllabification (1.6.1.); (ii) *oxytonesis*, or the placement of the stress on the final (non-epenthetical) nucleus (1.6.2.); (iii) the reductions of the diphthongs and of the 'weak' high vowels in pretonic positions resulting in the morphophonological patterns of *vocalic alternations* (6.3.): *է* /ē/ [ɛ] → *ի* [i] (< */eį̆/; 1.3.2.); *ույ* /oy/ [uį̆] → *ու* [u]; *եա* /ea/ [i̯ɑ] → *ե* [ɛ]; *ի* /i/ [i] → Ø; *ու* /u/ [u] → Ø.

1.6.1. Vowel epenthesis or schwa insertion

Probably the most important feature of the traditional pronunciation is the production of systematic patterns of syllabification by a rule-governed insertion of [ə], which is generally not represented in the orthography. The grapheme *ը ə* is rarely written since it is phonologically predictable; it is primarily used to indicate a lexically determined syllabification, e.g. *ընկեր ənker* 'friend', i.e. /Unkɛr/ → [əŋ.ˈkɛr]; *տուընջեան tow-ənǰ-ean* 'day (GDLsg.)' /tiu̯-Unʤ-i̯ɑn/ → [tə.vən.ˈʤi̯ɑn], cf. *տիւ tiw* 'day (NAsg.)'. It is fairly consistently used to indicate a lexical boundary in composition, e.g. *հատընտիր hat-əntir* 'select, choice, fine' (*հատ hat* 'a cut[ting]' + *ընտիր əntir* 'chosen'), etc., or a [ə] if the word spans a break in the line, e.g. *ծն_ ընդեան*

cn_ əndean [ʦə.nən.ˈdjɑn] ‘birth (GDLsg.)’ (Matenadaran 355), with (_) indicating a line break, for ծննդեան *cnnd-ean*. Occasionally, it appears in certain salient contexts, e.g. *ի սկզբանէ i skəzban-ē* [is.kəz.bɑ.ˈnɛ] ‘from (the) beginning’ in the historiated initial words of Genesis 1:1 (The *British Library, ms. Or. 8833*, f.3r) for text-internal *ի սկզբանէ i skzbanē*.

A descriptive illustration of how the rule mediates syllabification in the practical selection of word-initial (orthographical) consonant clusters is the following (cf. Thomson 1989: 116-121): CCV- → [Cᵊ.CV]: ծնունդ *cnownd* [ʦə.ˈnund] ‘birth’; CCCCV- → [Cᵊ.CᵊC.CV]: բժշկել *bžškel* [bə.ʒəʃ.ˈkɛl] ‘to heal’; CRCCV- → [CᵊRC.CV]: քրտնիլ *kʻrtnil* [kʰərt.ˈnil] ‘to sweat’; CFCV- → [CᵊF.CV]: դժուար *džowar* [dəʒ.ˈvɑr] ‘difficult’; SOCCV- → [ᵊS.OᵊC.CV]: սկզբանէ *skzbanē* ‘beginning (Absg.)’ [əs.kəz.bɑ.ˈnɛ]; SFV- → [Sᵊ.FV]: սխալ *sxal* [sə.ˈχɑl] ‘mistake’, etc.

The traditional syllabification seems to reflect the following overarching principles: (i) “no complex margins” (i.e. */CC-/→ [CəC]); (ii) “have an onset” (within the domain of a Prosodic Word), and “a coda may be a resonant or a fricative” (i.e. [+cont]). Deviations are due to later developments, e.g. *kʻrtnil* [kʰərt.ˈnil] < OA *[kʰər.tə.ˈnil], or more dominant prosodic principles, e.g. initial /s-/ is syllabified as a phrasal element, i.e., outside of Prosodic Word, cf. Vaux and Wolfe (2009). The different treatments of epenthesis word-initally are likely due to sonority-motivated syllable contact principle: /sP/ → [ᵊs.P], but /sF/ → **[ᵊs.F] → [sᵊ.F], /sR/ → **[ᵊs.R] → [sᵊ.R].

1.6.2. Oxytonesis or final stress system

The primary stress in CA is assigned to the final non-epenthetical (1.6.1.) vowel in the word, e.g. կերակուր *kerakowr* [kɛ.ɾɑ.ˈkuɾ] ‘food’, but մեղր *meł r* [ˈmɛ.ʁər] ‘honey’; թիւն *tʻiw-n*

[ˈtʰi.vən] ‘number’-def.; **զկեանսն** *z-kean-s-n* [əz.ˈkjɑn.sən] prep.-‘life’-acc.pl.-def., etc. The accented texts point to two exceptions: (i) non-final stress in certain adverbials: **ա՛յնպէս** *áyn-pēs* [ˈɑjn.pɛs] ‘so’, **ահա՛սիկ** *ahá-wasik* [ɑ.ˈhɑ.vɑ.sik] ‘behold, lo!’ (cf. Meillet 1977 [1905]: 328; Jensen 1959: 19); (ii) vocatives are often accented on the first syllable: **Ղա՛զարե** *Łázare* [ˈʁɑ.zɑ.ɾɛ] ‘Lazarus!’, **ռաբբի** *rábbi* [ˈrɑb.ːi] ‘Rabbi, master!’ (Gk. ῥαββί), **հա՛յրիկ** *háyrik* [ˈhɑj.ɾik] ‘father!’; or they forfeit their accent onto a vocative particle: **ո՛վ (ա՛յ) մարդ** *óv (áy) mard* ‘O man’ [ˈɔv. (ˈɑj.) mɑɾtʰ], cf. Martirosyan 2013: 90; Künzle 1984: 93).

1.6.3. Vocalic alternations

The shift of stress in inflection and derivation causes reduction of the diphthongs **է** /ē/ [ɛ], **ոյ** /oy/ [uɨ̯] and **եա** /ea/ [i̯ɑ] in destressed syllables, e.g. **լոյս** *loys* [ˈluɨ̯s] ‘light’ : **լուսոյ** *lows-o-y* [lu.ˈsɔ] ‘id. (GDAbsg.)’, **էշ** *ēš* [ˈɛʃ] ‘donkey’ : **իշոյ** *iš-o-y* [i.ˈʃɔ], **լեառն** *leaṙ-n* [ˈli̯ɑ.ɾən] ‘mountain’ : **լերին** *ler-in* [lɛ.ˈɾin] ‘id. (GDLsg)’. The alternation **եա** [i̯ɑ] ∼ **ե** [ɛ] occurs frequently in inflection and lexical composition, since the diphthong **եա** /ea/ arises from phonemic composition of any front vowel with *-a-* (1.10.2.10.): /sɛi̯r-ɛ-ɑʁʰ-Ø/ ‘love’-them.-aor.-3sg.act. → **սիրեաց** *sireac‘* [si.ˈɾi̯ɑʁʰ] ‘(s)he loved’ : /sɛi̯r-ɛ-ɑʁʰ-i/ ‘love’-them.-aor.-1sg.act. → **սիրեցի** *sirec‘i* [si.ɾɛ.ˈʁʰi] ‘I loved’; **բարի** *bari* ‘good’ + **-ա-** *-a-* (linking vowel) + **կամ** *kam* ‘wish’ → (*)/bɑɾi-ɑ-kɑm/ → **բարեկամ** *barekam* [bɑ.ɾɛ.ˈkɑm] (lexicalized) ‘friend’; **երկեամ** *erkeam* ‘of two years, biennial’ ← /ɛɾk-i-/ ‘two’ (< *dṷ-i-) + /am/ ‘year’ (1.9.5.2.); **որդեակ** *orde-ak* ‘dear child (Vsg.)’ ← /ɔɾd-i-/ +/-ɑk-ɑ-/ (dimin.) < MIran. *-aka- (cf. **նաւ** *nav* ‘ship’ → **նաւակ** *nav-ak* ‘boat’).

The high vowels **ի** /i/ and **ու** /u/ are also subject to reduction: **սիրտ** *sirt* [ˈsiɾt] ‘heart’ but **սրտի** *srt-i* [səɾ.ˈti] ‘id. (GDLsg.); **գլուխ** *glowx* [gə.ˈluχ] ‘head’ but **գլխոյ** *glx-o-y* [gəl.ˈχɔ] ‘id.

(GDLsg.)'; **հինգ** *hing* [ˈhiŋg] 'five' but **հնգեւտասան** *hnge-tasan* [həŋ.gɛ.tɑ.ˈsɑn] 'fifteen'. Diachronically, **ի** /i/ and **ու** /u/ in pretonic syllables go back to reduced diphthongs (1.8.1.), which may, however, become opaque synchronically. Thus, surface high vowels are not reduced in pretonic positions if they enter the derivation unstressed: **ուրախ** *owrax* [u.ˈrɑχ] 'happy' → **ուրախութիւն** *owrax-owtʿiwn* [u.rɑ.χu.ˈtʰjun] 'joy' (cf. **քունե-** *kʿown-e-* 'sleep' < *kʰoy̯ɜn-; 1.10.2.8.).

1.6.4. R̄-neutralization

The phonemes **ռ** /r̄/ and **ր** /r/ (1.4.5.) are phonetically neutralized before **ն** /n/: **արարի** *ar-ar-i* [ɑ.rɑ.ˈri] 'I did' but **առնեմ** *ar̄-ne-m* [ɑr.ˈnɛm] 'I do' ← /ar-ne-/; **դրունք** *dr-own-kʿ* [də.ˈruŋkʰ] 'door (Npl.)' but **դուռն** *dowr̄-n* [ˈdu.rən] 'id. (Nsg.)' (i.e. /dur-n/). The apparently exceptional cases of surface **-րն-** *-rn-* [-rn-] represent sequences of /-rUn-/ with an underlying high vowel deleted in pretonic position (1.6.3.): **կորնչիմ** *kornčʿim* 'I perish', traditionally pronounced (1.4.) [kɔr.nə.ˈʧʰim] ← /kori-nčʿ-i-/, cf. **կորեայ** *koreay* [kɔ.ˈri̯ɑ] ← /kori-a-i/ 'I perished (Aor.)'; **վերնոյ** *vernoy* (traditionally) [vɛr.ˈnɔ] 'upper (GDAbsg)' ← /verin-o-i/, cf. **վերին** *verin* 'id. (NAsg.)'. It has been suggested that the source of these exceptions should be sought in the relative chronology of the phonological processes involved, i.e. r̄-neutralization preceded vowel reduction (6.3.). However, the OA pronunciation may have differed from the traditional one in this respect: [vɛr.ˈnɔ] < OA *[wɛ.ɹə.ˈnɔj], [kɔr.nə.ˈʧʰim] < OA [kɔ.rən.ˈʧʰim] (cf. Clackson 1994: 38; Hübschmann 1906: 475). Loans, such as **պոռնիկ** *poṙnik* 'whore' from Gk. πορνικός, **նեռն** *neṙn* [ˈnɛ.rən] 'antichrist' from Gk. Νέρων 'Nero (PN)', are most likely gratuitous and not probative, since **ռ** /r̄/ renders Greek ϱ (1.2.) across the board at this stage.

1.7. Morphologically conditioned dissimilation

The paradigm of the aorist subjunctive is characterized by deaffrication of *-ꙗ* /-cʿ/ (AOR formant), when in contact with the pretonically reduced allomorph of *-ѣꙗ* /-icʿ/ (SUBJ): *սիրեսցես sir-es-cʿ-e-s* [si.ɾɛs.ˈʦʰɛs] ‘thou shalt love’ (← /√-eacʿ-icʿ-e-s/ AOR-SUBJ-ACT-2SG., cf. *սիրեցѣꙗ sir-ecʿ-icʿ* [si.ɾɛ.ˈʦʰiʦʰ] ‘I will love’(← /√-eacʿ-Ø-icʿ-Ø/ AOR- ACT-SUBJ-1SG). There are, however, systematic exceptions to this morphologically conditioned dissimilation: *լացցես la-cʿ-cʿ-es* ‘thou shalt weep’ (← /la-cʿ-icʿ-es/, cf. *լացѣꙗ la-cʿ-icʿ*); *ածցես ac-cʿ-es* ‘thou shalt lead’ (cf. *ածѣꙗ ac-icʿ*); this exceptional (but perhaps only apparent) retention of the affricate cluster is traditionally associated with or even attributed to the “monosyllabicity” of the aorist stem (Meillet 1913: 95); cf. also *ստասցѣս sta-s-cʿ-i-s* [əs.tɑs.ˈʦʰis] (1.6.1.) ‘thou shalt obtain’ (← /√-cʿ-icʿ-i-s/ AOR-SUBJ-MED-2SG (cf. *ստացայց sta-cʿ-a-ycʿ* ‘I will obtain ’ (← /√-cʿ-a-icʿ-Ø/ AOR-MED-SUBJ-1SG).

However, phonologically it seems more plausible that the prosodic shape of the overall morphological structure played a role in the preservation or deletion of the pretonically reduced high vowel in the subjunctive morpheme. Thus, perhaps, a prehistoric parsing into left-headed binary feet, prior to the complete loss of the final syllable, may account for the observed phenomenon: OA *սիրեսցես sir-es-cʿ-e-s* [si.ɾɛs.ˈʦʰɛs] vs. OA *լացցես la-cʿ-cʿ-e-s* *[lɑ.ʦʰə.ˈʦʰɛs]; cf. 1.9.2.5.; see Chapter 3.2.

1.8. Historical phonology

In the following discussion and throughout the rest of this chapter forms preceded by an asterisk indicate PIE reconstructions unless indicated otherwise. Forms preceded by a question

mark indicate possible but uncertain reconstructions. Derivations which arguably lead to the attested Armenian forms are, regardless of the time depth or reference to other concepts such as "Consonant shift", labeled PA. Mesropian orthography indicates CA forms. A vertical line above a nucleus indicates the reconstructed PA intensity accent to differentiate it from the PIE musical pitch accent, e.g. PIE *septḿ̥ > PA *[ˈhɛφ.tʰɑn] > **եւթն** *ewtʻn* 'seven'.

1.8.1. Diachrony of final syllables

The rhymes of PIE final syllables are generally not preserved in OA. This process is referred to as *apocope* and is ascribed to the shift of the original prosodic system with syllables characterized by mobile pitch differences to the system with intensity accent (cf. Meillet 1936: 19; contra Pedersen 1904 [=1982: 3ff.]).

As for the original final codas specifically:

(i) PIE obstruents are lost, presumably quite early; Holst (2009: 80f.) sees here an isogloss that Armenian shares with the "Balkan" languages: Greek, Albanian, and Phrygian: **ելիք** *e-likʻ* '(s)he left' < *é-likᵘ-e-t (Ved. *áricat*, Gk. ἔλιπε 'id.');

(ii) Original syllabic resonants are believed to be preserved as such until relatively late (at least word-finally): **տասն** *tas-n* < *déḱm̥ (Ved. *dáśa*); **ոտն** *ot-n* 'foot' < *pód-m̥ (Gk. πόδα); **գեղումն** *gel-owmn* 'twist, contortion' < *u̯elū-mn̥ (Lat. *volūmen* 'scroll', Gk. εἴλῡμα 'wrapper'); **աղբիւր** *ałbiwr* 'source' < *bʰrḗ-u̯r̥ (Gk. φρέαρ);

(iii) Original non-syllabic liquids are preserved: **այր** *ayr* 'man' < *h₂nḗr (Gk. ἀνήρ); **աստղ** *ast-ł* 'star' < *h₂stḗl (Gk. ἀστήρ) (if Olsen [2010] is right, the Armenian lateral may be inherited);

(iv) Non-syllabic nasals are traditionally assumed to be preserved in monosyllables: *k^{u}éh$_2$-m > ***քան*** *k'an* 'than' (Lat. *quam*); *dṓm > ***տուն*** *town* 'house' (Hom. δῶ, Av. *dąm-i* [Lsg.]); cf. Stempel 1990); also ***ձիւն*** *jiwn* 'snow' (Gk. χιών 'id.', Lat. *hiem-s* 'winter'), which would, however, have had to be understood as a monosyllable at the PA level, i.e. *ĝ^{h}i̯ṓm > PA *[ˈʤiu̯n] (cf. Ravnaes 1991: 100). It would seem that in words of more than one syllable only *-Vn is preserved, while *-Vm is lost (so Pisani 1951: 47f.): *u̯r̥h$_1$-ēn > ***գառն*** *gaṙ-n* 'lamb' (Gk. ἀρήν), ***հարսն*** *hars-n* 'bride' (< ?*pr̥̂k-ṓn; based on its inflection; cf. Hamp 1988; Godel 1975: 100f.), but *h$_1$éḱu̯-o-m (Asg.) yields ***էշ*** *ēš* 'donkey' (Gk. ἵππον, Ved. *áśvam*, Lat. *equum*). Kortlandt (1984a: 97f. = 2003: 45f.) assumes that all final *-VN# sequences develop into nasalized vowels; he considers ***գառն*** *gaṙ-n* and ***հարսն*** *hars-n* to be based on the original Asg.; so also Pedersen (1905: 216f. [=1982: 72f.]), who, however, also derives ***տուն*** *town* from *dṓmn̥ (Gk. δῶμα) and ***հարսն*** *harsn* from *pr̥̂k-nó-m (cf. ***բեռն*** *beṙ-n* 'load' < *b^{h}er-néh$_2$- cognate to Gk. φερνή 'dowry') and compares ***գառն*** *gaṙn* to Skt. *uraṇam* 'wether' (< *-én-m̥).

The most economical solution is to assume that nasals are preserved in final long vowel +nasal sequences (*-v̄N#) and lost in short vowel +nasal sequences (*-v̆N#). In the latter, the vowel was nasalized, subsequently reduced and lost (*-V̆N > PA *-Ṽ > *-ə > -Ø, while *-v̄N > PA *-Vn). This assumption accounts not only for the monosyllables cited above, which invariably contain *-v̄N, but also for one monosyllabic form that has not been part of the discussion, the preposition *(h$_1$)en > PA */ĭn/ *[ĩ] > ***ի*** *i* (sandhi-variant ***յ-*** *y-*) 'in', where the nasal must have been lost prior to the stage at which it was reanalyzed as an "inflectional prefix" with two allomorphs, i.e. PIE *en > CA /i-/ → {i}~{j-}; see Chapter 3.

1.8.2. Origin of the final stress system

The newly stressed penultimate nucleus acquired prosodic salience, which led to the reduction of the final post-tonic syllable, e.g. *é-lik^{u}-e-t (Ved. *áricat*, Gk. ἔλιπε) > PA */ɛ-lik^{h}-ɛ/ → *[ɛ.ˈli.k^{h}ə] > **ելիք** *e-likʿ* [jɛ.ˈlik^{h}] '(s)he left'. The shifts of stress onto the final syllable in inflection and derivation (1.6.2.) triggered pretonic reduction of high vowels and certain diphthongs. Pisani (1950: 168) assumes that final *-e disappears before the period in which the (reflex of the) original *k^{u} was palatalized (1.9.2.18.). Ravnæs (1991: 55) bases his analysis on the proposal of Dressler (1976: 305) that the palatalization before *i was chronologically earlier than that before *e and suggests that between these two stages the final, post-tonic *e was reduced to *[-ə] (vel sim.), i.e. a vowel which did not cause palatalization. The first part of this scenario finds typological parallels in modern French, where only high front segments condition palatalization of the coronals but not mid front vowels: *dit* [d^{j}i] 'said', *du* [d^{j}y] 'of the', *tu* [t^{j}y] 'thou', *tiens* [t^{j}jɛ̃] (~ [c͡çɛ̃]) 'here you go' vs. *de* [də], *des* [de] 'of', *deux* [dø] 'two', *terre* [tɛˑʀ] 'earth'; *génitif* [ʒeɲit^{j}if] 'genitive' vs. *né(e)* [ne]. Alternatively, others assume PA *[ɛ.ˈli.ʧ^{h}ɛ] → *[ɛ.ˈli.k^{h}ɛ] by analogy to the forms of the present (*lik^{h}-n̥- > **լքանե-** *lkʿ-an-e-*) or hypothetical but unattested forms with *o vocalism of the thematic vowel, such as *é-lik^{u}-o-m (Beekes 2003: 177).

The outcome of these developments was the attested final stress system (1.6.2.) often compared to the development of final stress in words with original penultimate stress in the history of French, e.g. Lat. *[sa.ˈluː.tem] > OFr. *[sa.ˈlyt]. As a rule of thumb, the nucleus which receives the PA stress is part of the original PIE penult. However, since the fixation of the stress occurred at a period after the lenition and loss of certain consonantal onsets of inherited final

syllables, namely *s, *i̯, and possibly *u̯ (Viredaz 2001-2002a), the position of the stress might on occasion correspond to the original antepenult: *méh$_1$d-es-h$_2$̥ (Gk. μήδεα ‘plans’) > *médeha > PA *[mí.dɛ.ɑ] (vel sim.) > *[ˈmi.tɑ] > մխտք *mit-kʿ* ‘intellect’; *(s)kor-éi̯e-ti ([iter.] of *[s]ker-) (Gk. κείρει, ON *sker* ‘shears’) > *[k^{h}ɔ.ˈrɛ.^{θ}i] > *[k^{h}ɔ.ˈɹɛi̯] > քորէ *kʿor-ē* [k^{h}ɔ.ˈɾe] ‘scratches’.

The patterns created by the various reductions just noted became phonologized into the synchronically productive process of vocalic alternations (1.6.3.): *pénk$^{u̯}$e (Gk. πέντε) > PA *[ˈφiŋ.gə] > հինգ *hing* ‘five’, but *pénk$^{u̯}$e-dek̂m̥-ti (Ved. *páñcadaśa*) >→ PA *[φəŋ.gɛ.tɑ.ˈsɑ.nə] > հնգետասան *hnge-tasan* ‘fifteen’; *u̯ói̯n-o- (Gk. [Ϝ]οἶνος)> PA *γ$^{u̯}$ei̯n-ii̯ɔ- > *[γ$^{u̯}$i.ˈni.^{j}ɔ] > գինի *gin-i* ‘wine’. This process seems to have been productive even at the time of the latest loans: լիտր *lit-r* [ˈli.təɾ] ‘pound’ (լտեր *lt-er* GDLsg) < *[ˈli.tr̥ ~ ˈlit.ɾə] (< Gk. λίτρα ‘weight’).

1.9. Consonantism

The contrast in the original PIE three series of stops is preserved in Armenian. The original palatal series develops into sibilants or affricates: *k̂, *ĝ, *ĝ^{h} > ս /s/, ծ /c/ [ʦ$^{(ʔ)}$], ձ /j/ [ʣ], respectively. The non-palatal series are characterized by a modification of their original laryngeal features, an epiphenomenon conveniently referred to as the “Armenian consonant shift”. The “shift” is most cogent in its word-initial outcomes (and especially in the PIE voiced series); thus, *p, *t, *k$^{(u̯)}$ become (?*p^{h} or *φ >) հ /h/ (or Ø), թ /tʿ/, ք /kʿ/, respectively (i.e. PIE *T- > CA T^{h}-); *b, *d, *g$^{(u̯)}$ > պ /p/, տ /t/, կ /k/, respectively (i.e. PIE *D- > CA T-). The PIE *D^{h} series is traditionally taken to yield normal voiced բ /b/, դ /d/, գ /g/, respectively; however, voiced aspirated stops are recognized as reflexes of this series in modern dialects by Sievers (1893), Pedersen (1906: 336-342 [=1982: 112-120]), Adjarian (1909), Allen (1951: 200),

Benveniste (1959), and Vogt (1938: 327; 1958). Garrett (1998) adduces phonological arguments for the feature [+slack vocal folds, - stiff vocal folds] for this series (cf. 1.4.7.), and these arguments are experimentally confirmed in Schirru (2012: 435-458). The reflexes of this series in some modern dialects of Armenian and additional phonological considerations (such as the mechanism of Adjarian's law) strongly indicate that at least for PA the traditional 'voiced' series should be reconstructed as 'murmured' and will be recognized as such in the discussion that follows (i.e. *b^h, *d^h, *$\hat{g}^h$, *$g^{(u)h}$ > PA * $b̤$, *$d̤$, *$dz̤$, *$g̈$, respectively).

Medially, PIE voiceless stops undergo a series of profound changes:

(i) Lenition to total loss (*-T- > CA $^{(*)}$-F- > Ø): *$b^h h_{2}$-tí-s (Dor. φάτις) > PA *[ˈbɑ̤.$θ^{j}$ih] > *[ˈbɑ̤.^{ð}i] vel sim. > բայ *bay* [ˈbɑj] 'speech'; *pede-tó-s > PA */φɛdɛ$θ^{ṳ}$ɔ/ > *[hɛ.ˈtɛ.β̤ɔ] > (այսու-)հետեւ *(ays-ow-)het-ew* '*from (this) step (on)' > 'henceforth' (Ved. *patsu-tás* lit. 'from [a place] at the feet'; Lat. *funditus* '$^{(*)}$from the bottom > completely'). Conditioned reflexes of intervocalic *t are assumed by Pisani (1951: 68), Klingenschmitt (1982: 98f.), Job (1988: 28), Olsen (1999: 151), and Matzinger (2005 passim): *-t- > PA *-$θ^{j}$-, a palatalized dental fricative (> *-$ð^{j}$- > -յ- *-y-* [1.9.6.1.] or -Ø-) and *$θ^{ṳ}$, a labialized dental fricative (> *φ > *β̤, a bilabial approximant > ւ~վ /u̯/ [1.9.6.5.]) conditioned by the [±back] features of the following vowel; in addition, *-t- > PA *-$θ^{ṳ}$-, before consonantal */r/ and perhaps also */l/ (1.9.6.5). In their phonetic exegesis all the scholars just cited go well beyond Meillet (1936: 33) and Schmitt (1981: 59), who simply posit *t > *y regardless of environment;

(ii) After sonorants, PIE voiceless stops merge with the inherited voiced aspirates (*-{R/N}T- >*-{R/N}D̤-): *H$r̥$-tú- > PA *[ˈɑr.d̤u] > արդ *ard* 'shape, order' (Ved. *ṛ̥tú-*

'appointed time, order'), cf. *é-d^{h}eh$_1$-t > PA *[ˈɛ.d̯i] > **եդ** *e-d* '(s)he put' (Ved. *ádhāt* 'id.'). In addition, original clusters of a (plain or aspirated) voiced stop plus resonant undergo metathesis (i.e. *[-]D$^{(h)}$R- > *-RD/T-): *b^{h}rā́tēr > PA *[ᵉr.ˈb̯a.jir] > **եղբայր** *eł̇bayr* 'brother' (Ved. *bhrā́tā* 'id.'); *mé$\hat{g}^{h}$(s)ri > PA *[ˈmɛʤ.ri] > **մերձ** *merj* 'near'(Gk. μέχρι 'id.'); *sṷidro(s)-(m̥) > PA *[ˈhɣ̊ᵘid.rɑn] > **քիրտն** *kʻirt-n* 'sweat' (Gk. ἱδρῶ 'id. [Asg.]' < PGk. *-óh-α).

A characteristic feature of satem languages, the merger of *K and *K^{ṷ}, seems to have taken place within the history of PA itself. The inherited labiovelar is affected by so-called "*u*-epenthesis" after a nasal (i.e. *-NK^{ṷ}- > PA *-ɑṷK-). After the merger of *K and *K^{ṷ}, a preceding labial segment 'satemizes' the velar so that the latter shows reflexes identical to those of the original PIE palatovelar *K̂ (*-ɑṷK- > PA *-ɑṷḰ-; 1.9.2.2., 1.9.3.2.): **աւծ** *awc* '(s)he anointed' < PA */ɑṷǵ-/ < *h$_2$n̥g^{ṷ}- (Lat. *unguen* 'ointment'), cf. **ածէ** *ac-ē* 'drives' < *h$_2$ég-e-ti (Gk. ἄγει, Lat. *agit* 'id.'); (1.9.2.1.).

Another feature often regarded as a peculiarity of Armenian consonantism is the resistance of all the original plain velars and *g^{ṷ} to palatalization (but see 1.9.2.7.): *g^{ṷ}ḗnh$_2$- becomes **կին** *kin* 'woman' (Ved. *jáni-*, MPers. *zan*, OCS *žena*, TB *śana* 'id.') as opposed to **ջերմ** *ǰerm* 'warm' from *g^{ṷh}er-mó- (Gk. θερμός, Ved. *gharmá-*, OE *wearm* 'id.'). Opponents of this view include Pedersen (1906: 392 =1982: 171f.) and Kortlandt (1975: 43f.=2003: 10f.), who attribute the absence of palatalized reflexes to the workings of paradigmatic leveling, thus, e.g., *g^{ṷ}én(e)h$_2$- was originally palatalized to *ʧína but subsequently restored to **կին** *kin* based on the plural **կանայ-** *kan-ay-* (< *g^{ṷ}n̥h$_2$-), etc. In the following sections we shall examine each member of the phonological inventory of CA from the point of view of its sources.

1.9.1. Stops

Table 1.3: Stops

/p/ պ	*b 1.9.1.1.	/b/ բ	*b^{h} 1.9.1.9.	/pʻ/ փ	(*p^{h} <) ?*sp- 1.9.1.15.
	??*{s}p- 1.9.1.2.				??*-h$_1$p- 1.9.1.16.
/t/ տ	*d 1.9.1.3.	/d/ դ	*d^{h} 1.9.1.10.	/tʻ/ ք	*t- 1.9.1.17.
	*{s}t 1.9.1.4.		*{R/N}t 1.9.1.11.		?*pt- 1.9.1.18.
	*{k̂}t 1.9.1.5.				??*-h$_1$t- 1.9.1.19.
	PA *{uḱ}t 1.9.1.5.; 1.9.3.2				
/k/ կ	*g$^{(ų)}$ 1.9.1.6.	/g/ գ	*g$^{(ų)h}$ 1.9.1.12.	/kʻ/ ք	*k$^{(ų)}$ 1.9.1.20.
	*{d}u̯ 1.9.1.7.		*u̯ 1.9.1.13.		*su̯ 1.9.1.21.
	*-{st}u̯- 1.9.1.8.		*{R/N}k$^{(ų)}$ 1.9.1.14		*tu̯ 1.9.1.22.
					(?)*-s 1.9.1.23.

1.9.1.1. **պ** *p* < *b: **ստիպե-** *stip-e-* ‘compel’ < *stéi̯b-e- (Gk. στείβω ‘I trample’); **լմպէ** *əmp-ē* ‘drinks’ < *[əm.ːə.ˈpɛ.jə] < PA *[iŋ.φi.ˈbɛ.θʲi] < *(h$_1$en-)pi-b(h$_3$)é-ti (Ved. *píbati*, Lat. *im-bibit*).

1.9.1.2. **սպ-** *sp-* may reflect *sp, parallel to *st* > **ստ** *st* (1.9.1.4.), but only two plausible etyma are available: **առասպել** *ār(-)a-spel* ‘fable’ < *pr̥(H) *spel-eh$_2$ (Goth. *spill*, MHG *bī-spel* ‘parable, example’, Alb. *fjalë* ‘word’); **սպառնա-** *spar̄-na-* ‘threaten’ < *spr̥-n-H- (Lat. *spernō* ‘I despise’, ON *sperna* ‘kick away’, Ved. *sphuráti* ‘kicks away’); alternatively, *sp- > **փ-** *pʻ-* (1.9.1.15.).

1.9.1.3. **տ** *t* < *d: **տասն** *tasn* ‘ten’ < *dék̂m̥ (Ved. *dáśa*, Gk. δέκα, Goth. *taihun*); **տուն** *town* ‘house’ < *dṓm (Gk. δῶ[μα], Lat. *dom-us*, Av. *dąm[i]* ‘at home’); **ետու** *e-tu* ‘I gave’ < PA */e-tu-i̯V/ ← *é-deh$_3$-m (Ved. *ádām* ‘id.’).

1.9.1.4. **ստ** *st* < PA *st < *st, *sd (*[zd]): **ստերջ** *sterǰ* 'barren' < *ster-i̯(e)h$_2$- (Ved. *star-í-ḥ* 'barren cow', Gk. στεῖρα 'infertile', Goth. *stairo* 'id.'); **աստղ** *astł* 'star' <*h$_2$stḗl (Gk. ἀστήρ, Ved. *stṛ́-bhiḥ*, Lat. *stēlla*) ; **ոստ** *ost* 'branch' < *h$_2$o/s/do- (Gk. ὄζος, Goth. *asts*); **նի՛ ստ** *níst* 'sit down!' < PA */ni-hist-ɛ/ < *ní *si-sd-e (Gk. ἵζε, Lat. *sīde*, Skt. *ni-ṣīda* 'sit down!').

1.9.1.5. **ստ** *st* < *k̂t, *{u}ḱt (see 1.9.3.2.): **երաստանք** *erastan-kʿ* 'buttocks', generally thought to be related to Gk. πρωκτός 'anus' from *prōk̂tó- (cf. Ved. *pṛ́ṣṭhá-* 'mountain ridge'; YAv. *paršta-* 'spine', if these are related); **դուստր** *dowstr* 'daughter' < PA *[ˈd̯us.tir] <*d^{h}uktḗr (Lith. *duktẽ̃*, OCS. *dъ̀štь* 'id.'), which seems to result from the *-PH.CC- > *-P.CC- rule driven by sonority principles in PIE medial codas: *[d^{h}ug]$_{\sigma}$h$_2$[tr-´]$_{\sigma}$ > *d^{h}uk.tr- (NIL 127^{1,5}, Byrd 2010: 106). However, the cluster behaves differently in **ցին** *cʿin* 'vulture' which is assumed to be a continuation of *k̂ti(H)no- (Gk. ἰ-κτῖνος 'kite; Milvus regalis', 1.9.2.15.).

1.9.1.6. **կ** *k* < *g$^{(\text{u})}$: **կալաւ** *kal-a-w* 'seized' < *g̥lH-t-ó (Lith. *galiù* '*have in power' > 'can', RCS *golěmъ* '*powerful > huge', MW *gellit* 'can' (cf. LIV^{2} 185f., Klingenschmitt 1982: 269f.); alternatively, **կալաւ** *kal-a-w* is from *g$^{\text{u}}$l̥h$_1$-tó (Hom. βλῆτο) and is related to **կեղ** *keł* 'wound'< *g$^{\text{u}}$élh$_1$-os- (Gk. βέλος 'missile'; de Lamberterie 2005: 333f.); **անկիւն** *ankiwn* 'corner' < *h$_2$(e)ng- (Lat. *angulus*, OCS *ǫgъlъ* 'id.', OIc. *ekkja* 'ankle'); **կռունկ** *krī-ownk* 'crane' < PA *kirH-un- < *gērh$_2$-ōn- (Gk. γέρανος, Lat. *grūs*, Lith. *gérvė*); **կին** *kin* 'woman' < *g$^{\text{u}}$ḗnh$_2$- (Gk. γυνή, OIr. *ben*, OE *cwēn*); **կով** *kov* 'cow' < *g$^{\text{u}}$o̯u̯- (Ved. *gáv-*, Gk. βο[ϝ]-).

1.9.1.7. **կ** *k* in PA cluster *{r}k < *(-)du̯-: **երկար** *erkar* 'long-(lasting)' < *du̯éh$_2$-ro- (Gk. δηρός 'id.', Ved. *dū-rá-* 'distant', Lat. *dū-dum* 'formerly' < *duh$_2$-, cf. **տեւ** *tew* 'duration' < *deu̯h$_2$-, RCS *davě* 'recently; yesterday', OCS *dav-ьnъ* 'ancient' < *dōu̯h$_2$-); **երկն** *erk-n* 'labor

pains’ < *$h_1$éd-u̯ōn (Hitt. *idāl-u-* ‘evil’ < *‘that which bites’, TB *yolo* ‘id.’ < *$h_1$ed-u̯ŏl-[ōn-]; cf. Gk. ὀδύνη ‘pain’); **երկու** *erk-ow* ‘two’ < *du̯-ó-h_1 (Ved. *dvā́*, Go. *twai* ‘id.’); **երկեաւ** *erke-a-w* ‘feared’ < PA */ɛ-ɛrki̯-ɑ-β̞ɔ/ < *é-du̯i- (Hom. ἔ-δει-σ-ε[ν] ‘was startled’ [with orthoepical -δδ- for *-δϝ- in some mss.], Av. *duuaē-θā-* ‘threat’); cf. Ved. *dvéṣ-ṭi* ‘is hostile; hates’ < *du̯éi̯-s-. *du̯ > **րկ** *rk* (“Meillet’s law”, cf. Meillet 1924 : 1f.) is rejected by Pedersen (1906: 398f. [=1982: 196f.]) and Kortland (1980: 99f.; 1989: 50 [=2003: 28[1]; 94]), who posit *du̯ > **կ** *k* instead and propose new etymologies or different reconstructions, e.g., **երկ-** *erk-* ‘fear’ < (?*herk- <) *preg$^{(u̯)}$- (Goth. *faurh-t-jan* ‘id.’ < *pr̥g$^{(u̯)}$-t-i̯o-, TB *parskaṃ* ‘they fear’ < *pr̥K-sk̂ó-nti; LIV^2 491); Gk. ὀδύνη < *h_3(e)d-un-, i.e. a different root, cf. (ἀ)νώδυνος ‘painless’ < *ń̥-h_3d^o (cf. Lith. *úodas* ‘gnat < *stinger’ < *$h_3$od-o-); *du̯ō > PA *ku → **երկու** *erkow* ‘two’ with *er- adopted from **երեք** *erekʿ* ‘three’. In addition, the phonetic mechanics of *du̯ > **րկ** *rk* remain a stumbling block to many of the scholars; nevertheless, cf., the *feature metathesis* analysis of DeLisi 2013.

1.9.1.8. **կ** *k* < *-{st}u̯-; the only citable example is **ոսկր** *osk-r* ‘bone’ < PA *(h)ȯs(t)-kir ← *Host- + *-u̯ēr, cf. Ved. *ásth-i*, Av. *ast-*, *as[-ca]*, Lat. *os(s)*, *ossua*, Gk. ὀστέον ‘id.’ The form *Host-u̯ēr, originally analyzed as *ostu̯-er, i.e. *Host-u- + *-r/-n- (Meillet 1936: 51; Lat. *ossu-a* , Gk. *ὀστέϝ-ον), is a transposed projection and hence very likely a reflection of the original root noun (?)*$H_{2/3}$ost- which adopted the (reflex of the original) suffix *-u̯er/n-; cf. Skt. *ásthi* < either *Host-i/n- or *Host-H̥?, Gk. ὀστέον < *Hosth̥$_1$-i̯o- or *Host-eu̯-?, Hitt. *ḫaštāi* < *Host(h_1)-ōi̯, Lat. *oss-u-* < ?*Host-u-, os[s] < ?*Host(H); OCS *kostь* < ??*Host-(i-). In any case, it is not clear at which stage the projected sequence *-stu̯- reflects historically real linguistic input and in

which form; perhaps PA */ɔst-u̯ir/ *[ɔs]$_{σ}$[tu̯ir]$_{σ}$ > *[ɔs]$_{σ}$t[ɣ̊ir]$_{σ}$ > *[ɔs]$_{σ}$[ɣ̊ir]$_{σ}$ > *[ˈɔs.kir] and shows *s preserved in *st (1.9.1.2.), rather than *{s}tu̯ > *{s}k^{h} (1.9.1.22.).

1.9.1.9. բ *b* < *b^{h}; բ *b* continues an original *b^{h} word-initially and after a resonant; (*-Vb^{h}V- > ւ *w* or վ *v*, 9.6.7., 4.5.) , e.g. բամ *b-a-m* 'I say' < *b^{h}éh$_{2}$-mi (Dor. Gk. φᾱμί, Lat. *fātum* 'prophecy'); հարբ *har-b* 'father (Isg.)' < *[ˈhɑɹ.b̥i] < PA */φɑθɑrb̥i/ < *ph$_{2}$tr̥-b^{h}i; դամբ(ար)ան *damb-(ar)an* 'grave' < *d^{h}m̥b^{h}- (YAv. *daxma-* 'id.' < *daf-ma-, Hom. τάφος 'funeral rites', OPr. *dambo* 'ground'; cf. Clackson 1994: 120f.; Beekes 2010: 534; LIV^{2} 143f.); ամբ *amb* 'cloud' < ?*n̥b^{h}-és- (Ved. *ámbhas-* 'water', cf. Lat. *imber* 'rain shower' < ?*n̥b^{h}-es-, Ved. *abhrá-* 'cloud', Av. *aβra-* 'rain' < *n̥b^{h}-ró-); cf. Clackson 1994: 133; for the proposed connection of the arguably older variant ամպ *amp* 'id.' with Skt. *ambu-* 'water', *ambara-* 'sky; garment', and Gk. ὄμβρος '(rain-)shower' see Martirosyan 2010: 51.

1.9.1.10. դ *d* < *d^{h}; in all positions except perhaps *-Vd^{h}V- (1.9.4.8.) , e.g. դուրք *dowr-kʿ* 'door' < *d^{h}úr-(e)h$_{2}$- (Gk. θύραι, Lat. *forēs*, Goth. *daur*); գինդ *gind* 'earring; necklace' < *u̯end^{h}-eh$_{2}$-(cf. Goth. *windan* 'to wind', Ved. *vandhúr[a]-* 'charioteer's seat'), etc.

1.9.1.11. դ *d* < *-{R/N}t-; i.e. sonorization after *R, e.g. արդ *ard* 'now' < *h$_{2}$érti (Gk. ἄρτι 'just now', Lith. *artì* 'near'); մարդ *mard* 'human' < *mr̥-tó- (Ved. *mr̥tá-* '*having died > dead,' Gk. βροτός 'mortal', OCS *mrъtvъ*); ընդերք *ənder-kʿ* 'bowels' < ?*h$_{1}$én-ter-h$_{2}$ (Gk. ἔντερα, Ved. *ántara-* 'interior', *āntrá-* 'intestine'), etc.

1.9.1.12. գ *g* < *g$^{(u̯)h}$: գեղաւն *geł-awn* 'song' < *g^{h}el- (ON *gala*, OHG *naht-gal-a* *'night-singer' > 'nightingale'); գեղձք *geł̇j-kʿ* 'glands' < *g^{h}elĝ^{h}- (Lith. *gẽležuonys*, OCS *žlězy*);

մէգ *mēg* 'fog' < *h$_3$me̯g^{h}-o- (Ved. *megha-* 'cloud', Gk. ὀμίχλη 'mist', Lith. *miglà* 'id.'); գան *gan* 'blow; wound' < *g$^{u̯h}$n̥-(ti-) (cf. Hitt. *kuen-zi*, Ved. *hán-ti*, Gk. θείνει 'kills').

1.9.1.13. գ *g* < *u̯: գործ *gorc* 'work' < *u̯órĝ-o-m (Dor.Ϝέργον, OHG *werk*, Av. *varəza-*); գին *gin* 'price' < *u̯es-nó- (Ved. *vasná-*, Lat. *vēnum*); տայգր *taygr* 'brother-in-law' < *deh$_2$i̯u̯ḗr (Ved. *devár-*, Lith. *dieverìs*); ծունգք *cowng-kʿ* 'knees' < *ĝónu̯-(h$_2$/-ih$_1$-) (Gk. γοῦνα, Lat. *genū*, TA *kanwë-ṃ*); կոգի *kogi* 'butter' < *g^{u}ou̯-(i)i̯o- (Ved. *gávya-* 'cow-', YAv. *gaoiia-*, Gk. -βοιος).

1.9.1.14. գ *g* < *-{R/N}k$^{(u)}$-, i.e. sonorization after *R: արգել *argel* 'obstacle' < *h$_2$(e)rk-el- (Lat. *arcula* 'casket', OHG *rigil* 'bolt'; cf. Gk. ἀρκέω, Lat. *arceō* 'I ward off'); երգ *erg* 'song' < *h$_1$erk^{u}-o- (Ved. *arká-* , Hitt. *arku-* 'chant', TB *yarke* 'worship'); հինգ *hing* 'five' < *pénk^{u}e (Ved. *pánca*, Gk. πέντε, Lat. *quīnque*, Lith. *penkì* 'id.').

1.9.1.15. փ *pʿ* < (?*p^{h} <) ?*sp-: փոյթ *pʿoytʿ* 'zeal' < ?*speu̯d-to- (Gk. σπουδή, Lith. *spáusti* 'squeeze', *spūdà* 'urgency', ?Alb. *punë* 'business' < *spud-nā-); փունդ *pʿownd* 'container' < *p^{h}on(-)d^{h}-o- (OCS *spǫdъ* 'bushel', Latv. *spanda* 'strap'; MLG *span* 'frame [of a ship]); փաստ *pʿast* 'evidence' <?*sp$_ə$k̂-tí- (Ved. *á-spaṣ-ṭa-* 'invisible', Lat. *spectō* 'I observe', Gk. σκέπτομαι 'I view; consider' < *σπεκ-) (but see 1.9.1.2.).

1.9.1.16. փ *pʿ* <??*-h$_1$p-; voiceless aspirates may continue an inherited PIE sequence *h$_{(1)}$+*T (cf. 1.9.1.18.): թուփ *tʿowpʿ* 'bush' < ?*tuHp- (Gk. τύφη 'reed mace', OE *þūf* 'thicket'). However, this view (see Olsen 1999: 773-775; 2010: 40[34]) has not met with general approval (cf. e.g. Martirosyan 2010: 323). The items generally involved in the discussion of voiceless aspirates frequently represent peripheral (substratal?) vocabulary. In addition, Olsen's proposal implies an *[h]-like realization of */h$_1$/, a decidedly minority view.

1.9.1.17. *թ t‘* < *t: *թառամ t‘aram* ‘withered’ < *tr̥s- (Goth. *ga-þaursana* [Asg.], Ved. *tr̥ṣāṇá-* ‘thirsty’, Gk. τέρσομαι ‘I wither’); *թանա- t‘ana-* ‘dampen’ < *t-n̥-h_2- (Gk. τή-κω ‘I melt’, OCS *ta-j-etŭ* ‘melts’, Lat. *tā-b-eō* ‘I waste away’); *-ութիւն -owt‘iwn* (abstract noun suff.) < ?*-eu̯-ti-$h_3$on- (Lat. *-tiō[n-]*, OIr. *-tiu*, Goth. *ra-þjo* ‘account, number’).

1.9.1.18. *թ t‘* < ?*pt-: *թեր t‘er* ‘leaf; petal; side’ (< *‘wing’) < *pter- and *թիռ- t‘ir-* ‘flight; to fly’ < *ptēr- (cf. Gk. πτερόν ‘feather, wing’; πτέρυξ ‘bird’; πτέσθαι ‘to fly’).

1.9.1.19. *թ t‘* < ??* -h_1t- (cf. 9.1.16.): *լուրթ lowrt‘* ‘shiny, light-blue’ < PA *$\hat{\text{k}}$lūt$^{\text{h}}$ro- < *$\hat{\text{k}}$luh$_1$-tro- (Goth. *hlutrs* ‘clear, pure’).

1.9.1.20. *ք k‘* < *k$^{(\text{u})}$: *քորէ k‘or-ē* ‘scratches; itches’ < *(s)kor-éi̯e-ti (Alb. *harr* ‘clips’, Gk. κείρει ‘shears’, Hitt. *iškāri* ‘pricks’, OHG *sceran* ‘to shear’); *քանի՞ k‘ani* ‘how many?’ < PA */k$^{\text{h}}$an-ii̯ɔ-/ ← *k$^{\text{u}}$éh$_2$-(u̯e)nt- (Lat. *qua-nt-us*, Ved. *kí-vant-*, Av. *cuuant-* ‘id.’); *ոք o-k‘* ‘anyone; *whosoever’ < *k$^{\text{u}}$ós-k$^{\text{u}}$e (Ved. [*yá-* (…)] *káś ca*, Lat. *quis-que*, Goth. *hvaz-u-h*).

1.9.1.21. *ք k‘* < *su̯-: *քուն k‘own* < *su̯óp-no- (Ved. *svápna-*, ON *svefn*, Lat. *somnus*); *քոյր k‘oyr* ‘sister’ < *su̯ésōr (Ved. *svásā*, Goth. *swistar*, Lat. *soror* ‘id.’).

1.9.1.22. *ք k‘* < *tu̯-: *քո k‘o* ‘your’ < *tu̯o-(si̯o) (Ved. *tvá-*, Gk. σός, OCS *tvo[jь]*); *քառ- k‘ar-* ‘four’ (an allomorph of *չոր- č‘or-* from *k$^{\text{u}}$et[u̯]or-es) < *(k$^{\text{u}}$)tu̯r̥-, cf. Gk. τράπεζα ‘table’ (< *‘of four-legs’ < PGk. *t[u̯]r̥-ped-ja); Av. *ā-xtūirī-m* ‘four times’, Ved. *turī́ya-* ‘fourth’ (< *k$^{\text{u}}$tur-). For the possibility that *{s}tu̯ may yield {s}k, cf. 1.9.1.8.

1.9.1.23. *-ք -k‘* < *-(e)s: *երեք e-re-k‘* ‘three’ < *tréi̯-es (Ved. *tráyaḥ*, Gk. τρεῖς, Lat. *trēs*); *չորք č‘or-k‘* ‘four’ < *k$^{\text{u}}$étu̯or-es (Ved. *catvā́raḥ*, Dor. τέτορες); *-մք -m-k‘* (1pl.) < *-me-s (Ved. *-más*, Dor. -μες, Lat. *-mus*, OCS *-mъ*); *-ջք -y-k‘* (2pl.) < *-te-s (2du.?) (cf. Lat. *-tis* ‘id.’, Ved.

-thaḫ [2du.], Goth. *-ts* 'id.'); *-ք -kʿ* (Npl./Ipl.) < *-Vs/*(-b^{h}i-)s, e.g. *քոյր kʿor-kʿ* 'sisters (Npl.)' < *sṷésor-es (Ved. *svásār-aḫ*, Lat. *sorōr-ēs* 'id.', Gk. ἔοϱ-εϛ 'relatives' [Hes.]); *հայրք har-b-kʿ* 'fathers (Ipl.)' < *ph$_{2}$tr̥-b^{h}is (Ved. *pitṛ́-bhiḫ*).

1.9.2. Affricates

Table 1.4: Affricates

/c/ ծ	*ĝ$_{1.9.2.1.}$	/j/ ձ	*ĝ^{h} 1.9.2.8.	/cʿ/ ց	*sk̂,*sk, *k̂s 1.9.2.14.
	*{u}g 1.9.2.2.				*tk̂, ?*d^{h}ĝ^{h}, ?*d^{h}g^{ṷh} 1.9.2.15.
	*ds 1.9.2.3.				?*tḭ 1.9.2.16.
	??*dḭ 1.9.2.4.				? *k̂ḭ 1.9.2.17.
/č/ ճ	(?)*-gḭ- 1.9.2.5.	/ǰ/ ջ	*g^{ṷh}{e, ĭ} 1.9.2.9.	/čʿ/ չ	*k^{ṷ}{e, ĭ, ḭ} 1.9.2.18.
	(?)*dḭ 1.9.2.6.		*-d^{h}ḭ- 1.9.2.10.		?*(-)kḭ- 1.9.2.19.
	??*g$^{(ṷ)}${e, ĭ} 1.9.2.7.		*-{R}ḭ- 1.9.2.11.		?*-tḭ- 1.9.2.20.
			(?)*ḭ- 1.9.2.12.		
			??*-{R}tk̂ 1.9.2.13.		

1.9.2.1. *ծ c* < *ĝ: *ծեր cer* 'old (man)' < PA */ʦɛr-ɔh-/ ← *ĝérh$_{2}$-s (Gk. γέϱαϛ 'honor < ?*maturity'; cf. Ved. *járant-*, Gk. γέϱοντ-, Oss. *zærond* 'old', OCS *[sŭ]-zьrěti* 'ripen'); *մեծ mec* 'big' < *mégh$_{2}$- (Gk. μέγαϛ, Lat. *mag-nus*, YAv. *maz-å̊nt-*, Ved. *máhi*, Alb. *madh*).

1.9.2.2. *ծ c* < *-{u/ṷ}g-, i.e. "satemization" of [labio]velars after *u/ṷ (cf. 1.9., 1.9.3.2.): *լուծ lowc* 'yoke' ←< PA */ḭuǵ-ɔ-/ < *ḭug-ó-m (Gk. ζυγόν, Lat. *iugum*, Goth. *juk*, OCS *igo*); presumably contaminated by *լուծանե- lowc-an-e-* 'loosen, dissolve; unyoke' (cf. Martirosyan 2010: 316); *-բոյծ -boyc* 'nourishing' < *b^{h}óṷg-o- (Ved. *bhóga-* 'enjoyment', Lat. *fu-n-g-ī* 'to engage o.s. with'); *ործա- orc-a-* 'vomit' < PA */φɔ-Vruʦ-/ < *h$_{2}$pó + *h$_{1}$reṷg-e- (Gk. ἐϱεύγομαι

'I belch', Lat. *ē-rūgere* 'disgorge noisily', Lith. *r(i)áugėti* 'belch'; OCS *otъ-rigati* *'belch out' > 'disgorge [words]'), etc. (cf. 1.9.3.2. for the parallel **ս** *s* < *{u/u̯}k).

1.9.2.3. **ծ** *c* < *ds: **աղծ-** *ałc-* 'filth; salt' < ?*săl-d-s (cf. **աղտ** *ałt* 'dirt; salt'< ?*săld-i-) (Goth. *salt*, OHG *sulza* 'silt; sediment'); **անիծ** *anic* 'nit' < *[(s)k]onid-s (Gk. κονίδ-, Alb. *thëni*, OE *hnitu*).

1.9.2.4. **ծ** *c* < ?*-d-i̯-; this development stands (or falls) on morphological considerations. Some scholars (e.g. Scheftelowitz 1905: 30; Godel 1965: 25 [= 1982: 23]; 1975: 82; Polomé 1980: 21; Klingenschmitt 1982: 194-195; Olsen 1999: 88, 92, 811, etc.) consider **ծ***c* to be the reflex of the original cluster *-d-i̯- in present tense *-i̯e/o- formations to roots in final *d (> PA *t). These forms generally surface as nasal presents: **մուծանե-***mowc-an-e-* < *mŏ̯u̯d-i̯e- *'make enter' (causative of the *sōpīre* type) > 'introduce', cf. **եմուտ** *e-mowt* 'entered'; **անիծանե-** *anic-an-e-* 'curse' < *h̥₃nŏ̯i̯d-i̯e- (iter.; cf. Goth. *ga-nait-ja-* 'revile'). Other scholars maintain that *-di̯- phonetically yields **ճ** *č* (1.9.2.6.) and that the forms with **ծ***c* are better explained by assuming that the Armenian nasal presents were built on the reflexes of original *s*-aorists (i.e. **ծ***c* < *-d-s-; 1.9.2.3.), and therefore surface as their synchronic counterparts: **անէծ** *anēc* '(s)he cursed'< *h̥₃nĕ́i̯d-s- (YAv. *nāist* 'id.' < *nāid-s-t), **հեծաւ** *hec-a-w* '(s)he mounted (a horse)' < *sĕ́d-s- (OCS *sědъ* 'I sat [aor.]', Ved. *satsi* 'sit down! [aor.impv.]'), cf. **հեծանի-** *hec-an-i-* 'sit'.

1.9.2.5. **ճ** *č* < (?)*-gi̯-; some examples adduced for this development involve root etymologies: **աճուկ** *ačowk* 'groin' < ?*pag-i̯o- (Ved. *pājasyá-* 'belly', ?*pakṣá-* 'wing; side', Russian *pax* 'loins'); **աճիւն** *ač(-)iwn* 'ash' < ?*azg-i̯o- (Gk. ἄζω 'I dry up', Goth. *azgo*, OHG *asca* 'id.').

However, the two most viable possibilities are **աճե-** *ačе-* 'grow' and **կոճ** *koč* 'log'. The former is possibly related to **աւճան** *awč-an* 'help', and they both may go back to PA */ɑu̯ʧ-/ from an inner-Armenian *-i̯e- formation of *$h_2$eu̯g-, i.e. virtual *$h_2$eu̯ǵ-i̯e- (cf. Lat. *augeō*, Goth. *aukan*, Lith. *áugti*) and *$h_2$eu̯ǵ-i̯o- (cf. Lat. *auxilium* < *au̯g-s-), respectively. The expected offglide in **աճե-** *ačе-* (<*/ɑu̯ʧ-ɛ-/) is also missing in the pretonic syllable of **ածուղ** *acuł* 'coal' from PA ?*/ɑu̯ʦu̯l-/ < PIE *h_1n̥g$^{\text{u}}$-ól (cf. OCS *ogalъ*, Ved. *áṅgāra-* 'id.', Martirosyan 2010: 43.); **կոճ** *koč* 'log; [chopping] block' < ?*go(u̯)g-i̯o- (cf. also **կոճղ** *koč-ł* 'beam', **կոճակ** *koč-ak* 'button'; **կոճքե-** *koč-kʿ-e-*, **կոճոպե-** *koč-op-e-*, **կոճոտի-** *koč-ot-i-*, etc., all 'beat; break'), which seems to be related to cognate forms such as Lith. *gùžas* 'crop', *gūžė́* 'cabbage head', *gugà* 'button', OHG *kuocho* 'cake', Old Czech *hýže* 'thigh' as well as Gk. γογγύλος 'round', ON *kǫkkr* 'lump', etc.). Since none of the cognates are *-i̯e/o- formations, it is formally more likely that **ճ** *č* reflects a conditioned development of PA *-ʦ- (or *-ʣ- before the "sound shift") from either *ĝ (1.9.2.1.) or a 'satemized' reflex of the inherited *g (1.9.3.2.) which interacted with productive PA verbal or nominal *i̯-formants (i.e. *{u̯}g- > PA *{u̯}ǵ- > *-ʦ- ⇒ *-ʦ-i̯- [or perhaps *{u̯}ǵ- > *-ʣ- ⇒ *-ʣ-i̯- >*-ʤ-] > *-ʧ- > -**ճ**- -*č*-); Cf., **կոծ-** *koc-* 'beat; lament' from ?*go(u̯)g-/*goĝ- (apparently related to **կոճ-** *koč-* 'block', cf. Martirosyan 2010: 756), which served as a base for an inner-Armenian reduplicated *-i̯e- present **կոչկոճեմ** *koš-koč-e-m* 'I beat, break, chop'; in other words, PA */kɔʦ-kɔʦ-i̯ɛ-/ (i.e. PA *-ʦ-i̯- > **ճ** *č*) became *[kɔʦ.kɔ.ˈʧɛ.mi], with shibilant assimilation (cf. **ճանաչե-** *čaŋ-ačʿ-e-* 'know', aor. **ծանեա-** *caŋe-a-* 'knew' < *ĝn̥h$_3$-), and ultimately OA */kɔʧ-kɔʧ-/ with obstruent dissimilation across a syllable boundary (cf. **բարբառ** *barʀ(-)baṙ* 'dialect' < PA */bɑ̈ɾ̄-bɑ̈ɾ̄-/; 1.4.5.); **վեչտասան** *veš-tasan* '16' < PA */u̯ɛʧ$^{\text{h}}$-tɑsɑn-/; cf. **վաթսուն**

vatʿ-sown ‘60’ < */u̯ɛɣʰ-sun-i-/ (1.10.1.12.). The dissimilations above are in each instance due to a synchronic rule *[α cont] [α cont] → [β cont] [α cont] (which points to an unconditional shibilant realization of the intermediary reflex of *k̂s [> *ɣʰ > ɣ *cʿ*; 1.9.2.14.; cf. Romance (*)ʁ from (*)ɣ from Proto-Romance *kʲ], i.e. վեց *vecʿ* ‘6’ < */u̯ɛɣʰ-/ < *sᵘu̯ék̂s; traditionally assumed in վեշտասան *veštasan* to be due to “ruki”, 1.9.3.8.). This rule seems to have been part of the Armenian phonological system for some time, cf. aor. subj. սիրեսցես *sir-es-cʿe-s* ‘wilt love’ as opposed to լացցես *lacʿ-cʿ-es* ‘wilt weep’ (1.7.).

1.9.2.6. ճ *č* < (?)*-di̯-; this development is proposed based on phonetic parallelism with the preceding development rather than etymological comparison (see Martirosyan 2010: 718 referring to Pedersen 1906: 396-97 [=1982: 174-75]): որոճե- *oroč-e-* ‘chew’ < PA */(φɔ-)rɔd-i̯ɛ-/ ← ?*red- (Lat. *rōdō* ‘I gnaw’, Ved. *rádati* ‘digs’); unfortunately, the cited cognates are themselves difficult to assess.

1.9.2.7. ճ *č* < ??*g(ᵘ){e, ĭ}; i.e. palatalization of a plain velar or *gᵘ. A few forms in which ճ *č* may be derived from an inherited *g(ᵘ) undergoing palatalization before a front vowel are encountered in the literature: ճեղ *čeł* ‘bald’ < ?*g(ᵘ)el-no- (OHG *kalo* ‘id.’ <*g(ᵘ)ol-u̯o-, OCS *golъ* ‘naked’) and the related ճիղճ *čiłč* ‘young, unripe’ (< ?*‘smooth)’ < *g(ᵘ)ēl-mo-; ճղճիճ *čłčim* ‘meager; stingy’; ճղճմ- *čłčm-i-* ‘be stingy; be scarce; be wrinkled’ (OE *clingan* ‘shrink, wither’, MHG *klōk* ‘wise’ <(*)‘thrifty’); ճմլե- *čm-l-e-* ‘squeeze’ < ?*gem-l- (OCS *žęti* ‘reap, harvest’, OIc. *kumla* ‘wound’, MIr. *gemel* ‘fetter’, Gk. Cypr. [Hsch.] ὔγ-γεμ-ος·συλλαβή). However, palatalization of the inherited plain velars comes at a price of assuming extensive analogy in the formative period of PA morphology (cf. 1.9.). Thus, ճեղ *čeł* ‘bald’ could also be

connected with Lat. *calvus*, Skt. *-kulva-*, YAv. *kauruua-* 'thin haired' < *kl̥H-(e)u̯o- (Derksen 2008: 176). In most cases, ճ *č* is of loan origin, e.g. ճիւ *čiw* 'shank; leg' < Iran. *čīva- (Av. *ascūm* 'shin [Asg.]' < *ast-čīwa-; Martirosyan 2005; cf. Vogt 1958: 159).

1.9.2.8. ձ *j* < *ĝ^{h}: ձեռն *jeṛ-n* 'hand' < *ĝ^{h}és-r-m̥ [Asg.] (Gk. χείρ-α, Ved. *hás-ta-*, Av. *zas-ta-*); անձուկ *anj-ow-k* 'narrow' < *h$_2$(e)ng^{h}-u- (Ved. *aṁhú-*, OCS *ǫzъ-kъ*, Goth. *aggwus*).

1.9.2.9. ջ *ǰ* < *g$^{u̯h}${e/i/?i̯-}, i.e. palatalization of *g$^{u̯h}$: ջեր *ǰer* 'warmth' < *g$^{u̯h}$ér-os- (Gk. θέρος 'harvest; summer', Ved. *háras-* 'flame, heat'); ջիլ *ǰił* 'sinew, tendon' <*g$^{u̯h}$iH-(s)leh$_2$- (Lat. *fīlum* 'thread', cf. Lith. *gýsla* 'vein', OCS *žila* 'vein, sinew', SCr. *žìla*, which might, however, formally also go with Gk. βιός 'bow-string' [< *g$^{u̯}$iH-ó-]); ջերմ *ǰerm* 'warm' < *g$^{u̯h}$er-mó- (Gk. θερμός 'id.', Skt. *gharmá-*, Thrac. Γέρμας TN '[*]hot springs').

1.9.2.10. ջ *ǰ* < *-d^{h}i̯-: մէջ *mēǰ* 'middle'< *méd^{h}-i̯o- (Ved. *mádhya-*, Gk. μέσσος, Goth. *midjis* 'id.'); ննջե- *nnǰe-* 'nod off; fall asleep' < PA */ni-nuʤ-ɛ-/ < *-snud^{h}-i̯é- (Lith. *snáudžiu* 'I doze, slumber away', cf. also Gk. νυστάζω [*(s)nudh-tázō], Kölligan 2007); գէջ *gēǰ* 'moist' < *g^{h}ei̯d^{h}-i̯o- (cf. Russ. *židkij* 'watery', SCr. *žídak* 'id.').

1.9.2.11. ջ *ǰ* < *-{R}i̯-: վերջ *verǰ* 'edge, end' < *(s)uper-i̯o-; Skt. *upári* 'over', Lat. *s-uper* 'id.'; ողջ *oǰ* 'whole; safe' < *h$_2$ol-i̯o- (OIr. *huile*, Lith. *ali-aĩ* 'completely')]. The double treatment of *Ri̯ (> Rǰ/i̯R; 1.10.2.5.; cf. Schmitt 1980, 427-430) has been connected with the presence or absence of (*)a-vocalism in the preceding syllable, i.e. PA *[-ɑRi̯-] > OA [-ɑi̯R-] (e.g. Godel 1982a: 60f.; Olsen 1999: 795ff.). Viredaz (2001-2002b) suggests that the process of epenthesis operated only after the vocalization of the syllabic resonants (i.e. PA *[-ɑRi̯-] > OA [-ɑi̯R-] operated before PA *[-R̥i̯-] > OA [-ɑRʤ-], thus OA [-ɑi̯R-] cannot reflect PIE *-R̥i̯-).

1.9.2.12. ⲩ- *ǰ-* < (?)*(H)i̯-: ⲩⲟⲩⲣ *ǰowr* ‘water’ < *i̯uH-r- (Lith *jū́rės*, OPruss. *iūrin* [Asg.]); ⲩⲁⲛ *ǰan* ‘effort’ < *i̯eh$_2$-ni-; cf. Dor. ζᾶλος ‘zeal’, Ved. *yā́mi* ‘I beseech’; ⲩⲟⲩ *ǰov* ‘sprout’ < ?*i̯eu̯h$_1$-o-; cf. Ved. *yáva-* ‘barley’, Hitt. *ewa-* ‘id.?’, Lith. *javaĩ* ‘grain’; cf. Gk. ζειά ‘spelt’); ⲩⲟⲣⲓ *ǰori* ‘mule’ < ??*i̯eu̯o-ro- (Lith. *jáutis* ‘ox’; cf. Ved. *yuváti* ‘yokes’, *ni-yú-t* ‘team’); cf. Lat. *iūmentum* < *i̯eu̯g-s-mn̥-to- ‘pack-horse’ (√*i̯eu̯[-]g- ‘to yoke’). The evidence for this development is not universally accepted (cf. Kölligan 2012: 138); alternatively, *i̯- > Ø (cf. Kortlandt 1998 [=2003: 122-24], Martirosyan 2010: 706). The most convincing evidence for this would be the relative pronoun ⲟⲣ *or* ‘who, which’ under the assumption that this form comes from *(H)i̯o-. Cf. ⲟⲩⲣ *owr* ‘where?’, ⲟⲩ *ov* ‘who?’ ⲟⲣ *or* ‘which’ < *(H)i̯o- (Ved. *yá-*, cf. West Slavic *ja-kъ ‘which[?]’).

1.9.2.13. ⲩ *ǰ* < ??*{R}tḱ: ⲱⲣⲩ *arǰ* ‘bear’< *h$_2$ŕ̥tḱo- (Hitt. *ḫar-tág-ga-aš*, Ved. *ṛkṣáḥ*, Gk. ἄρκτος). The sources I consulted are uniformly dismissive of the possibility that ⲱⲣⲩ *arǰ* ‘bear’ could be derived from *h$_2$ŕ̥tḱo- by regular sound change (cf. e.g. Martirosyan 2010: 743). This dismissal seems to be primarily based on two assumptions: (i) a comparison with the reflexes of *tḱ > ⳉ *cʿ* (1.9.2.15.) as they surface in *other* positions (cf. e.g. Olsen 1999: 184), and (ii) the traditional view that the development of the thorn clusters had to involve metathesis and fricativization parallel to Gk. or Skt., i.e. *tḱ > *kþ (vel sim.), which has, however, recently been questioned by Lipp (2009). From the development of {*tḱ =} *sḱ, i.e., {*θt͡ɕ >} *ht͡ɕ > *hʃ > *ʃː^{h} > ⳉ *cʿ*[ʦ^{h}], cf. {*tu̯ (1.9.1.22.)=} *su̯ (1.9.1.21.), i.e. {*θɣ̊u̯ > *θɣ̊ = *θx} > *hx > *xː > *x > ⳅ *kʿ*[k^{h}] (fortition; cf. 9.3.15.), the development of *-Rtḱ- may therefore reflect *Rθtʃ > *Rðʤ

(sonorization) > *Rddʑ (fortition) > Rdʑ. Furthermore, *dʰĝʰ seems to reflect *dĝʰ (dissimilation of aspiration) > *ddẓ > *tdẓ ("shift") = *tʦʰ > ց *c‘* (cf. *tk̂, *ts > ց *c‘*).

1.9.2.14. ց *c‘* < *sk̂, *k̂s, *sk: **եհարց** *e-harc‘* 'asked' < *é-pr̥(k̂)-sk̂e-t (Ved. *ápr̥cchat*, Av. *pərəs-*, Lat. *poscere*); **վեց** *vec‘* 'six' < *s(u)u̯ek̂s (Ved. *ṣáṭ*, Gk. ἕξ, Av. *xšuuaš*); -**ից** *-i-c‘* (Gpl.) < *-isk-o-, in e.g. OCS *(ljud)-ьskъ* 'human, (typical) of men', Lith. *(lietùv)-iška-s* 'Lithuanian, of the Lithuanians', Goth. *(þiud)-isk-s*, OHG *(diut)-isc* 'ἐθνικός'. Here may perhaps be also included cases of the relatively early voicing assimilation of *sg⁽ᵘ̯⁾ > *sk⁽ᵘ̯⁾: **երէց** *e-rēc‘* 'elder' < PA *[ˈφrɛj.sku] < ?*pre(i̯)s-gᵘ̯u- (Gk. πρεσβύς, Lat. *prīscus*).

1.9.2.15. ց *c‘* < *tk̂, ?*dʰĝʰ, ?*dʰgᵘ̯ʰ; i.e. so-called 'thorn' clusters: **ցին** *c‘in* 'vulture' < *tk̂iH-ino- (Gk. ἰ-κτῖνος, ἰ-κτίν 'kite'); cf. Ved. *śyená-*, Av. *saēna-* (< ?*[t]k̂i̯eH-ino-); **ցամաք** *c‘amak‘* '(dry) land' < *dʰĝʰm̥- (Ved. *kṣā́ḥ*, Gk. χθών, Hitt. *tēkan*, TA *tkaṃ*). **ձուկն** *jowk-n* 'fish' is in some accounts considered a counter-example to the development of this specific thorn-cluster configuration because it is understood as a reflex of *dʰĝʰuH- (Gk. ἰχθῦς 'id.') or *d⁽ʰ⁾ĝʰuH-(m) (Beekes 2003: 196; 2010: 606; cf. Lith. *žuvìs* 'id.'). It is, however, impossible to determine whether **ձ** *j* continues *d⁽ʰ⁾ĝʰ- or whether in this particular word the cluster simplified to *ĝʰ- word initially (1.9.2.8.).

1.9.2.16. ց *c‘* < ?*ti̯: **երիցս** *eric‘(-)s* 'three times' < *tri-ti̯o-, cf. Lith. *trẽčias* 'third', OP *θritiya-*.

1.9.2.17. ց *c‘* < ?*k̂i̯: **լուցե-** *lowc‘-e-* [aor. (originally impf.)] 'lit' < PA */lɔi̯ʦʰ-ɛ-/ <*lou̯k̂-i̯e- < ?*lŏ́u̯k-i̯e- (Lith. *láukti* 'expect' < ?*'allow to be seen clearly' < *'illuminate', presumably with significant change in verbal valence, cf. *lou̯k-éi̯e- 'light up' > Lat. *lūcēre*, Ved.

rocáyati; cf. OCS *po-lučiti* ‘reach, get’ (< *‘intend’), again with complex change in syntactic frame). According to Klingenschmitt (1982: 265-66), the PIE causative/iterative type R(ṓ)-i̯e- (e.g., *kʷṓlh₁-i̯o-h₂ai̯ > Gk. πωλέο[μ]αι ‘I wander to and fro’; *su̯ṓp-i̯e- > Lat. *sōp-ī-re* ‘lull to sleep’ LIV² 23) is at the root of the Armenian causative formation in *-ոյց- -oycʿ-* (*-ոյզ--oyz-*, *-ոյս--oys-*, and marginally lexical *-ոյծ--oyc-*): PIE *h₁ṓu̯k-i̯e- ‘cause to learn, teach’ > */ɔu̯k̂-i̯ɛ-/ (> */ɔi̯ʁʰ-ɛ-/) → /ɔu̯k̂-ɔu̯k̂-i̯ɛ-/ > *ուսոյծ ows-oycʿ* ‘id.’ (i.e., the causative stem *oycʿ- reinforced by the present stem *oys- < PA *ɔu̯ḱ- < PIE *h₁éu̯k- ‘learn’; cf. OCS *uč-i-ti* ‘teach’ < *h₁ou̯k-éi̯e-; Ved. *ucyási* ‘you get used to’ < *h₁uk-i̯é-si).

1.9.2.18. *չ čʿ* < *kʷ{e/i/i̯-}, i.e. palatalization of labiovelars (except *gʷ, 1.9., 1.9.2.7.), e.g. *չորք čʿor-kʿ* ‘four’ < *kʷet(u̯)or-es (Ved. *catvā́raḥ*, Dor. τέτορες, Lat. *quattuor*); *չոգան čʿog-a-n* ‘they went, moved’ < *kʷi̯éu̯-n̥t-o, cf. Ved. *cyávante* ‘they move’, Gk. (Hes.) σύθι · ἔλθε ‘come!’.

1.9.2.19. *չ čʿ* < ?*(-)ki̯-: *-իչ -ičʿ* (noun of agent suffix) < *-k-i̯ă- (OCS *-ičь*, *-ačь*, Alb. *-s*); *փչե- pʿčʿe-* ‘blow’ < ?*pʰūk-i̯é-; cf. *փուք pʿowkʿ* ‘breath’ < *pʰū-ko-; (Gk. φῦσα ‘bellows’ < *φῡτ-jα, OCz. puxati ‘to swell’ < *pʰū-s-); cf. Klingenschmitt 1982: 69[13]. Alternatively, *փչե- pʿčʿe-* < ?*pʰūt-i̯e-; *փուք pʿowkʿ* < ?*pʰūt-ko-, cf. Skt. *phūt-karoti* ‘makes the sound *phūt*’.

1.9.2.20. *չ čʿ* < ?*-ti̯- (cf. *ց cʿ* < *ti̯; 1.9.2.16.): *կոչե- kočʿe-* ‘call, name’ < ?*gʷot-i̯e- (Goth. *qiþan* ‘say, express’ < *gʷét-e/o-); however, the word could have been remade based on *գոչե- gočʿ-e-* ‘to shout’ < *u̯okʷ-i̯e- (Ved. *vāc-*, Lat. *vōx*, Gk. ὀπ- ‘sound’; Ved. *ávocat*, Gk. εἶπε < *é-u̯e-u̯kʷ-e-t).

1.9.3. Fricatives

Table 1.5: Fricatives

/s/ ս	*k̂ 1.9.3.1.	/z/ զ	?*-ĝ^{h}- 1.9.3.9.	/h/ հ	*p- 1.9.3.12.
	*{u/u̯}k 1.9.3.2.		??*-d^{h}- 1.9.3.10.		*s- 1.9.3.13.
	*Ns 1.9.3.3.				?*H{a}- (?<*h$_2$e-) 1.9.3.14.
	*-ss- 1.9.3.4.				?*H{o}- (?<*h$_3$e-) 1.9.3.14.
	*s{t}, *z{d} 1.9.3.5.				?*k^{u}- 1.9.3.15.
	*ps-, s{p}- 1.9.3.6.				
/š/ շ	*k̂u̯ 1.9.3.7.	/ž/ ժ	?*-g$^{(u)h}$- 1.9.3.11.	/x/ խ	?*k{h$_2$} 1.9.3.16.
	??*{r/k/k̂}s 1.9.3.8.				(?*k^{h}<)?*sG^{h} 1.9.3.17.

1.9.3.1. ս *s* > *k̂: տասն *tas-n* 'ten' < *dék̂m̥ (Ved. *dáśa*, Av. *dasa*, Lat. *decem*, etc.); սիրտ *sirt* 'heart' < *k̂ēr-d- (Gk. κῆρ, CLuw. ^{UZU}*zārt-*, OCS *srъdьce* 'id.'; cf. Skt. *śrad-dhā-* 'confidence'); սա *s-a* 'this (here)' < */sɔ-ˈɑi̯/ < *k̂o- (*k̂i-) (Hitt. *kā-*, *ki-*, CLuw. *zā-*, *zi-*, OCS *sь*, Lith. *šìs*, cf. Goth. *hi-dre* 'hither', Gk. σήμερον [*κj-ά̆μερο-]); սկեսուր *skesur* 'mother-in-law' < *[ɔs.ɣ̊^{u}ɛ.ˈsu.rɑ] < PA ?*[h^{u}ɛ.ˈsu.rɑ] (vel sim.) < *su̯ek̂ur-ā (Gk. ἑκυρά, Lat. *socrus*, OCS *svekry* 'id.'; for the assimilation, cf. Ved. *śvaśrū́-*); հաս- *has-* 'arrived (aor.)' < PA */(h)ɑs-/ < ?*h$_2$n̥k̂- (Ved. *ā́naṭ* 'achieved' < *é-h$_2$nek̂-; LIV^2 282); ասաց *as-ac'* '(s)he said' ←< PA */ɑs-/ ←< *(é-)h$_2$ek̂-t < */h$_2$eĝ-t/ (Gk. ἦ 'id.', TB *ākṣäṃ* < *h$_2$éĝ-s- 'will announce', LIV^2 256; cf. առած *ar̄-ac* 'proverb' (1.9.2.1.); Lat. *ad-agiō* 'adage').

1.9.3.2. ս *s* > *{u/u̯}k ("satemization" after *u/u̯, 9., 9.2.2.): լոյս *loys* 'light' < PA */lɔu̯ḱ-ɔ-/ < *léu̯k-o(s)- (Av. *raocah-* 'id.'; cf. OCS *luča* 'ray', Ved. *loká-* 'world', Lith. *laũkas* 'clearing').

1.9.3.3. ***ս s*** > *Ns: ***ամիս*** *amis* ‘month’ < *mēns-o- (Lat. *mēnsis*, cf. Ved. *mā́sa-*, Dor. μής, Gk. μήν); ***ուս*** *ows* ‘shoulder’ < PA */uns-o-/ <*h_2ŏm(-)s-o- (Ved. *áṃsa-*, Gk. ὦμος, Lat. *umerus*, Goth. *amsans* [Apl.]); ***-ս*** *-s* (Apl. ending) < PA *-(a)ns <*/-n-s/; cf. ***երիս*** *eris* ‘three (Acc.)’ < PA *[ˈθris(s)] < *tri-n-s (Goth. *þrins*); ***ոտս*** *ots* ‘feet (Apl.)’ < *pod-n̥s (Ved. *padáḥ*, Gk πόδας). Phonetically, it seems preferable to assume an intermediate development through a geminate: *-ns- > PA *-ss-; the latter merged with (analogically extended) PA*-s-s- (1.9.3.4.), which in turn merged with PA*s < *k̂ and PA *ǩ < *k (1.9.3.2.).

1.9.3.4. ***ս s*** < (PA) *ss: ***ես*** *es* ‘[thou] art’ < PA */ɛs-si/ (cf. Hom. ἔσ-σι, Att. εἶ, Ved. *ási* ‘id.’, etc.) <*$h_1$esi = */$h_1$es-s-i/ ; ***-ս*** *-s* (Lpl. ending) < ?*^{o}-s-su (under the assumption of an analogical reconstitution in the *s-stems: **/^{o}s-su/ > PIE *^{o}-su → PA *^{o}s-su > *-s*).

1.9.3.5. ***ս s*** < *s{t}: ***ստին*** *stin* ‘mother’s breast’ < *pstén- (?*sptén-)(YAv. *fštāna-*, Gk. στήνιον•στῆθος [Hes.], Lith. *spenỹs*, Ved. *stánau* [du.] ‘id.’, *viśvá-psnya-* ‘providing milk to all’).

1.9.3.6. ***ս s*** < *ps: ***սուտակ*** *sowt-ak* ‘lying’, ***սուտ*** *sowt* ‘false’ < *ps(e)u̯d-o- (Gk. ψεῦδος, ψύδος ‘lie’); ***սունկ*** *sownk* ‘mushroom’ (Gk. σπόγγος ‘sponge’).

1.9.3.7. ***շ š*** < *k̂u̯: ***շուն*** *šown* ‘dog’ < *k̂u̯ón (Gk. κύων, Ved. *śvā́-*); ***էշ*** *ēš* ‘donkey’ < *(h_1)ék̂u̯os (Ved. *áśva-* ‘horse’, Lat. *equus*).

1.9.3.8. ***շ š*** < ??*{r/k/k̂}s; this development, which would be the Armenian version of the “ruki” rule, is very uncertain. The classical example cited in the literature is ***թարշամի-*** *taršam-i-* ‘wither, dry up’ < PA */tɑrs-ɑm-/ < *tr̥s- (Ved. *tŕ̥ṣ-ya-ti*, Gk. τέρσ-ε-ται) beside ***թառամ*** *tarām* ‘withered, dried out’ (whence denom. ***թառամի*** *tarām-i-*, a different formation from ***թարշամի-*** *taršam-i-*). Other possible examples include ***ճառ*** *jar* ‘ugly’ next to ***գարշի-*** *garš-i-* ‘be disgusted’

< ?*ĝ^{h}r̥s- × *g$^{(ų)h}$r̥s- (Skt. *hṛ̥ṣyati* ‘bristles up’, *ghṛ̥ṣu-* ‘excited’, Av. *zarəšiiamna-* ‘id.’, Lat. *horreō*); cf. also գոլո(ր)շի *golo(r)ši* ‘vapor’ < ?*Hų̆ŏrs-(i)i̯eh$_2$- (cf. Hitt. *u̯arša-* ‘mist’, Gk. ἐέρση ‘dew’). Meillet (1898) invoked this rule to account for the shibilant in վեշտասան *veštasan* ‘16’ and the affricate in արջ *arǰ* ‘bear’; however, both of these might be explained otherwise (cf. 1.9.2.5., 1. 9.2.13). Pedersen (1905: 208 [=1982:70]) assumes that all but the last two items just cited show underlying sequences*-{r}si̯-. With the articulation shifted toward the palate, *[r]/s/[i̯] could well have resisted the assimilation of *rs to PA *-rr-, whence ռ, the regular development (1.9.4.9.), which must have been motivated by the homorganic (alveolar) articulation of the cluster. The evidence for *{k}s is even more tenuous. Thus, գիշեր *gišer* ‘night’ has been compared to Middle Welsh *ucher* and Bulgarian (Vinga dial.) *uščer*, perhaps from ?*u̯eksperos, a contamination of *u̯esperos ‘evening’ (Gk. ἕσπερος, Lat. *vesper*) and *ksep ‘night’ (Ved. *kṣáp*, Hitt. *išpant-* [*ksp-ént]). Furthermore, ուշի *uši* ‘storax, holm oak’ (Gk. ὀξύα ‘beech, spear’, Lith. *úosis* ‘ash-tree’) can be derived from a virtual *h$_3$ek-s-i̯eh$_2$-. Finally, the evidence for *{k̂}s comes only from Armenian dialects, where one finds հաշնիկ *hašnik* ‘wedding’ (Nor Naxĭjewan, Sivrihisar) as opposed հարսանիկ *harsanik* (*pr̥k̂-s-). Conceivably, however, this development is the result of the following *n* (cf. YAv. *frašna-* ‘question’ beside OAv. *frasā* ‘id.’). On these forms, as well as on “ruki” in general see Martirosyan 210: 709-10.

1.9.3.9. ղ *z* < *-ĝ^{h}-; a native origin of ղ *z* has been assumed for several intervocalic developments of inherited aspirated stops. The most credible of these involves the voiced aspirated palatal velar *-ĝ^{h}-, which word-initially and adjacent to a consonant yields PA *dz̧ (> ձ *j* [dz], 1.9.2.8.). If the forms listed below are not of Iranian provenance, they would show

intervocalic spirantization of the affricate: **դէզ** *dēz* 'heap' < PA *[ˈd̪ɛi̯.d̪͡ʒɔ] < *d^héi̯$ĝ^h$-o- (Av. *daēza-* 'wall', Gk. τεῖχος 'id.'); **մէզ** *mēz* 'urine' < *$h_3$moi̯$ĝ^h$o- (Av. *maēza-*, Skt. *meha-*, Gk. ὀμείχω 'I pee'); **ոզնի** *ozni* 'hedgehog' < PA */ɔd̪͡ʒini-ɑ-/ < *h_1o$ĝ^h$i-Hn-(i)i̯eh_2 (Gk. ἐχῖνος, cf. Lith. *ežỹs*, OHG *igil*); **լիզու-** *liz-ow-*, **լիզ(ան)ե-** *liz-(an-)e-* 'lick' < *léi̯$ĝ^h$-e- (Gk. λείχω, OCS *ližǫ*; cf. YAv. *riz-*, Ved. *réh-*).

1.9.3.10. **զ** *z* **<** ?*-d^h-; This development is rejected by Godel (1975: 130) and Greppin (1980: 131f.) but supported by Normier (1980: 19f.), Viredaz (2005: 85), and Kortlandt (2003: 80): **ելուզանե-** *el-uz-an-e-* (a synchronic causative of **ելանե-** *el-an-e-* 'go out/up') < ?*$h_1$lo$u̯$$d^h$-ei̯e- (Hom. ἤλυθον 'I came', Ved. *áruhat* 'went up'); **սուզ(ան)ե-** *sowz-(an-)e-* 'dive; hide' < ?*$\hat{k}$eu̯(-)d^h- (Gk. κεύθω, Goth. *huzd* 'treasure, hoard' < *kud^h-tó- 'hidden'). If this development is correct, one might compare it to its palatalized analog **ջ** *ǰ* from *-d^hi̯- (1.9.2.10.). Otherwise, **զ** *z* is frequent in Iranian loans, e.g., **գաւազան** *gawaz-an* 'ox-goad' < Iran. *gaw-āz- (Av. *gauuāza-*) with the Iranian development of *-az- from *-h_2eĝ-; cf. **ածե-** *ace-* < *h_2éĝ-e-.

1.9.3.11. **ժ** *ž* < ?*-$g^{(u̯)h}$-; There is a possibility that medial **ժ** *ž* develops from an inherited intervocalic *-$g^{(u̯)h}$-: **իժ** *iž* 'snake' < *$h_{1/3}$ḗ$g^{(u̯)h}$i- (Gk. ὄφις, ἔχις, Ved. *áhi-*, Av. *aži-*). Otherwise initial **ժ** *ž* is invariably of foreign (Middle Iranian) origin, as are numerous instances of this phoneme in other environments: **ժաման** *žaman* 'prompt', **ժամ** *žam* 'hour' < MParth. *jm'n* [ʒamaːn] 'time'; **ժիր** *žir* 'busy; diligent' < Parth. *jyr* [ʒiːr] 'wise' (Av. *jira-*, Ved. *jīrá-* 'lively'). At least in one case, initial **ժ-** *ž-* is the result of a language-internal distant shibilant assimilation: **ժոյժ** *žoyž* 'endurance' < *z-oyž; cf. **յոյժ** *y-oyž* 'very', **ոյժ** *oyž* 'power' < Pahl. *ōž* (Av. *aojah-*, Ved. *ójas-*).

1.9.3.12. հ- *h-* < *p-: հինգ *hing* 'five' < *pénkᵘe (Ved. *páñca*, Gk. πέντε); հուր *howr* 'fire', հնոց *hn-ocʿ* 'furnace' < *puH-r-ó- ~ *pū-n- (cf. Gk. πῦρ, Hitt. *paḫḫur*, Gsg. *paḫḫuenaš*, OIc. *fýrr*, Goth. *fon* 'id.'); հերու *heru* 'last year' < *péruti (Gk. πέρυσι, Ved. *parút* 'id.'); հարսն *harsn* 'bride' < *pr̥̂k- (cf. Lat. *procus* 'suitor', Lith. *pir̃šti* 'to propose', Ved. *praśná-* 'question').

1.9.3.13. հ- *h-* < *s- : հին *hin* 'old' < *sén-o- (Ved. *sána-*, Lith. *sẽnas* 'id.', Gk. ἔνος 'of last year').

1.9.3.14. հ- *h-* < ?*H-, i.e. հո- *ho-* < ?*h₃e-, հա- *ha-* < ?*h₂e-; many scholars treat the evidence for հ- *h-* from an initial laryngeal with reservation: հոտ *hot* 'smell' < *h₃ed-es- (Lat. *odōs*, Gk. ὄδμη 'id.'); հովիւ *hoviw* 'shepherd' < *h₃eu̯i-peh₂- (Ved. *ávi-pā-lá-* 'id.', CLuw. *ḫāu̯i-* 'sheep', Gk. ὄϊς 'id.'); հաւ *haw* 'grandfather' < *h₂eu̯h₂o- (Hitt. *ḫuḫḫa-*, Lat. *avus* 'id.', Lith. *avýnas* 'maternal uncle'); հաւ *haw* 'bird; rooster' < *h₂éu̯-i- (Lat. *avis*, Ved. Gsg. *véḥ* [< *h₂u̯- eu̯-s] 'id.'), cf. Gk. αἰετός 'eagle' (< *αϝι-); but note *Ho- > ո- *o-*, e.g. ոռ *oṙ* 'rump' (Gk. ὄρρος, OHG *ars*), etc. This development is supported by Kortlandt 1983: 12 (= 2003: 42); 1984b: 42f. (= 2003: 55) and Beekes 2003:181f. It neatly accounts for the positive evidence, most of which comes from the dialects, e.g. հարաւունք *harawown-kʿ* 'arable land' < h₂erh₃-u̯on-; dial. **hand* 'cornfield' (cf. անդ *and* 'id.'). In other cases, Kortlandt resorts to ad hoc transpositions for the sole purpose of saving the rule (cf. Olsen 1999: 766); thus, արաւր *arawr* 'plow' is argued to go back to *h₂r̥h₃trom, ածել- *ace-* 'lead' to *h₂ĝ-es- (Lat. *gerō* 'I carry'), etc.

1.9.3.15. հ- *h-* (< PA ?*x-) < *kᵘ-, cf. հիմ *him* 'why, for what?' alongside իմ *im* 'id.' (dial. *xi*, *xɛ*) < *kᵘé-sm-ōi̯ (Av. *cahmāi*, OCS *čemu* 'id.'); ինչ *inčʿ* 'something' (dialectal հինչ *hinčʿ*) (Ved. *kíṁ cit* [< *kᵘím=kᵘid], Lat. *quis-quam* 'anyone', etc.). Some scholars find this particular

development of initial *k$^{(ų)}$ problematic (cf. e.g. Martirosyan 2010: 299). There is, however, some possibility that the development of *k$^{(ų)}$ to ք *kʻ* passed through a stage of lenition (i.e. via PA *x, i.e. a velar fricative distinct from a uvular խ /x/ [χ], 1.4.4., 1.9.3.16.) and underwent a subsequent fortition to the attested aspirated velar stop, i.e. *k$^{(ų)}$> PA *x > ք *kʻ*. This way the reflexes of *s merged word-finally (i.e. *-Vs > PA *-Vh# > *-x, 1.9.1.23.) with the reflexes of *k$^{(ų)}$. It is conceivable that PA *x in հիմ *him* and ինչ *inčʻ* does not show the regular reflex but has been lenited further to the attested հ- *h-* and even further to Ø- due to the same specifics of "weak" sentential prosody that may be assumed for *tŭ > PA *θŭ, lenited to *ðu and subsequently fortified to the attested դու *du* 'thou' (cf. OE *þū* > archaic NE *thou* [ðaų] 'id.') for the expected ***tʻu*, 1.9.1.17.; similarly, *[-]to- > դա *da* 'this (by you)', *[ay-]d* 'id.', etc. (cf. NE *the* [ðə] < OE *þ-* [θ-], Goth. *ga-* *[ɣa-], Dutch *ge-* [χə-] < PGmc. *[χa-] < *kom-).

A few words have forms with initial հ- *h-* alongside forms without it: հիմ ~ իմ 'for what?', հսկայ ~ սկայ 'giant', etc. In certain instances, the initial հ- *h-* clearly lacks etymological justification, cf. հալուէ *halowē* < Gk. ἀλόη, հիրիկ *hirik* < Gk. ἶρις, հոկտեմբէր *hoktember* ←< Lat. *October*, Հռոմ *Hrom* < Lat. *Roma*. Jerejian (1953) further argues that the *h~zero* alternation reflects not only the age of the composition, cf. presumably older լեզուաա *lezow-at* 'dumb' vs. more recent լեզուահաա *lezow-a-hat* 'one whose tongue is cut', but may also be charged semantically, i.e. the forms with հ- *h-* denote *specificity*, *result*, or *intensity*, cf. ոգի *ogi* 'breath' : հոգի *hogi* 'spirit', արած *arac* 'plague' : հարած *harac* 'scurf', Աստուած *Astowac* 'God' : հաստուած *hastowac* 'creation', երկ *erk* 'work' : հերկ *herk* 'furrow', արբիլ *arbil* 'to

drink' : ***Հարբիլ*** *harbil* 'to be intoxicated', ***եղկ*** *ełk* 'tepid' : ***Հեղկ*** *hełk* 'lazy', ***ողող*** *ołoł* 'overflow' : ***Հեղեղ*** *hełeł* 'flood', etc.

1.9.3.16. ***խ*** *x* < *(-)kh_2-: ***խայթ-*** *xayt'-e-* 'stab' < *$kh_2ei̯$-t- (Lat. *caedō* 'I hew' [<*$kh_2ei̯$-d-], ?Ved. *khidáti*); ***ցախ*** *c'ax* 'branch' < ?*$\hat{k}$ŏk-h_2- (with dissimilation) (Ved. *śā́khā*, Lith. *šakà*, OCS *soxa* 'stick; fork', Goth. *hoha* 'plow'). Phonetically, ***խ*** /x/ is a uvular segment, i.e. [χ] (1.4.4.); this realization may be understood as a result of assimilation to the following *h_2 with its pharyngeal place of articulation, i.e. *[ħ] (vel sim.). Since in PA *-kh_2- represented two segmental articulations, it was a fortis sound (perhaps at some point even a geminate). The place of articulation and the fortis nature of the sound have made it distinct from PA velar (non-geminate) *[x] from PIE *$k^{(u̯)}$ (1.9.3.15.).

1.9.3.17. ***սխ*** *sx* < (??*sk^h-<) ??*sG^h-: ***սխալ-*** *sxal-e-* 'go astray' < ?*$sk^{u̯h}$al- < ?*(s)$g^{u̯h}$al- (Ved. *skhálati* 'stumbles', Gk. σφάλλω 'I make stumble' [*-λ-j-], Lat. *fallō* [<?*fal-ne-] 'I lead astray').

1.9.4. Liquids

The original liquids are preserved as such even in PA unaccented final syllables (1.8.1.), e.g. ***Հայր*** *hayr* 'father' < PA *[ˈφɑ.θʲir] < *$p\underset{\circ}{h}_2$tḗr (Gk. πατήρ); ***աղբեւր*** *ałbewr* 'source' < PA *[ɑr.ˈbi̯.u̯ɑr] < *b^hréh$_1$-$u̯\underset{\circ}{r}$ (Gk. φρέαρ); ***աստղ*** *astł* 'star' < PA *[ˈɑs.til] < *$\underset{\circ}{h}_2$stḗl (Gk. ἀστήρ).

Table 1.6: Liquids

/l/ ***լ***	*l- 1.9.4.1.	/r/ ***ր***	*-r- 1.9.4.6.
	*Ol- 1.9.4.2.		*Tr- 1.9.4.7.
			?*-d^h- 1.9.4.8.
			*(-)d{u̯}- (see 1.9.1.7.)

/ɬ/ ղ	*-l{C}- 1.9.4.3.	/r̄/ ռ	*rs, *sr 1.9.4.9.
	*-ln- 1.9.4.4.		?*rH{V} 1.9.4.10.
	*r{...r} 1.9.4.5.		(*)r{n} 1.9.4.11.

1.9.4.1. լ- *l-* < *l-: **լիզե-** *liz-e-* 'to lick' < *lé̯i̯ĝʰ-e- (Gk. λείχω, OCS *ližǫ*, OIr. *ligim*, Lat. *lingō* 'id.'); **լոգանա-** *log-an-a-* 'to bathe' < *leu̯h₃- (Lat. lavō 'id.', Gk. λε-λου-μένος 'having washed'); **լոյս** *loys* 'light' < *léu̯k-os- (Av. *raocah-* 'id.'); **լա-** *l(-)a-* 'to weep' < *leh₂- (Ved. *rā́yati* 'barks', OCS *lajǫ* , Lat. *lātrō* 'id.').

1.9.4.2. լ- *l-* < *Ol-: **լու** *low* 'flea' < *Blus- (Ved. *plúṣi-*, Gk. ψύλλα < *psul-i̯a < *plus-i̯ā, Lith. *blusà*, OCS *bluxa*, Lat. *pūl-ex* < *pusl- < *plus-, OHG *flōh*, Alb. *plesht* 'id.'); **լու** *low* 'hearing; heard, known' < *k̂lu-tó- (Ved. *śrutá-*, Gk. κλυτός, OIr. *cloth* 'id.'); **լնու-** *lnow-* 'to fill' < *plē-n- ← *pl̥-né-h₁- (Ved. *pr̥ṇā́ti* 'fills', Gk. πλῆτο 'got full', Lat. *-plēvit* 'filled').

1.9.4.3. ղ ɬ < *-lC-: **գեղձք** *geɬj-k'* 'glands' < *gʰelĝʰ- (OCS *žlěza*, Lith. *gẽležuonys* 'id.'); **ողբ** *oɬb* 'wail' < *Holbʰ- (Gk. ὀλοφύρομαι 'I wail' [?← *ὀλφ-]; Lith. *ulbúoti* 'call; sing'); **աղտ** *aɬt* 'filth' < *(?s)l̥d- (ON *úldna* 'to rot' < *Hl̥-d-; cf. Dutch *uilig* 'mouldy', MLG *ulm* 'rottenness', Lat. *alga* 'sea-weed'; OIr. *sal* 'dirty' < *sal-, OHG salo 'id.' < *sal-u̯o-).

1.9.4.4. ղ ɬ < PA *-ln-: **հեղու-** *heɬ-u-* 'pour; fill' < PA *pel-nu- < *pelh₁-; **տաղ** *taɬ* 'fable; poem' < *dl̥-(s)ni-; **տող** *toɬ* 'line, rank' < *dol-(s)ni- (OIc. *telja* 'to tell', *tal* 'number; narration'); **Ալիւն** *Aɬiwn* TN < PA ?*[ɑl.ˈniβ̞.nɑ], cf. Ανλιβνα (Ptolemy; ca. 150 CE).

1.9.4.5. ղ ɬ < PA *r{...r}: **եղբայր** *eɬbayr* 'brother' < *bʰrā́tēr; **աղբեւր** *aɬbewr* 'spring' < *bʰreh₁-u̯r̥.

1.9.4.6. *-ր- -r-* < *-r-: **արաւր** *arawr* ‘plow’ < *$h_2$érh$_3$-tro-m (Gk. ἄροτρον, OIr. *arathar* ‘id.’, etc.); **հերու** *herow* ‘last year’< *peruti (Gk. πέρουσι, Ved. *parút* ‘id.’).

1.9.4.7. *ր-* r- < *Tr-: **երեք** *erek‘* ‘three’ < *tréi̯es ; **երեւի-** *erew-i-* ‘to appear’ < *k$^{\text{u}}$(/p)rep- (Gk. πρέπω ‘am manifest’); **երէց** *erēc‘* ‘elder’ < *prei̯sko- (Lat. *prīscus*, Gk. πρέσβυς ‘id.’).

1.9.4.8. *ր-* r- < ?*-d$^{\text{h}}$-: **գերե-** *ger-e-* ‘capture; lead into captivity’ < *u̯ed$^{\text{h}}$-e- (Lith. *vedù* ‘I lead’, YAv. *vāδaiia-* ‘lead’; cf. **վարե-** *var-e-* ‘lead’ borrowed from Iranian); cf. Praust 2005; **այրե-** *ayr-e-* ‘burn (tr.)’ < *$h_2$ei̯d$^{\text{h}}$-e- (Gk. αἴθειν ‘id.’); *-ր -r* [2sg. Imper.], e.g. **լուր** *low-r* ‘listen!’ < *$\hat{\text{k}}$lu-d$^{\text{h}}$í (Ved. *śrudhí*, Gk. κλῦθι ‘id.’); cf. Jasanoff 1979: 145f.

1.9.4.9. *ռ ṙ* < *sr , *rs: **ձեռն** *jeṙn* ‘hand’, *jeṙ-k‘* ‘id. (Npl.)’ < *ǧ$^{\text{h}}$és-r-m̥, *ǧ$^{\text{h}}$és-r-es (Gk. χεῖρα, χεῖρες, Hitt. *kiššeran* ‘id.’); **առու** *aṙow* ‘stream’ < *sru-tí- (Ved. *srutí-*, Gk. ῥύσις, cf. OIr. *sruaim* ‘id.’); **քեռ** *k‘eṙ* ‘sister Gsg.’ < *su̯é(-)sr-os (Goth. *swistr-s* ‘id.’); **ոռք** *oṙ-k‘* ‘buttocks’ < *Hors-o- (Gk. Ion. ὄρσο-, Hitt. *arra-*, OHG *ars* ‘id.’); **թառամ** *t‘aṙ-am* ‘withered’ < PA */t$^{\text{h}}$ɑrs-/ < *tr̥s- (Goth. *ga-þaurs-ana* [Asg.] ‘id.’).

1.9.4.10. *ռ ṙ* < *-rH-: **առ** *aṙ* ‘at, by, before’ < *pr̥H- (e.g. Gk. παρά); **գառն** *gaṙ-n* ‘lamb’, *gaṙ-in-k‘* ‘id. (Npl.)’ < *u̯r̥h$_1$-én, *u̯r̥h$_1$-én-es (Gk. ϝαρήν [Gortyn], [πολύ-]ρρην-ες ‘having many lambs’ [-ρρην- <*-ϝρην- < *-u̯r̥h$_1$-n-]); but cf. **հարաւ** *haraw* ‘south’ if from *pr̥H-u̯o- (OCS *pr̀vŭ* ‘first’).

1.9.4.11. *ռ ṙ* < PA *-r{n}-: **առն** *aṙ-n* [ɑ.rən] ‘man (Gsg.)’ < PA *[ˈɑn.rɔ] < *h$_2$n̥-r-ós (Gk. ἀνδρός, Ved. *naráḥ* ‘id.’); cf. Nsg. **այր** *ayr* < *h$_2$nḗr (Gk. ἀνήρ, Av. *nā* ‘id.’); **ջեռնու-** *ǰeṙnow-* ‘get warm’ < PA */ʤɛr-nu-/ ← ?*g$^{\text{u̯h}}$r̥-nu- (Skt. *ghr̥-ṇo-* ‘burn’, Goth. *brinnan* ‘id.’), cf. **ջեր** *ǰer* ‘warmth’ < *g$^{\text{u̯h}}$er-os- (Gk. θέρος, Ved. *háras-* ‘id.’).

1.9.5. Nasals

Original syllabic nasals are realized, as are syllabic resonants generally (1.10.1.11.), with a preceding prop vowel, i.e. *N̥ > PA *ɑN (1.10.1.11.), ultimately reflected as **-ամ-** *-am-* (1.9.5.2.) or **-ան-** *-an-* (1.9.5.5.). The original non-syllabic nasals are generally preserved as such (especially medially), except:

(i) in clusters preceding an original labiovelar, i.e. *NK$^{\text{u}}$ > PA *u̯Ḱ (1.9.6.4.);

(ii) before a high vowel (1.9.6.3.);

(iii) in clusters preceding an *s, i.e. *Ns > (PA ?*ss >) **ս** *s* (1.9.3.3.);

(iv) word-finally (1.8.1.).

Table 1.7: Nasals

/m/ **մ**	*-N-p/b$^{\text{h}}$- 1.9.5.1.	/n/ **ն**	*-N/N̥# 1.9.5.4.
	*m̥ 1.9.5.2.		*n̥ 1.9.5.5.
	*(s)m 1.9.5.3.		*(s)n 1.9.5.6.

1.9.5.1. **մ***m* < *-N-p/b$^{\text{h}}$-: **ամուլ** *amowl* ‘barren’ < PA *[ɑm.ˈːu.lɔ] < *ń̥-pōl-o- (Gk. πῶλος ‘foal’; cf. **ուլ** *owl* ‘(goat) kid; fawn’ < *pṓl-o-) or rather from *ń̥-putl-o- (Ved. *a-pútra-* ‘without sons’; Olsen 1999: 35); **ամոք** *amok‘* ‘soft; agreeable (of food)’ < *sm̥-pok$^{\text{u}}$-ó- (cf. Skt. *sam-pak-va-* ‘thoroughly cooked; tender’).

1.9.5.2. **մ***m* < PA *-(ɑ)m- < *-m̥-: **ամ** *am* ‘year’, **ամառն** *amaṙ-n* ‘summer’ < PA */hɑmH-ɑ-/ < *sm̥h$_2$-eh$_2$ ‘summer; season’ (Ved. *sámā-* ‘season’; OIr. *sam* ‘id. < *sm̥-h$_2$-ó-).

1.9.5.3. **մ** *m* < *(s)m: **մի** *mi* ‘one; a(n)’ < PA */sm-iH̯ó-/ (Gk. μία ‘one [fem.] < *sm-ih$_2$-; cf. Lat. *semel* ‘once’); **մի** *mi* (modal negation) < *méh$_1$ (Ved. *má*, Gk. μή); **մեծ** ‘great’ < *meĝ-h$_2$̯(-) (Ved. *máhi*, Gk. μέγα[ς] ‘id.’).

1.9.5.4. **-ն** *-n* < *-N/N̯#; original consonantal *-m# and *-n#, together with the result of vocalization of *-m̥# and *-n̥# merge into PA *-n# (8.1.): **գառն** *gaṙ-n* ‘lamb’ < PA *[ˈgɑr.Hin] < *u̯r̥h$_1$-én (Gk. ἀρήν, Ved. *úrā*); **եւթն** *ewtʻn* ‘seven’ < PA *[ˈhɛφ.t^{h}ɑn] < *septḿ (Gk. ἑπτά). Thus, a final **-մ** *-m* may only reflect an original medial *-m- from a period before final syllable reduction: **եմ** *e-m* ‘I am’ (← *[ˈim.ɪi]) < PA *[ˈɛh.mi] < *h$_1$és-mi (Ved. *ásmi*, Gk. εἰμί, OCS *jesmь* ‘id.’); cf. *ĝ^{h}iH̯-ṓm (Nsg.) > PA */ʤi-u̯n-/ > **ձիւն** *jiwn* ‘snow’ (Gk. χιών ‘id.’), but *ĝ^{h}i-m-ós (Gsg.) > PA */ʤim-/ > (dial.) **jm-ayt‘* ‘snow blindness’.

1.9.5.5. **ն** *n* < PA *(-){ɑ}n- < *n̥: **ան-** *an-* (privative prefix): **անկար** *an-kar* ‘impossible’; **կանայց** *kan-a-cʻ* ‘woman (GDpl.)’ (an earlier form of **կանանց** *kan-an-cʻ* ‘id.’) < PA ?*/gɑn-ɑ-sḱ-/ ← *g^{u}n̥h$_2$- (Boeot. βανά ‘id.’). The stem /kɑn-ɑn-/ of the later form is no doubt imported from **կանամբք** *kan-am-b-kʻ* (Ipl.), which is itself secondary (cf. **կնաւ** *kn-a-w* [Isg.] < */kin-ɑ-bi̯/ ←< *g^{u}néh$_2$-b^{h}i-; Ved. *gnábhiḥ*, OIr. *mnáib* ‘id.’). Medial **-ն-** *-n-* may also reflect original *-m/m̥C-, with assimilation of the nasal to the place feature of the following consonant: **հանգչի-** *hang-čʻ-i-* ‘rest’ < PA */hɑŋgi-/ < *sm̥-k^{u}ih$_1$- (Lat. *quiēscō* ‘I rest’, OCS *po-čijǫ* ‘id.’); cf. 1.9.5.1.

1.9.5.6. **ն** *n* < *(s)n: **նաւ** *naw* ‘ship’ < *néh$_2$u̯-s (Gk. ναῦς, Ved. *náu-*, Lat. *nāvis*, OIr. *nau*, OIc. *nór* ‘id.’); **հնոց** *hn-oc‘* ‘furnace; (lit.) fire-place’ < PA */φun-/ ← *péh$_2$-u̯r̥, *ph$_2$-u̯én- (Goth. [fon], funins [Gsg.] < *p(h$_2$)un- (pace Kroonen 2013: 151); Gk. πῦρ, πῦρός, Umbr. *pir* < *pŭr-); **նու** *now* ‘daughter-in-law’ < *snus-ó- (Ved. *snuṣá-* , OCS snъxa, Gk. νυός, Lat. *nurus*

'id.'); **նեարդք** *neard-kʿ* < *sneh$_2$-u̯r̥-t- 'sinews' (Gk. νεῦρον, Lat. *nervus* [< *neu̯r-o-], Skt. *snā́van-*, Hitt. *išḫunawar* 'string; sinew').

1.9.6. Glides

Table 1.8: Glides

/y/ յ	*-{V}t{ĭ, ĕ} 1.9.6.1.	/w/ ւ	*-n{K^{u}} 1.9.6.4.	[v] վ < *[w]	*uu̯- 1.9.6.12.
	*-si̯- 1.9.6.2.		*-t{o/r}- 1.9.6.5.		*-{o}b^{h}- 1.9.6.13.
	*-n(T){ĭ, ē}- 1.9.6.3.		*-p- 1.9.6.6.		
			*-b^{h}- 1.9.6.7.		
			PA *-m{u}- 1.9.6.8.		
			?PA*-{u}m{n} 1.9.6.9.		
			?*-C{T}- 1.9.6.10.		
			*-k̂{r}u, ?k̂{l} 1.9.6.11.		

1.9.6.1. յ *y* < *-{V}t{ĭ, ĕ}-: **բայ** *bay* 'speech' < *b^{h}e̯$_2$-ti (Gk. φάσις 'id.'); **-ի-** *-ē* (< */-ε-i̯i/ < PA */-ε-θ^{i}i/), **-այ** *-a-y*, **-ու** *-u* (<*/-u-i̯i/ < PA*/-u-θ^{i}i/), *go-y* (3sg. pres. ind.) < PA *[ˈɣ^{u}ɔ.θ^{i}i] (Skt. *-ti*, Gk. ἐσ-τί 'is', OLat. *iouesa-t* 'iūrat'); **հայր** *hayr* 'father', **մայր** *mayr* 'mother', **եղբայր** *ełbayr* 'brother' < *-tĕr (Lat. *pater*, *māter*, *frāter*, Ved. Asg. *pitáram*, *mātáram*, *bhrā́taram* 'id.', Gk. πατήρ, etc.); **հէրու** *heru* 'last year' < PA *[φɛ.ˈru.ji] < *peruti (Gk. πέρυσι, Ved. *parút* 'id.').

1.9.6.2. յ *y* < *-si̯-, cf. **-ոյ** *-o-y* (GDAbsg.) < PA */-ɔ-i̯(i̯)ɔ/ < *-o-si̯o (Gsg. *o-stem ending) (Hom. -οιο, Ved. *-asya* 'id.').

1.9.6.3. յ *y* < *-N(T){ĭ, ĕ}-, so-called "*i*-epenthesis": **այր** *ayr* 'man' < *[ˈɑ.ɲir] < PA */ɑnir-/ < *h$_2$nḗr (Gk. ἀνήρ, Av. *nā* 'id.', Lat. *Nerō* PN); **այր** *ayr* 'cave' < PA *[ˈɑɲ(ː)ir] < *antḗr (Gk. ἄντρον 'id.' ← *ἀντήρ : ἀντρα); cf. Hom. ἀστήρ (sg.) : ἄστρα (coll.) → ἄστρον (sg.); de Lamberterie 1978: 243ff.

1.9.6.4. ւ *w* (< PA *$m^{u̯}$) < *-N{$K^{u̯}$}-: **աւծ** *awc-* 'grease' <*/ɑu̯ǵ-/ < PA */ɑ$m^{u̯}$g-/ < *h_3n̥$g^{u̯}$- (Ved. *áñj-as-*, Lat. *unguen* 'id.', OIr. *imb* 'butter', OHG *ancho* 'id.'); **աւձ** *awj* 'snake' <*/ɑu̯$ǵ^h$i-/ < PA */ɑ$m^{u̯}$$g^h$i-/ < *$h_2$n̥$g^{u̯h}$-i- (Lat. *anguis*, OHG *unc*, Lith. *angìs*, Ved. *áhi-*), **աւձիք** *awji-k'* 'collar' as if from *h_2n̥$g^{u̯h}$- (cf. Aeol. ἄμφην, αὐχήν 'neck' < *h̥$_2$m$g^{u̯h}$-ḗn, cf. Pronk 2010).

PA *$m^{u̯}$ represents a shorthand for an apparently necessary intermediate stage in which the labial feature of the original labio-velar stop is reflected in the featural composition of the preceding nucleus. The traditional interpretation of this stage invokes a so-called "*u*-epenthesis" followed by the deletion of the nasal, i.e. *n$K^{u̯}$ > *$n^{u̯}$K (= ?*$n^{u̯}$K̂) > *$V^{u̯}$nK > *$V^{u̯}$K > *VwK̂. While this is of course remotely possible, a "simpler" assimilation seems more likely. The (unordered) labial feature of the labio-velar was realized on the preceding nasal in the form of a (bi)labial approximant (or fricative) with nasal resonance phonetically similar to the lenited nasal in the history of Celtic, e.g. *dōm(h_2)-o- 'belonging to the household' (vr̥ddhi derivative of *dom(h_2)- 'house'; cf. Matasović 2009: 88f.) > OIr. *dám* [daːμ] 'retinue; dining party' > NIrish *dámh*, Munster [dɔːf], Ulster [daw]), i.e. PIE *n̥$K^{u̯}$ > PA *ɑμ$K^{u̯}$ (lenition) > *ɑμK (*K and *$K^{u̯}$ merge) > *ɑu̯K̂ (phonetically less marked bilabial approximant).

A notorious counter-example to this development is **անկանի-** *ank-an-i-* 'fall' (Goth. *sigqan* 'sink [Intr.]' < *séng$^{u̯}$-e-, LIV^2 531; cf. **ընկենու-** *ənke-now-* 'hurl < *cause to fall' < *song$^{u̯}$-éi̯e-; Goth. *sagq-ja-n** 'sink [tr.]'). For Winter (1962: 258), **անկանի-** *ank-an-i-* contains a syllabic nasal, i.e. *sn̥g$^{u̯}$-(n̥-), cf. ?*sn̥-n(é)-g$^{u̯}$- (LIV^2 ibid.) which would have blocked the development. Klingenschmitt (1982: 181f.) assumes the opposite: the development specifically involves a syllabic nasal, i.e. *n̥$K^{u̯}$ > *u̯K̂ while *Vn$K^{u̯}$ >*VnK. Klingenschmitt's view is

supported by *pénk$^{\text{u}}$e > հինգ *hing* 'five', while Winter's finds support in հանգչիմ *hang-č$^{\text{h}}$-i-m* 'I rest' < *sm̥-k$^{\text{u}}$ih$_1$-. As for անկանի- *ank-an-i-*, the evidence for a labio-velar in this root is debatable: Hom. ἐάφθη 'crashed down (of armor)' (Il. 13,543; 14,419), presumably ← *ἔαπτο < *é-sŋg$^{\text{u}}$-to (cf. LIV^2 ibid.^{2}) is formulaic and could equally well go back to *é-sŋg$^{\text{u}^{\text{h}}}$-to '*resounded; clanged' (cf. Goth. *siggwan* 'sing, resound'; LIV^2 532^{1a}); Goth. *sigqan* may be related to PGm. *sakk/gōn 'to drop; sag' and analyzed as an inner-Germanic thematized nasal present, i.e. */se-n-k-nu-énti/ → */senk-nu-e-/ > *senkkwe- (Kroonen 2013: 423), which alternated with *senkwe- (the geminate simplified in superheavy syllables) (Kroonen, email Jan. 20. 2014). Thus, Goth. *sigqan* 'to sink' in and of itself may not be as strong a piece of evidence for the presence of a labio-velar in the root as previously assumed.

1.9.6.5. ւ *w* < PA *θ$^{\text{u}}$ < *-t{o, r, ?l}-: -ւ *-w* (aor.med.3sg. ending) < *-t-o, cf. եղեւ *eɫe-w* 'was; became < *turned (out)' < *é-k$^{\text{u}}$l-e-to ← *k$^{\text{u}}$l̥h$_1$-tó (Gk. ἔπλετο, Alb. *cleh* 'id.', Lat. *coluit* 'colonized < *went around'); հաւր *hawr* 'father (Gsg.)' < *ph$_2$tr-ós (Gk. πατρός, Lat. *patris* 'id.'); արաւր *arawr* 'plow' < *h$_2$érh$_3$-tro-m (Gk. ἄροτρον, Lat. *arātrum*, OIr. *arathar* 'id.'). Original *t may be continued by ւ *w* also before a lateral, if ամուլ *amowl* 'barren' reflects *n̥-putlo- (Ved. *a-pútra-* 'having no sons'; Olsen 1999:235).

1.9.6.6. ւ *w* < *-p-: եւ *ew* 'and' < *h$_1$epi (Ved. *ápi* 'also', Gk. ἐπί 'upon, in addition to', Goth. *if-tumin daga* 'on the following day' [< *h$_1$ep-tm̥-?]); եւթն *ewt'n* '7' < *septḿ (Gk. ἑπτά, Ved. *saptá*, Lat. *septem* 'id.'); քուն *k'own* 'sleep' < PA */k$^{\text{h}}$ɔβ̥n-ɔ-/ < *su̯op-no- (Ved. *svápna-*, Lat. *somnus*, *sopor*, Gk. ὕπνος 'id.'); արծուի *arcowi* 'eagle' < PA *[ɑr.ʁsi.ˈβ̥i.jɔ] < *h$_2$r̥ĝip-i̯ó- (Ved. *r̥jipyá-*, Av. *ərəzifiia-* 'id.').

1.9.6.7. ւ *w* < *-b^h-: *-w* (1sg. ending) < *-V-b^hi, cf. բայիւ *bay-i-w* ‘by a word’ < *$b^h$$ḫ_2$-ti-$b^h$i; *-աւոր -[a-]wor* ‘carrier, carrying’ < *-b^horó-, cf. լուսաւոր *lows-a-wor* ‘bright < *bringing light’ < *leu̯k-o-b^horó-s (cf. Lat. *lūci-fer* ‘id.’, Ved. *vājam-bharáˊ* ‘bringing booty’).

1.9.6.8. ւ *w* < PA *-m{u}- < PIE *m{ŭ, ō, ?oN}: աւր awr ‘day’ < PA *[ˈɑ.μur] < *āmōr (Hom. ἦμαρ < *ām-r̥, Myc. *a-mo-ra-ma* /āmōr-āmar/ ‘day by day’); *-ուք -ow-kʿ* (aor. subj. 1 pl.) < PA */-ɔμu-k^h/ ←< ?*-o-mō (Ved. *-mā*, Goth. *-ma* [1pl. Opt.] < *-mō/ē, [Jasanoff 1979: 136]); *-իւն -iwn* (verbal abstract/action noun suffix) < PA */-iμ-un/ < ?*-e-mōn (Ritter 1985).

1.9.6.9. ւ *w* < PA *{u/ō}m{n}; i.e. dissimilation to the following *(-)n: *-ուն -own* ([fossilized] Med. Ptp.) < PA */-ɔ-μnɔ-/ < *-o-m(h_1)nó- (Av. -mna-, Gk. -όμενο-ς, Ved. *-ānáˊ-*, TB *-mane*); անուն *anown* ‘name’ < PA *[ɑ.ˈnu.μn̥] < *$Ḫ_{1/3}$nō-mn̥ (Gk. ὄνομα, Ved. *nā́maˊ* ‘id.’).

1.9.6.10. ւ *w* < ??*-C{T}-: գիւտ *giwt* ‘discovery’ < (?)*u̯id-ti-, cf. *git* ‘id.’, եգիտ *e-git* ‘s/he found’ (Ved. *á-vit-tiˊ* ‘poverty, lit. not finding’); հաւտ *hawt* ‘flock of sheep’ < ?*p(e)h_2-d-ti- (MP *pādaˊ* ‘id.’); see 1.10.2.

1.9.6.11. ւ *w* < *-k̂{r}u-, perhaps also *-k̂{l}-: մաւրուք *mawru-kʿ* ‘beard’ < *smok̂ru- (Ved. *śmáśruˊ* ‘id.’, Lith. *smãkras* ‘chin’); possibly արտաւսր *artawsr* ‘tear’ if from PA*[ɑr.ˈtɑu̯(s).ru] (?) < *drak̂ru (with PA *-s- leveled from plural արտասուք *artasow-kʿ* < PA *[ɑr.tɑ.ˈsu.u̯ɑ] < *drak̂uh$_2$ [Kortlandt 2003: 60]); possibly գիւղ *giwł* ‘village’ if from PA ?*/giu̯l-i-/ < *u̯ik̂lī- < *u̯ik̂-(s)l-ih$_2$- (Ved. *víśˊ* ‘settlement’, Lat. *vīcus* ‘district’, *vīlla* ‘dwelling’, OCS *vьsь* ‘village’, Goth. *weihs* ‘id.’).

1.9.6.12. վ- *v-* < *uu̯-: վեց *vecʿ* ‘six’ < PA *[(h)u.ˈu̯ɛ(ʁ^h).ʁ^{h}V] ←< *s^{u}u̯ék̂s (Lindeman variant) (Dor. ϝεξ, YAv. *xšuuaš*, MW *chwech*); (յ) վեր *(i) ver* ‘up(wards)’ < PA */(i h)uu̯ɛri/ <

*(en) *up-ér-i (Ved. *upár-i*, Gk. ὑπέρ, Lat. *[īn-]s-uper*). Otherwise, words with an initial *վ- v-* are exclusively of foreign pedigree, except perhaps for *վայ vay* 'woe!' (Lat. *vae*, Goth. *vai*, MIr. *fae*), which, presumably on account of its expressive value, is believed to have exceptionally escaped the change of *u̯- > *գ- g-* (1.9.1.13.) (cf. Godel 1982b: 9; Martirosyan 2010: 591). Alternatively, *վայ vay* is a Semitic loanword (cf. Gk. οὐαί, Beekes 2010: 1123).

The PA medial sequences *-uu̯- and *-u̯u- are also reflected as OA /u/ *[u̯] (i.e. not as *գ* /g/, 1.9.1.13.; cf. Eichner 1978: 148f.): *լուացա- low-acʿ-a-* 'washed (oneself)' < PA */luu̯-a-sḱ-/ ← *luh₃- (Gk. λού-ω, λού-ο-μαι 'id.'; cf. OIr. *lóathar* 'basin', ON *lauðr* 'soap; lather'), cf. *լոգա(ցա-) log-a(cʿ-a-)* 'id.' < PA */lɔu̯-ɑ-(sḱ-)/ < *leu̯h̥₃- (1.10.1.13.).

1.9.6.13. -*վ* -v < *-{o}b^h-: *մարդով mard-o-v* 'man (Isg.)' < *mr̥-tó-b^hi-, cf. 1.4.6.

1.10. Vocalism

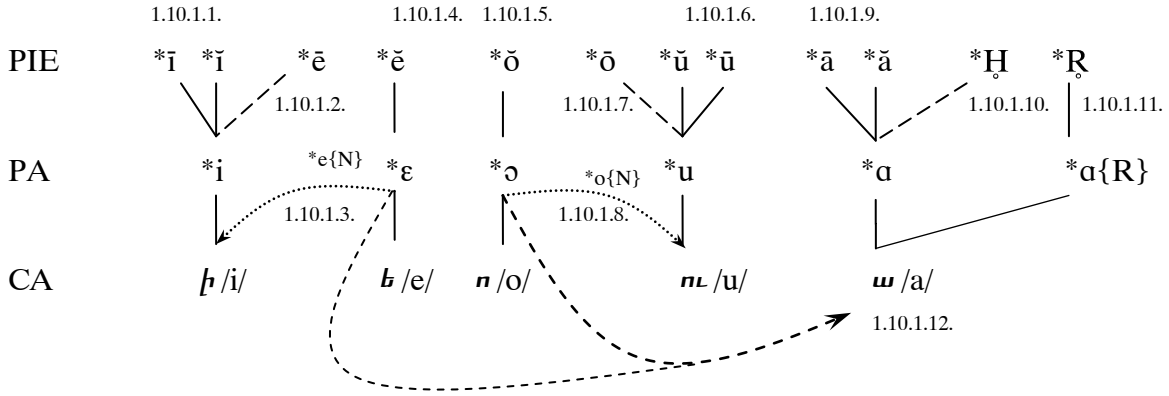
The quantitative contrast characteristic of the original PIE vocalism is lost. Distinct reflexes of the original mid vowels *ĕ vs. *ē (1.10.1.4., 10.1.2.) and *ŏ vs. *ō (1.10.1.5., 10.1.7.) imply that the contrast based on length gave way to one based on quality (or timbre) distinctions.

1.10.1. Monophthongs

The peripheral vowels, PIE *ĭ, *ŭ and *ă are reflected as *ի* /i/ (1.10.1.1.), *ու ow* /u/ (1.10.1.6.; 1.3.1.), and *ա* /a/ (1.10.1.9.), respectively. The original long mid vowels merge with the reflexes of the original high vowels: *ē merges with *ĭ into *ի* /i/ (1.10.1.2.) and *ō merges with *ŭ into *ու ow* /u/ (1.10.1.7.). The original short mid vowels *ĕ and *ŏ are during the PA stage raised before nasals, where they too merge with *ի* /i/ (1.10.1.3.) and *ու ow* /u/ (1.10.1.8.), respectively. Elsewhere, original short *ĕ and *ŏ are generally preserved as such (but cf. 1.10.1.12.), especially

in the final stressed syllables of Armenian citation forms and inflectional stems (cf. 1.10.1.4., 1.10.1.5.).

Figure 1.1: Monophthongs



1.10.1.1. ի *i* < *ĭ: **ելիք** *e-likʿ* 'has left' < *é-lik^{u}-e-t (Gk. ἔλιπε, Ved. *áricat* 'id.'); **յիլ** *yil* (~**յիւղ** *yiwł*) 'tendon' < *g^{u}^{h}iH-(s)leh$_2$ (Lith. *gýsla* 'vein', SCr. *žȉla* 'id.', Lat. *fīlum* 'thread, string').

1.10.1.2. ի *i* < *ē: **սիրտ** *sirt* 'heart' < *k̂ḗr-d(-) (Gk. κῆρ, Ved. *hā́rdi*, HLuw. *zārza* 'id.'); **մի** *mi* (prohibitive particle) < *méh$_1$ (Gk. μή, Ved. *má*, Av. *mā*, Alb. *mo* 'id.').

1.10.1.3. ի *i* < *e{N}: **հինգ** *hing* 'five' < *pénk^{u}e (Ved. *páñca*, Gk. πέντε); (**հ**)**իմ** *(h)im* 'to what?' < *[ˈhim.ːu] < PA *[ˈχɛh.muį̈] < *k^{u}é-sm-ōį̈ (YAv. *cahmāi*, OCS *čemu* 'id.'; cf. Umbr. *esmei* [dem. pronoun Dsg.], OPruss. *st-esmu* 'id.'). Contrast **է**$^{\circ}$**ր** *ē-r* 'of what?' < *[ˈhɛį̈.ːor] ←< PA *[xɛh.į̈ɔ] (atonic) < *k^{u}é-sį̈o (Av. *cahiiā*, OCS *česo* 'id.'); cf. 1.10.1.8.

1.10.1.4. ե *e* < *e; as a general rule in stressed syllables: **հետ** *het* 'footprint' < PA */φɛt-ɔ-/ < *ped-ó-(m) (Ved. *padá-*, OIc. *fet* 'id.', Gk. πέδον 'ground'); **ջերմ** *jerm* 'warm' < *g^{u}^{h}er-mó- (Gk. θερμός 'id.', Thrac. Γέρμας TN '[*]hot springs'). For PA *e > **ա** *a* cf. 1.10.1.12.

1.10.1.5. **ո** *o* < *o; as a general rule in stressed syllables: **ոտն** *otn* 'foot (NAsg.)' < PA *[ˈφɔ.tɑn] < *pód-m̥ (Asg.) (Gr. πόδ-α, Ved. *pā́d-am*); **որբ** *orb* 'orphan' < *Horb^{h}-o- (Gk. ὀρφ-ανός, Lat. *orbus* 'childless, bereft of parents', OCS *rabъ* 'slave'). For PA *o > **ա** *a* cf. 1.10.1.12.

1.10.1.6. **ու** *u* < *ŭ: **նու** *now* 'daughter-in-law' < *[ˈnu.$^{u̯}$o] < PA */nuhɔ-/ < *snusós (Gk. νυός, Lat. *nŭrus*, Ved. *snuṣā́*); **մուկն** *mow-kn* 'mouse' < *mū́s (Ved. *mū́ḥ*, Gr. μῦς, OCS *myšъ*).

1.10.1.7. **ու** *u* <*ō: **ուլ** *owl* 'kid' < PA */φul-ɔ-/ < *pōlo- (Gk. πῶλος 'foal'); **տուր** *towr* 'gift' < *deh$_3$-ro- (Gk. δῶρον, OCS *darъ*; cf. Ved. *dā-ná-*, Lat *dō-t-* 'gift, dowry').

1.10.1.8. **ու** *u* < *o{N}: **ծունր** *cown-r* 'knee' < *ǵón-u- (Gk. γόνυ, Ved. *jā́nu-*); **-սուն** *-sown* '-ty' < *-(d)k̂óm-t- (Gk. -κοντ-α, OIr. *[trí]-cho* '[thir]-ty'); the raising of original *o to **ու** *u* before a nasal must be later than the weakening of original *s (> *h > Ø, 1.9.3.13.): **-ում** *-owm* DLsg. (pronominal ending) < */-um.mu/ < PA */^{o}-ɔhmu̯/ < *^{o}ó-sm-ō̯ (Ved. *kásmai*, Av. *kahmāi*, OCS *komu* 'id.'; cf. also Goth. *þamma* [<*to-sm-]); cf. 1.10.1.3.

1.10.1.9. **ա** *a* < *ă: **աղ** *ał* 'salt' < PA *[ˈhɑl(l)] < *săl-s (Gk. ἅλ-ς, Lat. *sāl* 'id.'; cf. OCS *solь*); **մայր** *mayr* 'mother' < PA *[ˈmɑ.θ$^{i̯}$ir] < *mātēr (Dor. μάτηρ, Lat. *māter*, OIr. *máthir*).

1.10.1.10. **ա** *a* < *Ḫ̥: **արաւր** *arawr* 'plow' < PA *[ɑ.ˈrɑ.θrɔ] < *h$_2$érḫ$_3$-tro-m (Gk. ἄροτρον, OIr. *arathar* 'id.'); **այր** *ayr* 'man' < PA *[ˈɑ.ɲir] < *ḫ$_2$nḗr (Gk. ἀνήρ, Phryg. αναρ, Ved. *sū-nára-*).

1.10.1.11. **ա** *a{R}* < *Ṛ̥: **մարդ** *mard* 'human' < PA */mɑrd̯-ɔ-/ < *mṛ̥-tó- (Ved. *mṛ́-tá-* '*having died > dead,' Av. *mərəta*, Gk. βροτός 'a mortal', OCS *mrъtvъ*, OIr. *marb* 'dead'). For cases where *Ṛ̥ = *Ṇ̥ cf. 1.9.5.2., 1.9.5.5.

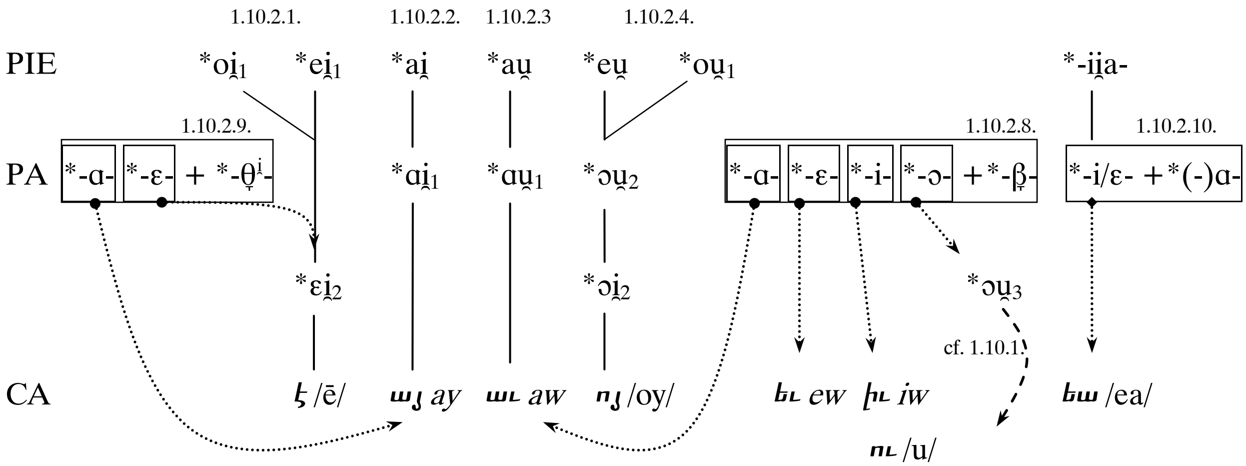
1.10.1.12. In some cases, Armenian shows **ա** /a/ for an expected */e/ or */o/. It seems that unstressed PA *ɔ was lowered to **ա** /a/ in open initial syllables (Grammont 1918: 223f.; Kortlandt 1983: 10 [=2003: 40]; Morani 1994); e.g. **ալիք** *alikʿ* 'grey hair' < PA *[φɔ.ˈli.ʲɔ] (Gk. πολιός, Lith. *palĩvas* 'pale'; cf. Ved. *palitá-* 'id.' < *pel-); **աչք** *ačʿ-kʿ* 'eyes [Npl.]' from PA *[ˈɔ.ki] 'id. [NAdu.]' (Gk. ὄσσε, OCS *oči*, Lith. *akì* 'id.' < *$h_3ok^{ᵘ}$-ih_1); **ասր** *as-r* 'fleece' < PA *[ˈφɔ.ḱu] (Gk. πόκος 'id.', Myc. *po-ka* 'shorn wool', but see below).

It has been also proposed that PA *ɛ is lowered to **ա** /a/ when the following syllable contains /u/ (Meillet 1936: 55; de Lamberterie 1978: 271; Ravnæs 1991: 13; Clackson 1994: 126). The most notable examples are **վաթսուն** *vatʿ-sown* '60' < */vɛʁ^{h}-sun-i-/ (Gk. ἑξήκοντα, Lat. *sexāgintā* 'id.'), cf. **վեց** *vecʿ* '6' and **վեչտասան** *veš-tasan* '16' from a Lindeman variant *s^{u}u̯éĥs-; **ծաղր** *cał-r* 'laughter' < PA */ʦɛlːu-r/ ←< *ǵélh$_2$-ōs- (Gk. γέλως); cf., **ասր** *as-r* 'fleece' if, alternatively, from PA *[ˈφɛ.ḱu] (Gk. πέκος 'id.' [cf. πόκος above], Lat. *pecus* 'sheep' < *peĥu-). However, there are clear counterexamples to this rule: **սկեսուր** *skesur* 'mother-in-law', *henum* 'weave' (beside zero-grade *hanum* 'id.', Lith. *pìnti* 'pleat'); but the most notable of these is the frozen adverb **հերու** *herow* 'last year' < *peruti (Dor. πέρυτι, Ved. *parút*, OIc. *í fjǫrð*).

1.10.1.13. In addition, the change of *e to **ո** *o* conditioned by a following *u̯ and a [+back] vowel (frequently a prop vowel from the following syllabic resonant or a laryngeal) seems to be regular, i.e. *-eu̯-Ḫ/Ṛ- > PA *[-ɔu̯ɑ-] (or PA ?*[-ɛγ^{ᵘ}ɑ-] > *[-ɔγ^{ᵘ}ɑ-])> **-ոգա-** *-oga-*, e.g. **լոգացա-** *log-acʿ-a-* 'washed (oneself)' ←< PA *[lɔγ^{ᵘ}ɑ-])< *leu̯ḫ$_3$- (Lat. *lav-ō* < *leu̯h$_3$-e/o-), cf. **լուացա-** *low-acʿ-a-* 'id.' (9.6.12.); **չոգան** *čʿog-a-n* 'they went' < PA *[ʧ^{h}ɛ.ˈu̯ɑ.nɔ] < *k^{ᵘ}i̯éu̯-n̥t-o (Ved. *cyávante* 'id.); cf. **չուե-** *čʿow-e-* 'id.' < *k^{ᵘ}i̯éu̯-/*k^{ᵘ}i̯u- (Ved. *cyávam* 'I shall move').

1.10.2. Diphthongs

Figure 1.2: Diphthongs



The primary, i.e. PIE, diphthongs *ai̯ and *au̯ are preserved as այ *ay* and աւ *aw* into the CA period (1.10.2.2.; 1.10.2.3.). Secondary այ *ay* and աւ *aw* arise as a result of so-called *i*-epenthesis and *u*-epenthesis, respectively (cf. 1.10.2.5.; 1.10.2.6.). As early as ca. 800, աւ *aw* [ɑu̯] monophthongizes before a consonant (Weitenberg 1996: 95). Beginning with ca. 1100 the monophthong thus formed is represented by a new character օ *ō* (1.3.5.) and in the traditional pronunciation merges with ո /o/ everywhere but in word-initial position: որ [vɔɾ] 'who' (relative pronoun) but օր (= աւր) [ˈɔɾ] 'day'. There are apparent exceptions to the monophthongization which are subject to specific explanations, such as աղաւնի *aławni* 'dove' and նաւթ *nawtʿ* 'crude oil', traditionally pronounced [ɑ.ʁɑv.ˈni] and [ˈnɑftʰ] (not **[ɑ.ʁɔ.ˈni] and **[ˈnɔtʰ]), respectively. The latter is a loanword showing post-CA աւ *aw* (cf. Farsi *naft*, Gk. νάφθα), the former represents OA *[ɑ.lɑ.wə.ˈni] (1.10.2.8.), reflected in dial. **ałvəni* 'id.' with syncope of medial unaccented *-a-* which postdated the preconsonantal monophthongization (ca. 1100; cf. Martirosyan 2010: 29).

PIE *ei̯ and *oi̯ merge into the secondary PA *εi̯₂. This diphthong surfaces as a monosegmental է /ē/, but synchronically still behaves like an underlying diphthong (1.3.2.). PIE *eu̯ and *ou̯ merge into the diphthong ոյ /oy/ (presumably via secondary *ɔu̯₂), traditionally pronounced [ui̯] (1.4.3.). New diphthongoidal եւ *ew*, իւ *iw*, աւ *aw* and ու *ow* (= *ɔu̯₃) arise as a result of the spirantization of *b^h and *p (> PA*β̞ > w > ւ *w*, traditionally [v]) (1.10.2.8.). The diachronically tertiary diphthong *ou̯₃ subsequently merges with the monophthongal ու *ow* /u/.

The only "true" diphthongs of CA are է /ē/, ոյ /oy/, and եա /ea/. The phonological value of the other traditional "diphthongs" is at best ambiguous: prevocalically, the off-glide behaves as an onset of the following syllable, e.g. աւելի *aweli* [ɑ.vɛ.ˈli] 'more', այո *ayo* [ɑ.ˈjɔ] 'yes', երեւիմ *erewim* 'I appear' [jɛ.ɾɛ.ˈvim]; իւիք *iwikʿ* [i.ˈvik^h] 'any (Ipl.)', գովեմ *govem* 'I praise' [gɔ.ˈvɛm], etc.; word-finally, the value is ambiguous, but the off-glide could be understood as the coda of the same syllable: նաւ *naw* [ˈnɑv] 'ship', especially since final աւ *aw* never monophthongizes into post-CA օ *ō*. Taking into consideration the insight of Godel (1975: 9) that *VwC* and *VyC* are phonologically indistinct from *VrC* and *VnC*, the segmental sequence աւ *aw* must have been phonologized as a diphthong at a period from CA to post-CA prior to its monophthongization. The stipulation 'before a consonant' is gratuitous, since early-post-CA աւ *aw* behaves as a diphthong exclusively in this environment. A parallel fate later befell the dialectal (even secondary) այ *ay*, e.g., CA արժան *aržan* 'worthy'> **ayžan* > dial. *ēžan* 'cheap' (Feydit 1982: 52).

Finally, instances in which -ւ -*w* "diphthongs" appear as reflexes of PA obstruents before what seems to be the PA avatar of the PIE abstract noun suffix */-ti-/ (1.9.6.10.) pose great difficulties both phonetically and chronologically (cf. Winter 1962: 261; Clackson 1994: 40, 155;

Martirosyan 2010: 732f.). The glide in this position is the product of the PA syllable coda, which seems to have undergone lenition. Factoring in subsequent devoicing of *D to T (1.9.), the laryngeal features of the following dental suffix correspond to those of the original precursors of ւ *w*: գիւտ *giwt* [ˈgi̯ut] 'finding' < *[ˈγiβ̞.ti] < PA */γ$^{u̯}$id-di-/ (PIE √u̯id; Ved. *á-vit-ti-* 'not finding'), cf. եգիտ *e-git* '(s)he found' < *é-u̯id-e-t (Ved. *ávidat* 'id.'); արաւտ *arawt* 'pasture' < PA */θrɑʣ-di-/, cf. արածե- *arac-e-* 'graze' < *tréh$_2$ĝ-e- (cf. Gk. τρώγω 'I chew' [← *troh$_2$ĝ-], τράγος 'he-goat'); բուտ *bowt* [but] 'fodder' < *[ˈbu̯β̞.ti] (4.6.) < PA */bu̯ʣ-di-/ (PIE √b^{h}ug; cf. Skt. *bhukti-* 'consumption'), cf. բուծանե *bowc-an-e-* 'nourish; fatten' < *b^{h}eu̯g- (9.2.2.); ծանաւթ *canawt* "known; acquaintance' < *[ʦɑ.ˈnɑβ̞.t^{h}i] < PA */ʦɑnHɑʧ^{h}-t^{h}i-/, cf. ճանաչե- *čanač^{ʿ}-e-* 'know' (< *ʦ...ʧ^{h}; cf. aor. ծանեա- *cane-a-* 'knew') < *ĝn̥h$_3$-sk̂-i̯é-.

1.10.2.1. է *ē* < (PA *ɛi̯$_2$ <) *ɛi̯$_1$, *ɔi̯$_1$: դէզ *dēz* 'heap' < *d^{h}éi̯ĝ^{h}-os- or *d^{h}ói̯ĝ^{h}-o- (OAv. *[pairi-]daēza-* 'enclosure', Gk. τεῖχος, τοῖχος 'wall', Goth. *daigs* 'dough'); գէտ *gēt* 'skillful, knowing; sorcerer' < *u̯oi̯d-ā- (cf. Ved. *véda* 'I know', Gk. *οἶδα*, Goth. *wait*, OCS *vědě* 'id.' < *u̯ói̯d-h$_2$e).

1.10.2.2. այ *ay* < *ăi̯{C}: այծ *ayc* 'goat' < *h$_2$ei̯ĝ(-ih$_2$)- (Gk. αἴξ, Gk. Lacon. αἶζα); տայգր *tayg-r* 'son-in-law' < *deh$_2$i̯-u̯ér (Gr. δᾱήρ, Ved. *devár-*, Lith. *dieverìs* 'id.').

1.10.2.3. աւ *aw* < *ău̯: աւթոց *awt'(-oc')* 'garment' < PA */ɑu̯-tɔ-/ < *h$_2$eu̯(H)- (Lith. *aūtas* 'foot-cloth', Latv. *àuts* 'cloth'); աւթ *awt'* 'lodging' < PA */ɑu̯-ti-/, cf. ագաւ *ag-a-w* 'spent the night' ← PA *[ˈɑ.γ$^{u̯}$i(st)] < *é-h$_2$u̯ĕs(-s)-t (Ved. *ávātsīt* 'id.', Hom. ἄεσα 'I spent the night').

1.10.2.4. ոյ *oy* < (*ɔi̯ < PA *ɔu̯$_2$ <) *eu̯, *ou̯$_1$: լոյս *loys* 'light' < PA*/lɔu̯ḱ-ɔ-/ < *léu̯k-os- (OP *raučah-* 'day'; cf. Ved. *róka-*, Gk. λευκός 'white, bright', Lat. *lūx*, OCS *luča* 'ray');

-բոյծ-*boyc* ‘feeding’ < PA */b̥ou̯ǵ-o-/ <*b^{h}ou̯g-o- (Ved. *bhóga-* ‘delight’); ճոյլ *joyl* ‘molten (mass)’ <*ĝ^{h}eu̯-(t)lo- (Ved. *hotrá-*, Av. *zaoθra-* ‘libation’). Apart from the merger of the primary diphthongs *eu̯ and *ou̯$_1$, PA *ɔu̯$_2$ may reflect the result of inner-Armenian contractions: քոյր *kʿoyr* ‘sister’ < *[ˈk^{h}ɔi̯ɹ] < PA *[ˈhɣ̊^{u}ɛ.hur] < *su̯ésōr (Ved. *svásā*, Lith. *sesuõ*, OIr. *siur*, Lat. *soror* ‘id.’); ունի- *own-i-* ‘have; capture’ < */ɔi̯n-/ < PA */hɛhun-/ < *se-sónh$_2$- (Ved. *sasā́na* ‘has obtained’, OHG *sann* ‘has striven’; cf. ողջոյն *ołǰoyn* ‘greetings!’ ← *ołǰ* ‘safe, hale’ + *oyn, the imperative of an intransitive “have”; de Lamberterie 2005: 338.). The assumption of an intermediary *oi̯ is based on compounded demonstrative pronouns such as նոյն *no-yn* ‘the same’ < PA */nɔ- + -iːn/, cf. *inkʿnin* ‘he himself’, etc. (*inkʿn* + *in* ‘the self-same s/he, it’).

1.10.2.5. Secondary այ *ay*, so-called “*i*-epenthesis”: This phenomenon is perhaps best conceptualized as a transfer of the palatal feature over a sonorant consonant. The trigger seems to be the presence of ա *a* in the preceding syllable: այր *ayr* ‘man’ < *[ˈɑ^{i}.ɲir] < PA*/ɑnir/ <*h$_2$nḗr (Gk. ἀνήρ ‘id.’); այլ *ayl* (~այղ *ajł*) ‘other; but’ (< ?*[ˈɑj.λɔ] < ?*[ˈɑλ.ːɔ])< PA */ɑl-i̯ɔ-/ < *h$_2$él-i̯o- (Gk. ἄλλος, Lat. *alius*, OIr. *aile* ‘other’, cf. Gk. ἀλλά ‘but’, Goth. *alja* ‘id.’); սայր *sayr* ‘edge’ < *[ˈsɑ^{j}.ri] < PA *[ˈsɑ.ri] < *k̂ḫ$_3$-ri- (Lat. *cō-ti-* ‘whetstone’, *ca-tu-s* ‘clever < *sharp[ened]’, Ved. *śi-tá-* sharpened’, OIr. *cath* ‘wise’, OE *hān* ‘[whet]stone, hone’ [<*k̂eh$_3$-i-]), cf. also inner-Armenian morphophonemic variant սուր *sowr* ‘sharp’ < *k̂{e/o}h$_3$-ro-; փայլ *pʿayl* ‘splendor’ < *[ˈp^{h}ɑj.li] < PA */p^{h}ɑl-i-/ < *(s)p^{h}l̥H-(i-) (?Skt. *sphuliṅga-* ‘spark’, ?(-)*sphu{l/r}i-ta-* ‘flashed; *erschienen*’), cf. in any case inner-Armenian morphophonemic variant փայփ(այ)իմ *pʿał-pʿ(ał)-i-m* ‘I glitter’.

Epenthesis has also been posited if the trigger was any low or back vowel. The relevant etyma for *o* are: թոյլ *tʻoyl* ‘permission’ < ?*tolh$_2$-i-; cf. թողու- *tʻołow-* < ?*tol-nu- ← *tl̥-ne-h$_2$- ‘allow’ (Klingenschmitt 1982: 243); բոյլ *boyl* ‘assembly’ < *b^{h}oli-, cf. բոլոր *bolor* ‘all’. However, the epenthesis did not materialize in several *i*-stems: բան *ban* ‘word’ < *b^{h}eh$_2$-ni- (OIc. *bǿn* ‘request’), սալ *sal* ‘anvil’ < *k̂h̥$_3$-li- (Skt. *śí-lā* ‘rock’), or in other potentially qualifying forms: անիւ *aniw* ‘wheel’ < *h̥$_3$nēb^h-o/eh$_2$- (?Ved. *nā́bh-i-* ‘nave’, cf. Gk. ὀμφαλός ‘navel’< *h̥$_3$nb^h-l̥-).

1.10.2.6. Secondary աւ *aw*, so-called “*u*-epenthesis”: աւձ *awj* ‘snake’ < */ɑu̯ĝ^h-i-/ < PA *aŋ^{u}g^h-i-< *h$_2$-n̥-g^{uh}-i- (OHG *unc*, Lat. *anguis,* Lith. *angìs*, cf. Ved. *áhi-*, Gk. ὄφις < *Hóg^{uh}-i-); արտաւսր *artaw-s-r* ‘tear’ < *drak̂u-; cf. արտասուք *artasow-kʻ* ‘id. (Npl.)’ (Gk. δάκρυ, Ved. *áśru*, TB *akrūna*).

1.10.2.7. Secondary է *ē* < PA *ɛ before palatals: մէջ *mēǰ* ‘middle’< PA *[ˈmɛʤ.ːɔ] < *méd^h-i̯o- (Ved. *mádhya-*, Gk. μέσσος, Goth. *midjis* ‘id.’; 9.2.10.); էշ *ēš* ‘donkey’ < PA *[ˈɛʃ.ːɔ] < *(h$_1$)ék̂u̯os (Ved. *áśva-* ‘horse’, Gk. ἵππος, Lat. *equus*; 9.3.7.); գիշեր *gišer* ‘night’ < PA *[ɣ^{u}ɛʃ.ˈːɛ.rɔ] < *u̯ekspero- (vel sim.)(Gk. ἕσπερος, Lat. *vesper*, OCS *večerъ* ‘id.’) (1.9.3.8.), with *[-ɛʃ.ː-] > *[-ɛj.ʃ-]; cf. Pedersen (1905: 205 [= 1982: 67]); Bonfante (1937: 27); de Lamberterie (1978: 264f.).

1.10.2.8. Tertiary աւ *-aw-*, եւ *-ew-*, իւ *-iw-*, ու/ով *-ow/ov-* from *-Vβ̞- which apparently results from lenited reflexes of PA *-b̤- (< *-b^h-, 1.9.6.7.), PA *-φ- (< *p, 9.6.6.), and PA *-θ^u- (< *t{o, r, ?l},1.9.6.5.):

աւ *aw* < *-ɑβ̞-: տաւն *tawn* ‘feast’ < */tɑβ̞n-ɔ-/ < PA *[ˈtɑφ.nɔ] > *dh̥$_2$p-nó- (Lat. *dap-s* ‘sacrificial meal’, *damnum* ‘expense’ [< *dh̥$_2$p-nó-], ON *tafn* ‘victim’; cf. Gk. δάπτω ‘I devour’);

աղաւրի *aławr-i* ‘mill(er)’ < PA *[Hɑl.Hɑ.ˈθri.ja] < *$h_2l̥h_1$-tr-íi̯h_2 (Gk. ἀλετρίς ‘id.’); possibly ***աղաւնի*** *aławn-i* ‘dove’ < ?PA *[φɑl.Hɑ.βu.ˈni.i̯ɑ] ←< ?*p$l̥h_2$-b^h-ōn-i̯h_2 (cf. at some remove Lat. *palumbēs* ‘wood- pigeon’).

եւ *ew* < *-εβ̯-: ***եւթն*** *ewtʻn* ‘seven’ < PA *[ˈhεφ.t^{h}ɑn] < *septm̥ (Gk. ἑπτά, Lat. *septem*); ***եղեւ*** *eł-e-w* ‘happened; turned out’ < PA *[ɛl.ˈːɛ.θ^{u}ɔ] < *é-k^{u}l-e-to (Gk. ἔπλετο ‘id.’).

իւ *iw* < PA *-iβ̯-: ***անիւ*** *aniw* ‘wheel’ < *h$_3$nēb^h-o/eh$_2$- (?Ved. *nā́bh-i-* ‘nave’, cf. Gk. ὀμφαλός ‘navel’< *h$_3$nb^h-l̥-).

ու /u/ < *ɔu̯$_3$ < PA *-ɔβ̯-: ***քուն*** *kʻown* ‘sleep’ < *su̯op-no-; ***ութ*** *owtʻ* ‘eight’ < PA *ɔpt^{h}ō ← *oḱtō; cf. Elean Gk. ὀπτώ for ὀκτώ). The monophthongization and the subsequent merger of *ɔu̯$_3$ with */u/ likely postdates the pretonic reduction of high vowels (1.6.3.). This is seen in relic forms with unreduced, non-alternating pretonic ***ու*** *ow* which continues *ɔu̯$_3$: ***քունեմ*** *kʻown-e-m* [k^{h}u.ˈnɛm] ‘I sleep’, synchronically analyzable as a denom. of ***քուն*** *kʻown* [ˈk^{h}un] ‘sleep’ < PA */k^{h}ɔu̯$_3$n-ɔ-/ < *su̯óp-no- (Ved. *svápna-* ‘id.’); contrast ***գրեմ*** *gr-e-m* [gə.ˈrɛm] ‘I write’, denom. of ***գիր*** *gir* ‘letter; writing; manuscript’; ***դադաս*** *dl-a-m* [də.ˈlɑm] ‘I cease’, denom. of ***դուլ*** *dowl* ‘pause; truce’, etc. The pretonic reduction in the noun ***քուն*** *kʻown* [ˈk^{h}un] itself (oblique ***քնոյ*** *kʻn-o-y*), which is in this analysis historically irregular, is readily explained by the mechanics of the synchronically highly productive process of vocalic alternations, which involve a pretonic reduction of a paradigmatically de-stressed vowel (i.e., the alternations are the result of a derived environment effect; cf. Khanjian 2009: ***ուրախ*** *urax* [u.ˈrɑχ] ‘happy’ → ***ուրախանա-*** *owrax-an-a-* ‘rejoice’, ***ուրախութիւն*** *owrax-owtʻ-iwn* ‘happiness’, not **[ə.rɑχ-^{o}]). Thus, once */ɔu̯$_3$/ (*[ɔβ̯] ~ *[ou̯] vel sim.) became phonetically realized as *[u(u̯)], and its reflex was subject

to alternations involving shifts of stress, it was reanalyzed and fully merged with */u/; i.e. */k^{h}ou̯$_{3}$n-o-/ → *[^{l}k^{h}un] : *[k^{h}u.^{l}nəj] (< PA *[hʸɔφ.^{l}nɔh.jo] < *su̯ópn-o-si̯o; Ved. *sváp*nasya* 'id.') was leveled to */k^{h}un-ɔ-/ → ***քուն** *kʿown* : ***քնոյ** *kʿnoy* [k^{h}ə.^{l}nɔ] 'sleep (GDAbsg.)'. However, the monophthongized */ɔu̯$_{3}$/ was never destressed in the verbal paradigm (since no form of the paradigm carries stress on the root), and its reflexes (i.e. *[ou̯] >*[u]) thus technically merged with (the reduced variant of) /oy/. This divorce was no doubt aided by mismatches in semantics as well, since the noun ***քուն** *kʿown* means only 'sleep', but the verb ***քունեմ** *kʿown-e-m* at some point also acquired the meaning 'copulate' (presumably based on the euphemistic 'sleep with'). The linguistic result of this is that the verb ***քունե-** *kʿown-e-* is analogically reduced on its way to modern Armenian, becoming ***քնե-** *kʿn-e-*, precisely in the meaning **'**to sleep**'**, because of its morpho-semantic connection with the nominal ***քուն** /k^{h}un-/ **'**sleep**'**. However, its phonologically regular etymological doublet ***քունե-** *kʿun-e-* has only the specialized obscene meaning **'***futuere***'**.

1.10.2.9.Tertiary **-այ-** *-ay-*, **-է-** *-ē-* < PA *-V- +*-θ^{i}- (< *t{i, e}, 1.9.6.1.):

***այ** *ay* < PA *-ɑθ^{i}-: ***մայր** *mayr* 'mother' < PA *[^{l}mɑ.θ^{i}ir] < *mā́tēr (Gk. μήτηϱ, Lat. māter, OIr. *máthir*, TB *mācer* 'id.'); ***կայ** *kay* 'station, place' < *g^{u}h̯$_{2}$-tí- (Gk. βάσις 'base').

***է** *ē* < *ɛi̯ < PA *-εθ^{i}-: ***բերէ** *ber-ē* 'carries' < PA */b̯ɛr-ɛ-θ^{i}i/ < *b^{h}ér-e-ti (Ved. *bhárati*, OCS *beretъ*); **-է** *-ē* (Absg. ending) < ?*éti (Gk. ἔτι 'also; further', Ved. *áti* 'over').

1.10.2.10. ***եա** *ea* **<** PA *-i(-)ɑ- and *-ɛ(-)ɑ-: ***կեա-** *kea-* 'live' < *g^{u}éi̯h̯$_{3}$-C- or ?*g^{u}ii̯h̯$_{3}$-C- (Hom. βέομαι 'I shall live' < *g^{u}éi̯h$_{3}$-e- (aor. subj.); cf. Ved. *jīvá-*, Gk. ζωός, OCS *živъ* 'alive' < *g^{u}ih$_{3}$-u̯ó-); **-եաց-** *-e(-)ac-* (aor. formant): ***սիրեաց** *sir-e-ac-* 'love'-them.-aor.(-3sg.) '(s)he loved'.

CHAPTER 2

THE ORIGIN AND DISTRIBUTION OF ԼԼ <L> AND Ղղ <Ł>

2.1. Introduction

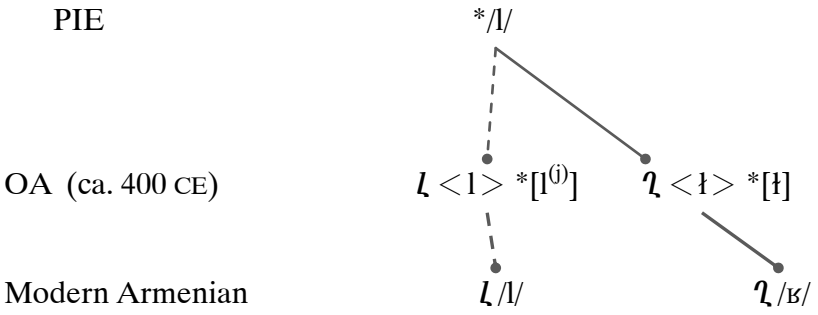
At some point in the prehistory of Armenian, the inherited PIE */l/ splits into two lateral phonemes. Since ca. 400 CE, when the language of Old Armenian (OA) is first written down, the two phonemes are orthographically represented by the letters Լլ <l> and Ղղ <ł>, respectively. The graphemes are referred to as *լիւն liwn*—traditionally pronounced [ljun], with a voiced alveolar lateral /l/—and *ղատ łat*—traditionally pronounced [ʁɑt], with a voiced uvular fricative or approximant /ʁ/ [ʁ̞ ~ ʁ/χ], respectively. However, the traditional pronunciation formulated by the Armenian grammatical tradition (ca. 1000 CE) is an innovation of the early medieval stage of the language (cf. Godel 1975: 24).

Certain aspects of the distribution of the two original laterals in the native lexicon are securely known while others are in dispute and open to question. The two phonemes are in the native, i.e. non-borrowed, lexicon unmistakably in partial complementary distribution: OA Լլ <l> (trad. /l/) is the invariable reflex of an inherited lateral word-initially, while OA Ղղ <ł> (trad. /ʁ/) is the invariable reflex of an inherited lateral before a consonant (cf. Hübschmann 1875: 35f; 1897: 407; Meillet 1894: 298; 1936: 44; Godel 1975: 10; Greppin 1986; etc.).

There are currently two competing accounts regarding the distribution of the two native laterals between vowels and word-finally: Meillet (1903: 22, 25; 1936: 43, 47, 173, 182) and Greppin (1986). In this chapter, I argue that both of these accounts are inadequate and essentially unfalsifiable. They both depend on unwarranted specifications and on analogical leveling based on semasiological influence of cognate lexemes to such a degree as to be devoid of any predictive value; see (2.2.2).

Furthermore, it is currently assumed that, prior to the modern state of affairs, the two original lateral phonemes contrasted in terms of secondary articulation. OA ⲗ is in the current Western scholarship transliterated as <l> precisely because it is assumed—since Meillet (1894)—that it was originally realized as a 'clear', 'front' or perhaps palatal(ized) lateral *[$l^{(j)}$~ ʎ] and OA ⲓ is transliterated as <ł>, since it is assumed that it earlier represented a 'dark' or 'back' or velar(ized) lateral *[ɬ]; cf. Figure 2.1, below.

Figure 2.1: Development of PIE */l/ according to Meillet (1894, 1936)



The traditional front—back distinction is problematic. It does not adequately explain nor motivate the original split, nor the overall patterns of the distribution of the two laterals in the Armenian lexicon.

First, the traditional analysis does not convincingly show that the assumed front—back distinction was conditioned or in any regular way related to the positions of the PIE lateral within the word or the quality of the surrounding vowels at any developmental stage of the Armenian language. This is primarily the case because the assumption of a front—back distinction originated as an educated guess in support of an analysis of unrelated data outside of Armenian (Meillet 1894); see (2.2.1). Moreover, the invoked typological observation that laterals tend to become velarized before consonants is based on an arbitrarily chosen portion of the distribution of OA ղ <ł>, namely, the preconsonantal lateral in forms such as **գեղձք** *geł̇j-kʿ* 'glands' (= OCS *žlěza* < *$g^{h}elĝ^{h}$-eh_2-). However, the velarization assumption leaves laterals in forms such as **եղեւ** *eɫew* 'became' (= Gk. ἔπλετο < *e-k^{u}l-e-to) unexplained.

Second, since languages with an analogous distinction typically use both 'front' and 'back' laterals in their loanword phonologies, the traditional assumption of the clear—dark distinction does not explain the almost absolute exclusion of the presumably clear lateral (OA լ) in the lexicon borrowed from the nearby languages in the prehistory and early history of Armenian; cf. **Շահրապղական** *Šahrapłakan* PN of a general under *Xosrov II* (**Խոսրով Բ**) who died 252 CE (≈ Gk. Σαραβλαγᾶς); **ղեկ** *łek* 'rudder' ← Syr. *lēqā* 'id.'; **կաթողիկոս** *katʿołikos* 'the head of the Armenian Apostolic Church' ← Gk. καθολικός 'general; universal'; **աթղեստայք** *atʿłestay-kʿ*

'athletes' ← Gk. ἀθληταί 'id.'; etc. (cf. Hübschmann 1897: 59, 327; Meillet 1911; Sköld 1927; Greppin 1986: 282; etc.); see (2.2.3).

Not only is the exclusive employment of the presumably velarized lateral (OA ղ) in the early loans puzzling, so are the rare instances in which it is exceptionally not used; i.e. պահլաւ *Pahlaw* 'Parthian; [a dialect of] Middle Persian'; դահլիճ *dahlič* 'hall' (Sköld 1927); see (2.2.6). The consistent use of OA ղ in place of foreign *[l] is puzzling not only synchronically, it is also puzzling diachronically, since throughout the cited scholarship, it is OA լ which is regarded as the 'regular' reflex of PIE */l/; the other lateral is thought to be its conditioned variant.

Third, the traditional clear/front—dark/back distinction would be expected to produce a much greater dialectal or socio-phonetic variation in the historical development of the two laterals. Typologically, both velar(ized) and palatal(ized) realizations of laterals are—dialectally or within a language family—diachronically somewhat unstable and tend to cause significant socio-phonetic variation. Both realizations show distinct propensity for vocalization or analogical developments, i.e. $^{(*)}$[ɬ] > [w, o, u, ʁ], etc; $^{(*)}$[lʲ] > [ʎ, j, ʝ, ʒ, ʃ], etc. However, OA լ becomes uniformly /l/ and OA ղ becomes uniformly /ʁ/ in all Armenian varieties, many of which are mutually unintelligible and show independent developments comparable to the developments within conventionally recognized language families.

In this chapter, I propose an analysis of the split and distribution of the two original laterals based on a laryngeal configuration distinction in terms of the (auditory)[1] feature [VOICE]. In other words, (pre-)OA լ reflected */l̥/ (or */l̥^{h}/), i.e. voiceless (or voiceless aspirated) lateral,

[1] Cf. Ladefoged (1997: 611f.)

which contrasted with (pre-)OA ղ */l/, i.e. voiced lateral. The assumption of a laryngeal configuration distinction between the two Armenian laterals explains relatively straightforwardly the diachronic behavior and distribution of the laterals in the native as well as borrowed lexicon.

In the non-native lexicon borrowed up until ca. 600 CE, the *voiced* lateral phoneme (reflected as OA ղ <ł>, i.e. *[l]) rendered a foreign unmarked, i.e. voiced, lateral. Similarly, the dissimilation product of the native */r/ and */n/ (i.e. voiced sonorants) is also invariably reflected as OA ղ <ł>, never as OA լ <l>, regardless of the position within a word or vocalic context; cf. աղբիւր *ałbiwr* 'well' (= Gk. φρέαρ; cf. Goth. *brunna*); եղունգն *ełowng-n* 'fingernail' (≈ ὄνυξ; cf. OHG *nagal*); եղեամն *ełea-mn* 'hoarfrost' (≈ Lith. *ýnis*, SCr. *îmje*).

The original voiceless lateral phoneme (later reflected as OA լ <l>, i.e.*[$l_{̥}^{(h)}$]) systematically did not reflect a foreign voiced lateral, since the voiceless Armenian lateral phoneme was acoustically beyond confusion markedly distinct. Nevertheless, the foreign lateral was in fact exceptionally rendered by the voiceless lateral phoneme when it was—due to its segmental phonetic context—*perceived* as such; hence, MIran. *pahlawi* 'Parthian' → OA պահլաւ *Pahlaw* (= *[pɑhl$_{̥}^{(h)}$ɑw]) ~ պալհաւ *Palhaw* (= *[pɑl̥hɑw]); see (2.2.7).

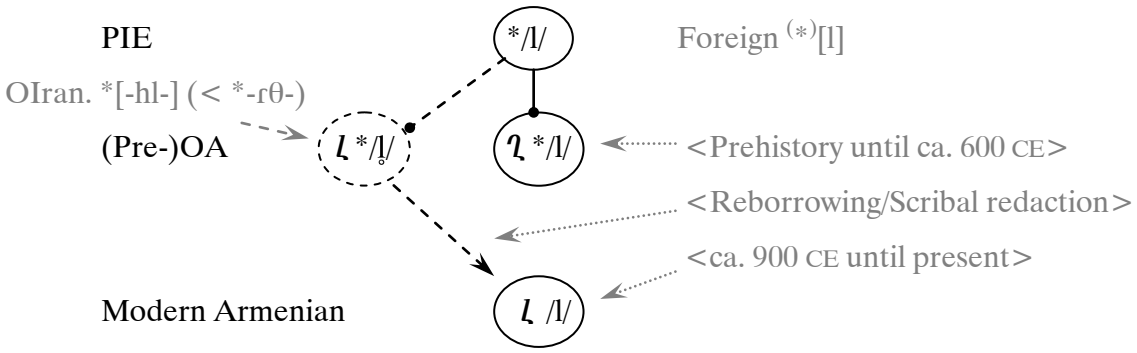
I propose that, in the attested historical period, the voiced lateral phoneme became a voiced counterpart of /χ/ in conformity with the *Feature Economy Principle* (Clements 2003). Since the uvular phoneme /χ/ (OA խ) was the only obstruent in the Armenian phonological system without a voiced counterpart (excluding հ /h/, properly a voiceless laryngeal glide), the voiced uvular counterpart was provided by the reanalysis of the articulatorily relaxed phonetic realizations of the original voiced lateral approximant which continued OA ղ */l/.

Laterals are primarily characterized by two gestures: a tongue tip raising and a tongue dorsum retraction (Giles and Moll 1975; Sproat and Fujimura 1993; Scobbie and Pouplier 2010). In the historical period, the original lateral realization of the voiced phoneme morphed into the attested uvular, non-lateral articulation by gradually relaxing the central constriction created by the tongue tip raising gesture. The extension of the tongue tip was articulatorily weakened in codas (cf., Giles and Moll ibid.; Scobbie and Pouplier ibid.), i.e. in positions assumed in this analysis to be originally exclusively occupied by the voiced lateral. The undershot, weakened and later completely non-realized tongue tip raising gesture in the original voiced lateral phoneme was perceptually reanalyzed as an acoustically similar realization of /ʁ/, i.e. the voiced counterpart of the uvular phoneme /χ/; see (2.4.1. – 2.4.3).

The originally voiceless lateral phoneme became subsequently voiced, since voiceless laterals are diachronically universally unstable. Sonorants that do not have a homorganic phoneme contrastive in voicing (i.e. marked for [VOICE]) are naturally expected to be realized as voiced; see (2.4.4.); i.e. (i) */l̥$^{(h)}$/ : */l/ : */χ/ → *[l̥$^{(h)}$] : *[l̝~ ʁ̝] : *[χ] > (ii) /l̥$^{(h)}$/ : /ʁ/ : /χ/ → *[l̥$^{(h)}$ ~ l] : [ʁ̝] : [χ] > (iii) /l/ : /ʁ/ : /χ/.

Appealing to the two systemic (perhaps universal) phonological tendencies above explains why all Armenian dialects *independently* reflected the two original laterals in such a uniform manner. The modern realization of OA ղ <ղ> may be descriptively referred to as a 'pendulum' shift, i.e. a situation in which the earlier and later diachronic realizations of a phonological structure are achieved through a distinct intermediary realization; see Figure 2.2 below.

Figure 2.2: Pendulum shift from PIE */l/ to modern Armenian լ /l/



Further evidence for the voicing distinction and the pendulum-like transfer of the phonetic realization of the original voiced lateral may be found in the spelling variation attested in the later, post-classical literary tradition. This variation occurred in the historical period and is roughly datable to a period from ca. 600 CE until ca. 900 CE. With an important exception discussed further below (*այլ՛ ayl' ~ այլ ayl* 'other'), the spelling variation occurs only in the borrowed lexicon. This indicates that the distribution of the two phonemes in the native lexicon was already fixed. The traditional assumption of a front—back articulatory distinction does not offer a satisfactory systematic explanation for the interlude of rampant spelling variation.

I argue that the attested variation orthographically reflects the fact that the two graphemes were at a particular point in time both realized identically, i.e., as a typical voiced lateral (*)[l]; for illustration, Gk. Ἀλέξανδρος was originally adopted as *[ɑlɛkʰsɑnd(ɛ)ɾ] which was spelled in OA as *Ալեքսանդ(ե)ր Ałekʿsand(e)r* (i.e. with OA ղ */l/ for loaned *[l]) and which regularly developed to the traditional/modern [ɑʁɛkʰsɑnd(ɛ)ɾ] (i.e. OA ղ <ł> */l/ > trad. ղ /ʁ/). Since the Greek name was still around after the Armenian changes of */l/ to /ʁ/ and */l̥/ to /l/, the name was loaned again in the medieval period as [ɑlɛkʰsɑnd(ə)ɾ], i.e. identically as in the

OA period half a millennium earlier, but this time it was naturally spelled as **Ալեքսանդր** *Alekʿsandr* to reflect the shift of the phonetic values between the two graphemes, i.e. OA **Ղ** <ł> */l/ (ca. 400 CE) = trad./mod. **լ** /l/ (ca. 1000+ CE) with no phonologically relevant qualification.

The attested philological variation such as **Աղեքսանդ(ե)ր** *Alekʿsand(e)r* ~ **Ալեքսանդր** *Alekʿsandr* has therefore nothing to do with the putative secondary articulation distinction, the position of the original lateral in the word, or the qualities of the neighboring vowels. The variation reflects the fact that the loaned lateral (i) stayed the same in the source language, (ii) was borrowed twice, and (iii) both graphemes **Ղ** <ł> and **լ** <l> reflected the same phonological segment at the relevant stage, the voiced lateral approximant (*)/l/ (*)[l].

Scribes active in the later tradition redacted spellings of a subset of words either because they were fully conversant with the Greek or Syriac languages and knew the 'correct' realization of the written loanwords or had knowledge of the prior realizations of these words from archaic dialects or speech; cf. **բաղիստր** *bałistr* 'arrow' (Jer. 9:8; translates βολίς) vs. **բալիստր** *balistr* (1Mac. 6:51; translates λιθοβόλα), both from Gk. βαλ(λ)ίστρα 'catapult'; **Ողոմպիադ** *Ołompiad* (earlier) ~ **Ոլոմպիաթ** *Olompiatʿ* from Gk. (αἱ) Ὀλυμπιάδες; **պաղատ(ն)** *pałat(n)* ~ **պալատ(ն)** *palat(n)* 'palace' from Gk. παλάτιον (← Lat. *palatium*); etc.

Furthermore, if we assume that the Armenian spelling variation represents an unchanged foreign voiced alveolar lateral which was reborrowed/redacted at different time periods and that the Armenian graphemes were successively used to render this unmarked lateral, we may also easily account for the existence of the so-called 'third' orthographic lateral (Meillet 1911); e.g. **այղ** *ayłʾ* 'other', **գայղ** *gaył* 'wolf', later invariably redacted to **այլ** *ayl*, **գայլ** *gayl*, etc, and

variation found in cognate lexemes such as ***փայլ*** *pʿayl* 'splendor' vs. ***փողփողիմ*** *pʿoł-pʿoł-i-m* 'I glitter'.

In (2.4.3.), I argue that the change of OA */l/ to modern /ʁ/ did not occur after OA $^{(*)}$[j]. The relaxation of the tongue tip raising gesture of the voiced lateral was blocked in this position after a palatal segment that also utilizes this gesture. The spelling ***այղ՛*** *aył'* thus represents the original voiced lateral, i.e. *[ɑjl]. Since the voiced */l/ did not develop into /ʁ/ after $^{(*)}$[j] (or nonsyllabic $^{(*)}$/i/), the original spelling was later supplanted with an apostrophe to indicate that the grapheme ***ղ*** <ł> was not to be read as [ʁ] in these specific words. The younger scribal tradition completely redacted all instances of the orthographic ***այղ՛*** *aył'* to ***այլ*** *ayl* to normalize the orthography with the current pronunciation of the lexemes, i.e. *[ɑjl] = ***այղ*** *aył* (***այղ՛*** *aył'*) ⇒ ***այլ*** *ayl* [ɑjl]; *[gɑjl] = ***գայղ*** *gaył* *[gɑjl] ⇒ ***գայլ*** *gayl* [gɑjl]; ***փայլ*** *pʿayl* [p^{h}ɑjl] (redaction of an unattested ***փայղ**** *pʿaył**, i.e. *[p^{h}ɑjl]) vs. ***փողփողիմ*** *pʿoł-pʿoł-i-m* *[p^{h}ɔl.p^{h}ɔ.lim] (> trad. [p^{h}ɔʁ.p^{h}ɔ.ʁim]), etc.

Finally, the assumption of a voicing distinction explains the otherwise enigmatic classification of the two laterals by an anonymous Armenian translator of the *Art of Grammar* by Dionysius Thrax. In the Armenian rendition of the work, the traditional front lateral ***լ*** /l/ is not grouped with the other "liquids" (***նայք*** *nay-kʿ*, ὑγρά): ***մ*** /m/, ***ն*** /n/, ***ր*** /ɾ/, ***ղ*** */l/, but with voiceless aspirated or fricative consonants: ***պ*** /p^{h}/, ***ք*** /k^{h}/, ***խ*** /χ/, ***թ*** /t^{h}/, ***ց*** /ts^{h}/, ***ջ*** /tʃ^{h}/, ***լ*** */l̥$^{(h)}$/; see (2.5.).

This chapter is divided into two parts. PART I reviews the previous scholarships on the subject and addresses the question of the phonological substance of the two original laterals. PART II concerns the origin and distribution of the two phonemes.

PART I: THE PHONOLOGICAL DISTINCTION BETWEEN THE LATERALS

2.2. Secondary articulation distinction solves a different puzzle

The secondary articulation distinction assumption goes back to Meillet (1894) and stands entirely on the presumed link between the observed distribution of OA ꙗ <ł> in the native lexicon and the typological observation that laterals tend to velarize before consonants.

Meillet (1894: 298f) argues that the discrepancy between the treatment of the inherited so-called palatovelars in, for example, Lithuanian *klausýti* and OCS *slovo* can be explained if we assumed that the distinction reflects *two different realizations of the lateral* following the velars rather than two different kinds of velars, i.e. *klausýti* developed from *[kłow-] (from */klou̯-/) but *slovo* from *[kʲlʲew-] (from */kleu̯-os/ rather than */k̂leu̯-os/; cf., Gk. κλέος vs. Ved. *çrávas* 'id.').[2]

Meillet describes the lateral in *[kłow-] as *l vélaire*, the one in *[kʲlʲew-] as *l dental*. He goes on to argue that these two lateral realizations have parallels in a number of IE languages: Indo-Iranian, Germanic, Latin, and Balto-Slavic. He brings in Armenian, since in Armenian there are evidently also two sorts of (originally) lateral segments, and—as he speculates—one of them (partially) occurs in exactly the same position we would typologically expect a velarized lateral, i.e., before a consonant.[3]

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[2] Meillet (1894:298) "La répartition des deux traitements dépend non de ce qu'il y avait primitivement deux sortes de *k*, mais plutôt, à ce qu'il semble, de la prononciation de *l*. On trouve, en effet: lit. *klausýti*: v. sl. *slovą*. En supposant que le traitement α [i.e. sibilants in *satəm* for velars in *kentum*] est régulier devant *l* dental et β [i.e. velars in *satəm* for labiovelars in *kentum*] devant *l* vélaire, on rendrait compte de κλέος: skr. *çrávas*, v. sl. *slovo* [...] en face de lit. *klausýti* avec *au* de *ou*."

[3] Meillet (1894:299) "[I]l y a tout lieu de croire qu'à la distinction letto-slave de *l* vélaire et de *l* dental a répondu une distinction analogue en indo-iranien. En effet *l* vélaire apparaît devant consonne en latin [...], en anglo-saxon, [...], en haut-allemand [...], en grec [...] et en arménien: dans cette langue on trouve par example *aλ-* initial *aλb*, *aλbewr*, *aλmowk*, *aλǰik*, *aλt*, *aλkhat*." (Note: the scholarly literature of this time renders ꙗ *l* by the Greek letter λ; see Table 2.1).

For Meillet, the secondary articulation distinction in the PIE laterals is obviously conditioned by the quality of the neighboring vowels (cf. */kl-/ → *[kłow-] vs. *[kʲlʲew-]), and such a treatment may still be visible in at least the branches that show the front—back distinction in the laterals synchronically. Crucially, Meillet (1894; 1905-06) explicitly acknowledges that this allophonic distinction is not conditioned by the quality of the neighboring vowels in the synchronic phonological system of Armenian, since the original distribution of the two laterals has been presumably wiped out by extensive analogy.[4]

By the same token, Meillet's rules of the distribution of the two laterals (see 2.2.2.) do not refer in any way to the quality of the adjacent vocalic melodies. The conditioning environment that Meillet (1936) and later Greppin (1986) invariably refer to involves either the edges of words or positions before a consonant and before a vowel (regardless of its quality). In any case, the traditional assumption of the front—back distinction between the Armenian laterals was in its very inception based on comparative and philological evidence not directly observable in the Armenian data.

2.2.1. Previous scholarship on vocalic conditioning

According to Meillet (1894, 1905-06) the front—back distinction was inherited from PIE, but, as he explicitly recognizes, the original vocalic conditioning has been in Armenian thoroughly obscured by analogy. In spite of the extensive analogical leveling, the subsequent

[4] (Meillet 1894:299) "Quant à la distinction de deux *l* suivant le timbre de la voyelle suivante, elle n'est jusqu'ici bien attestée, en dehors du letto-slave, qu'en latin: *uolo* : *uelim* - *famulus* : *familia*, etc. et en irlandais."; (Meillet 1905-06: 238) "En arménien ancien, au contraire [to Latin], une ancienne *l* reste dentale constamment en position initial ou intervocalique devant quelque voyelle que ce soit, sauf extension analogique de la prononciation *ł*: on a également *alu-* et *ali-*, *lo-* et *le-*; mais, comme second élément de diphtongue, on ne trouve que *ł*; on a donc *ałti-* comme *ałtu-*, *ilte-* comme *ilto-*."

scholarship has until the present day struggled to analyze the distribution of the laterals based on the influence of the neighboring vocalic qualities. The following section seeks to illustrate the fact that the assumption of a front—back distinction has not yet engendered convincing etymological or philological results.

Martirosyan (2010: 558) explains the alternation of the two laterals in the peculiar lexical doublet *ջիլ ǰil* ~ *ջիղ ǰił* 'tendon' by the twofold declension attested for the forms. The variant *ջիղ ǰił* goes back to **ǰil-a-* (from *g$^{u̯h}$iH-sl-eh$_2$) "with a dark [-*ղ*] *-ł* due to the following back vowel" and the variant *ջիլ ǰil* back to **ǰil-i-* (from a reconstructed *g$^{u̯h}$iH-sl-ih$_{2/1}$-) "with a palatal [-*լ*-] *-l-* between front vowels".

However, the reconstruction *g$^{u̯h}$ī-sl-ī- is for this word unattested elsewhere in IE (cf. Lat. *fīl-a* NOM.PL of *fīlum*, Lith. *gýsl-a*, OCS *žil-a*, both FEM.SG). The front vowel in the *-slī-formation is posited solely to account for the alleged palatal quality of the lateral. This is in and of itself quite resourceful; however, the problem is that the specific form that the virtual *g$^{u̯h}$ī-sl-ī- reconstruction purports to explain is *also unattested.* Thus, we have *ջլաւք ǰl-a-w-kʻ* (Bible+), *ջղաց ǰł-a-cʻ* (Ełišē), *ջղիւք ǰł-i-w-kʻ* (Plato) but we have neither the comparative evidence for a PIE *g$^{u̯h}$ī-sl-ī- nor any Armenian forms based on **ǰil-i-* with the presumed palatal lateral in an *i*-stem form.

Based on the available data, we are no closer to providing evidence that the lateral was palatalized between two front vowels (and by extension that a PIE *g$^{u̯h}$ī-sl-ī- should be reconstructed for Armenian). From the forms that are actually attested, the only thing that may be securely inferred is that the *a*-stem forms are inherited (based most likely on the FEM forms in

*-eh$_2$-; cf. Olsen 1999: 63) and that the laterals are arbitrarily in free variation. In fact, the (most likely) secondary *i*-stem form **ցղիւք** *jłiwkʿ* (< **jił-i-*) more or less confirms that the quality of the surrounding vowels has no effect on the distribution of the laterals.

More specifically, the limited distribution of **ցիլ** *jil* (Tʿiflis, Axalcʿxa, E and SE peripheral dialects) indicates that the form /jil-a-/ (Bible) is very likely an OA archaism, while **ցիղ** *jił* (rest of the dialects; cf. Martirosyan ibid.) spread as an innovation of a dialect parallel to OA, i.e., the inherited form */jil-a-/ had a parallel form */jił-a-/ (Ełišē), and the latter stem was taken and reanalyzed as **ցղի-**, i.e. /jił-i-/ (attested later in Plato).

Similarly, discussing the distribution of the lateral graphemes in a Greek manuscript written in Armenian letters (Bibliothèque National, Paris. BnF, Mss Arm. 332), Clackson (2002) concludes that **լ** <l> shows *preference* to occur "in the vicinity of front vowels", while at the same time it also *sometimes* appears to be in free variation with the other lateral (in a particular case even within a single lexeme, cf. **ելք-** *elkʿ-* [1x], **ելք-** *elkʿ-* for Gk. -ελθ- [4x]) (2002: 254).

However, the alleged preference for **լ** <l> to occur adjacent to a front vowel is based on an arbitrarily chosen restricted subset of the data, namely the occurrence of **լ** <l> in a bilabial stop plus lateral cluster before a front vowel (4x **բլ** *bl-* vs. 1x **պղ-** *pł-*). The reasons for such a restriction are unclear. Most importantly, the holistic picture is utterly different: altogether, there are 59 tokens of a lateral grapheme (i.e. **լ** <l> or **ղ** <ł>) found next to a front vowel (59/84); yet, it is represented by **լ** <l>, i.e. by the presumably front/palatal lateral, only 19 times. It seems to fail to be palatalized or fronted by an adjacent front vowel 68% of the time (40/59). If we consider only those lateral graphemes that are *followed* by a front vowel: out of 36

such instances, the presumed palatal quality of the Armenian lateral **լ** <l> corresponds to the quality of the front vowel only 12 times. Thus, even under this restricted provision, the lateral grapheme fails to be palatalized by the following front vowel 66% of the time.

At the same time, it is not clear why the lateral would be palatalized in forms such as **կալապոտի** *kalapoti* (B13) other than by mistake (cf. also **կաղամ** *kałam* for Gk. -αλα- or the unexplained variation in **գոիվին** *gowlin*, **դոիղի** *dowłi* for Gk. γουλίον 'throat' and δούλη 'slave', respectively).

To summarize, the assumption that the distribution of the laterals is linked to the qualities of neighboring vowels or their position within a word is superfluous and helps little to explain the distribution of the lateral graphemes in this manuscript or phonemes in the Armenian lexicon. Meillet (1894, 1905-06, 1903, 1936) originally assumed that the laterals were distinct in terms of secondary articulation based on allophonic processes attested outside of Armenian. He explicitly maintained that the lack of evidence for such a conditioning was due to extensive analogy within the language, which makes these claims circular and, by definition, unfalsifiable. In my opinion, an open-minded reevaluation of the available data makes both of these positions unprovable, if not untenable.

2.2.2. Previous scholarship on the distribution in the native lexicon

Hübschmann (1875: 35f; cf. also 1883: 72, 85; 1897: 407) unmistakably shows that not only is the presence of a lateral segment a feature that differentiates the native Armenian lexicon

from the lexicon securely borrowed from Iranian after ca. 250 BCE,[5] but also that OA լ <l> is the invariable reflex of an inherited lateral word-initially; e.g. լիզեմ *lizem* 'I lick' (≈ Gk. λείχω); լոյս *loys* 'light' (≈ Lat. *lūx*); etc. The presence of word-initial ղ <ł> is thus recognized as a tell-tale sign of a borrowed lateral from Middle Iranian, Syriac, or Greek; e.g. ղենջակ *łenǰak* 'apron; towel' (ult. from Lat. *linteum* 'linen cloth' via MIran.; Olsen 1999: 247); ղեկ *łek* 'oar' (≈ Syr. *lēqā*); Ղեւոնդ *Łewond* PN (≈ Gk. Λεωνίδας), ղամբար *łambar* 'torch' (≈ Gk. λαμπάδ-ᾰ), etc.

On the other hand, OA ղ <ł> is evidently the invariable reflex of an inherited lateral before a consonant; e.g. գեղձք *geǰj-kʿ* 'gland(s)' < PIE *ĝʰelĝʰ- (≈ OCS *žlězy*); աղտ *ałt* 'filth' (≈ Goth. *salt* 'salt'); աղբ *ałb* 'dung' (≈ Hitt. *šalpa-*), etc. Pedersen (1906) adds a special subcase of invariable OA ղ <ł> from an earlier */-ln-/; e.g. թողում *tʿołowm* 'I leave; allow' perhaps from pre-OA *tol-nu- (≈ Lat. *tollō* 'I elevate; remove' < Proto-Ital. *tol-n-). The presence of a pre-consonantal (and in fact also a post-consonantal; see below) լ <l> is nonexistent in OA and effectively indicates loanwords from a period in which the grapheme already represented the traditional or modern value; e.g. փալկոն *pʿalkon* 'falcon' (= Gk. φάλκων); ջուլհակ *ǰowlhak* 'weaver' (≈ NP *ǰōlāha*); CA դիկլիկոն *diklikon* 'omentum' (cf. Gk. δικλίς); եւրակլիկլովն *eurakiklovn* 'windstorm' (≈ Gk. εὐροκλύδων); etc.

The distribution of the original laterals between vowels and word-finally—i.e. precisely in the positions in which they contrast—remains unsettled and controversial; cf., e.g. ալիք *ali-kʿ* 'gray hair; waves' vs. աղիք *ałi-kʿ* 'intestines'; գոլ *gol* 'warmth' vs. գող *goł* 'thief', etc.

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[5] The date is based on the political influence of the Parthian Empire (248 BCE – 224 CE) in the region. The prehistoric Armenians had been in contact with Old Iranians already several centuries prior to their subjugation by the Medes ca. 625 BCE (cf. Hübschmann 1897: 9); however, the overwhelming majority of the Iranian loanwords goes back to Parthian times (*ibid.* 12).

Meillet (1903: 22f; 1936: 43, 47, 173, 182) assumes that the presumably clear OA ***լ*** /l/ is a regular reflex of the inherited lateral intervocalically, e.g. ***դալար*** *dalar* 'fresh, verdant; green' (≈ Gk. θαλερός 'blooming'); the intervocalic lateral in, for example, ***դեղին*** *dełin* 'yellow' is assumed to be due to the influence of ***դեղ*** *deł* 'herb' (≈ Gk. θαλλός 'twig') in which the dark lateral was presumably regular word-finally. Therefore, forms such as ***դալ*** *dal* 'beestings' with a word-final clear lateral had to be influenced by cognate forms such as ***դալար*** *dalar* above. Similarly, the dark lateral in ***կաղին*** *kałin* 'acorn' (≈ Gk. βάλανος 'id.') was extended from the regular, preconsonantal oblique form ***կաղնոյ*** *kałn-o-y*, traditionally (i.e. from ca. 1000 CE) pronounced [kɑʁ.nɔ]; i.e., according to Meillet, PA *[kɑ.lʲin] : *[kɑł.nɔj] → OA [ˈkɑ.łin] : [kɑł.ˈnɔj].

Let us consider *when* the laterals in these forms became word-final or preconsonantal. As far as the relative chronology of the apocope of final rhymes is concerned, there is enough evidence to assume that the inherited final syllables were still present in the language during the time of the earliest Iranian loanwords, as is convincingly argued by Olsen (2005) and reflected in the opinion of a number of scholars (e.g., Meillet 1911: 149, 1936: 23; Jensen 1959: 19; Olsen 1999: 859; Matzinger 2005: 27ff, etc.). Based on a distinct pattern of the distribution of the borrowed laterals at this period (in which foreign *[l] → OA ***ղ*** <ł>), it is quite likely that the distribution of the laterals in the native lexicon had already been fixed. It is therefore unlikely that the laterals were being redistributed within a paradigm during or after this period.

Similarly, the attested oblique forms such as ***կաղնոյ*** *kałnoy* are the result of pretonic high vowel reduction, i.e. ***կաղնոյ*** *kałnoy* continues an earlier */kalin-o-i̯o/. The reduction is demonstrably younger than the Parthian stratum of loanwords (Bolognesi 1951, 1960; Ravnæs

1991: 45f; Meillet 1936: 23). In any case, even if we assumed that the high vowels were categorically lost in an abrupt manner, rather than initially only phonetically reduced,[6] the assumption of the preconsonantal analogy is contradicted by words such as գլուխ *glowx* 'head', cf. oblique գլխոյ *glx-o-y* from */g^{i}/$_{u}$lux-o-i̯o/.

The indication that the distributional rules of Meillet are effectively unfalsifiable is inadvertently provided by Greppin (1986), who argues that the conditioning specifications should be reversed. The dark lateral in words such as կաղին *kałin* or եղէգն *eɫēg-n* 'reed' is regular, while the clear intervocalic lateral in դալար *dalar* somehow reflects the connection with դալ *dal* 'beestings; yellowish' in which the lateral is regular word-finally. Non-final postconsonantal lateral also passes to OA clear or palatal լ <l> */l$^{(j)}$/; e.g. գլեմ *gl-e-m* 'I turn' (≈ Lat. *volvo*), կլանիմ *kl-an-i-m* 'I swallow' (≈ Ved. *girátı*); (ibid. 283).

Arguably, however, the lateral in forms such as գլեմ *glem* is synchronically—and diachronically has always been—intervocalic. The traditional pronunciation preserves the realization of this type as [gə.lɛm], and in fact, the type is typically synchronically still analyzable as due to the pretonic reduction of high vowels, especially in verbs which are likely denominal (i.e. [gə.lɛ́m] = */gil-e-m/ ← գիլ *gil* '(a) rolling'; cf. Hammalian 1984). In fact, I will argue further below that the inherited sequences of word-medial */-C.l-/ are invariably reflected as OA

[6] I argue elsewhere that the reduced vowels are still partially preserved as such up to the attested OA as indicated by the absence of affricate dissimilation in forms such as OA լացցես *lacʿcʿes* (= *[lɑ.ts^{h}ə.ts^{h}ɛs]) 'thou shalt weep' as opposed to OA ստասցիս *stascʿis* 'thou shall get'. The same may be true of the orthographic -րն- -ռն- clusters from original */-r^{i}/$_{u}$n-/ such as կորնչիմ *kor-nčʿ-i-m* 'I am lost' as opposed to -ռն- -ṙn- from original */-rn-/ ; in fact, cf. the explicit կորընչիմք *korə-nčʿ-i-m-kʿ* (M6200, dated 887 CE; Künzle 1984 I: 65) in which the written schwa corresponds to the position of the original high vowel (see Thomson 1975: 118), i.e. */kori-nčʿ-i-m-k^{h}/, cf. կորեայ *koreay* = */kori-a-y/ 'I perished'.

Ղ <ł>: եղեւ *eɫew* ‘was; turned out’ < *e-k$^{\text{u}}$l-e-to (≈ Gk. ἔπλετο); յղի *y-ɫi* ‘pregnant’ < *i- + *iŋ(φ)li-o/a- < *en-pleh$_1$-; ջիղ *ǰiɫ* ‘sinew’ < *g$^{\text{u}}$$^{\text{h}}$ī-sl-ā (≈ Lith. *gýsla*); սիր-ող *sir-oɫ* ‘lov-ing’ < *k̂eir-o-tlo-, cf. ծն-աւղ *cn-awɫ* ‘parent; begetter, one begetting’ < *ĝenh$_1$-tōl (≈ Gk. γενέτωϱ).

In other words, the traditional rules of the distribution of the laterals may be reversed while at the same time providing the same (questionable) result: applicability to the histories of individual words only.

2.2.3. Previous scholarship on the distribution in the borrowed lexicon

Both Hübschmann (1897:327) and Sköld (1927) conclude that OA Ղ <ł> (trad. /ʁ/) is the regular reflex of Persian, Syriac or Greek *[l] in the borrowed OA lexicon. There is no evidence in all of the languages involved (including Armenian) that would challenge the simplest hypothesis that both the source and target laterals borrowed into Armenian were typical voiced segments, i.e. Persian, Syriac, Greek *[l] → Armenian Ղ <ł> */l/.

Since at least the time of the oldest loans from Parthian, i.e. from ca. 250 BCE, the phoneme that ends up as OA Լ <l> (trad. /l/) is hardly ever used to represent a lateral segment in loanwords into OA; e.g. New Testament Gk. Βεθλεέμ TN, arguably [bɛt$^{\text{h}}$.lɛ.(ʔ)ɛm] ≈ OA Բեթղեհէմ *Betʿłehēm* > modern Armenian Բեթղեհեմ /bɛtʰʁɛhɛm/; NT Gk. Ἰερουσαλήμ [$^{\text{o}}$lɛːm] TN = OA Երուսաղէմ *Erowsałēm*; Gk. ἐκκλησία ≈ OA եկեղեցի *ekełecʿi* ‘church’; Ηλι ηλι λαμὰ σαβαχθανι (Matt. 27: 46) = Էղի Էղի ղամա սաբաքթանի *Ēɫi Ēɫi ɫama sabakʿtʿani*, etc. This is puzzling, since languages with front—back or analogical distinction in the laterals typically use both laterals in their loanword phonologies; e.g., Russ. файл [fajɫ] ‘file’ ← English *file*, cf. киль [k$^{\text{j}}$iʎ] ‘keel’ < Dutch *kiel* [k$^{\text{h}}$iˑɫ]; the distinction may also follow the source language; cf. Albanian

pyll 'forest' ← Lat. *palude(m)* vs. *fjalë* 'word' ← Lat. *fabella*, etc.[7] In addition, the Armenian alphabet (created ca. 400 CE) follows the order of the Greek alphabet and shows OA Ղ <ł> (trad. /ʁ/) in the place of Greek λ (voiced alveolar approximant /l/), while OA Լ <l> (trad. /l/) is intercalated into the alphabetical order at a place without a Greek counterpart, just like other non-Greek sounds, such as Ժ /ž/ [ʒ], Ծ /c/ [ʦ$^{(ʔ)}$] or Ը [ə]; see Table 2.1.

I argue that the assumption that modern Armenian Ղ <ł> /ʁ/ develops from an earlier typical or articulatorily unmarked voiced */l/, which is for a long period of linguistic development (at least from ca. 250 BCE to ca. 600 CE) realized as a typical voiced alveolar lateral approximant *[l], requires no special qualification. There is no evidence within Armenian itself that secondary articulation qualifications should be at play.

Table 2.1: Positions of OA Լ <l> and Ղ <ł> in the Armenian alphabet

α	β	γ	δ	ε	ζ	η		ϑ	ι			ϰ			λ	μ	ν	ξ	ο	π	ϱ	σ	τ		υ	φ	χ
Ա	Բ	Գ	Դ	Ե	Զ	Է	Ը	Թ	Ժ	Ի	Լ	Խ	Ծ	Կ	Հ	Ձ	Ղ	Ճ	Մ	Յ	Ն	Շ	Ո	Չ	Պ	Ջ	Ռ	Ս	Վ	Տ	Ր	Ց	Ւ	Փ	Ք	Օ	Ֆ
ա	բ	գ	դ	ե	զ	է	ը	թ	ժ	ի	լ	խ	ծ	կ	հ	ձ	ղ	ճ	մ	յ	ն	շ	ո	չ	պ	ջ	ռ	ս	վ	տ	ր	ց	ւ	փ	ք	օ	ֆ
a	*b*	*g*	*d*	*e*	*z*	*ē*	*ə*	*tʿ*	*ž*	*i*	*l*	*x*	*c*	*k*	*h*	*j*	*ł*	*č*	*m*	*y*	*n*	*š*	*o*	*čʿ*	*p*	*ǰ*	*rr*	*s*	*v*	*t*	*r*	*cʿ*	*w*	*pʿ*	*kʿ*	*ō*	*f*

The traditional analysis also cannot explain the few exceptional cases in which the presumably clear/palatal Լ <l> does occur in OA loans from Middle Iranian times; cf. MIran. *pahlawi* 'Parthian' → OA Պահլաւ *Pahlaw*, also rarely Պալհաւ *Palhaw* 'id.'; MIran. *dāhlīz* → OA դահլիճ *dahlič* 'hall' (Sköld 1927).

[7] Armenian evidently does not behave like Albanian: Lat. *scutella* (Latin *-ll-* renders an *exilis* 'slender' lateral; Allen 1965: 34) → OA սկուտղ *skowtł* 'plate', just as Lat. *arcula* (with a *pinguis* 'fat' lateral) → արկղ *arkł* 'box' (see Meillet 1913).

The assumption of a voicing distinction proposed in this analysis straightforwardly explains why OA ***լ*** <l> (i.e. the voiceless lateral */l̥$^{(h)}$/) essentially does not occur in loans from languages with only a voiced lateral in their inventories and why OA ***ղ*** <ł> (i.e. the voiced lateral */l/) does; cf., Syr. *lēqā* 'oar' → OA ***ղեկ*** *łek*, i.e. *[lɛk], not *$^{?}$[łɛk], etc.

It also explains why or how only a few exceptions occur: the laterals were perceived as voiceless in the immediate vicinity of a non-native word-medial aspiration or */-h-/; cf. MIran. /-hl-/ (< *-rθ-) → OA ***-հլ-*** *-hl-*, i.e. *[-h.l̥$^{(h)}$-], not *$^{?}$[-h.l^{j}-]: OA ***պահլաւ*** *Pahlaw* ~ ***պալհաւ*** *Palhaw* = *[pɑhl̥$^{(h)}$áw] or *[pɑl̥$^{(h)}$háw]; OA ***դահլիճ*** *dahlič* 'hall'(← MIran. *dāhlīz*) = *[d̪ɑhl̥$^{(h)}$itʃ].[8]

2.2.4. Spelling variation (ca. 600 CE — ca. 900 CE)

One of the main obstacles in determining the distribution of the two original laterals in terms of their relative chronology is the fact that the available or extant manuscripts of the earliest Armenian language are copies (of copies) of the original OA texts several centuries removed from the classical time at which the texts were first written down. While the laterals in the native lexicon are as a rule stable (with the exception of ***այղ*** *aył* ~ ***այլ*** *ayl* = Gk. ἄλλος, ἀλλά), the laterals in loanwords into Armenian show a great deal of variation—most conspicuously in specific words attested in different versions of the same text; e.g., ***ղապտեր*** *łapter* (M6200, dated 887 CE) ~ ***լապտեր*** *lapter* (E229, dated 989 CE, and subsequent versions), reflecting Gk. λαμπτήρ 'torch; lantern' (cf. Künzle 1984 II: 309)—but frequently also specific

[8] Interestingly, some Middle Persian borrowings from Avestan show *-hr/hl-* for Old Avestan *-ṣ̌-* from the original sequences *-rθ- when preceded by the Iranian accent. García and de Vaan (2014: 24) hypothesize that OAv. written *-ṣ̌-* represented a voiceless lateral fricative. Such an assumption would explain the presence of [-h-] as a sort of artificial preaspiration before the lateral in Middle Iranian, and subsequently its presence in the OA forms.

words attested in different texts; e.g., բաղիստր *bałistr* ‘arrow’ (Jer. 9:8; translates βολίς) ~ բալիստր *balistr* (1Mac. 6:51; translates λιθοβόλα), both from Gk. βαλ(λ)ίστρα ‘catapult’, etc.

Based primarily on philological argumentation, significant order has been brought into the seeming anarchy, especially, by Hübschmann (1897) and later Sköld (1927). In loanwords which entered Armenian since at least ca. 250 BCE up until ca. 600 CE, a foreign *[l] is consistently reflected by OA ղ <ł> */l/, not OA լ <l> */l̥ʰ/); cf. Hübschmann 1897: 327; Meillet 1911; Sköld 1927; Greppin 1986: 282. This is most evident in loans that have been fully nativized, and show no variation even in the later language, esp. PNs such as Ղազար *Łazar* (← Gk. Λάζαρος), Ղեւի *Łewi* (← Gk. Λευι), Ղեւտացի *Łewtacʻi* (← Gk. Λευίτης), Ղուկաս *Łowkas* (← Gk. Λουκᾶς), etc. The onomastic evidence strongly suggests that the lack of variation is due to the fact that these proper names were immune to the scribal redaction since they developed as part of the spoken register and not as part of the learned lexicon, which can be relatively easily tampered with. Also, in cases with attested variation, the forms with OA ղ <ł>—being rarer and generally limited to the oldest manuscripts—arguably preserve the original state of affairs (cf. Olsen 1999:922); cf. հաղոէ *hałoē* ~ հալուէ *halowē* (← Gk. ἀλόη ‘aloe’); Սամուէղ *Samuēł* ~ Սամուէլ *Samuēl* (← Gk. Σαμουήλ PN); սաղմոս *sałmos* ~ փսալմոս *pʻsalmos* (← Gk. ψάλμος ‘psalm’); etc. It is only in loans evidently adopted after ca. 900 CE that the orthographic representation of the two phonemes becomes free of spelling variation again. This stability is evidently a result of the phonetic distinctiveness of the two phonemes; i.e., at this point, they evidently assumed their traditional or modern realizations լ <l> /l/ vs. ղ <ł> /ʁ/; cf. Բուլղար *Bowłłar* [bulʁɑr] (ca. 900 CE) ← Gk. Βούλγαρος [bulɣaros]; լիղաթ *liłat* [liʁɑt] (ca. 1100 CE) ←

Gk. ληγᾶτον [liγaːton]; դիալողոս *dialołos* [diɑloʁos] (ca. 1200 CE) ← Gk. διάλογος [dialoγos]; փսալմոս *p'salmos* ← Gk. ψάλμος 'psalm' (cf. OA սաղմոս *sałmos*, i.e. *[sɑlmos]; Bible+); cf. Hübschmann 1897: 327f.

2.2.5. The third orthographic lateral: Ղ' <Ł'>

Furthermore, Meillet (1911:210) introduces the third type of lateral, Ղ', i.e. Ղ <ł> with an apostrophe. This lateral only occurs in the oldest manuscripts and in specific words after -յ- /-y-/ (*[-j-]). In the medieval scribal tradition, all instances of Ղ' <ł'> get redacted across the board to Լ <l>.[9] The traditional analysis sees in the alternation a result of two contradictory tendencies: Ղ <ł> as the regular reflex of a word final lateral and analogical leveling.[10]

However, as I have argued earlier based on relative chronology, by the time of the apocope of final syllables, the distribution of the laterals in the native lexicon is fixed. The lateral in the precursor of the OA այղ' *aył'* (or also simply այղ *aył*) would be in medial position after a consonant, i.e. այղ *aył* < *[ɑj.lo] (< PIE *$h_2$el-i̯o-; cf. Gk. ἄλλος, OIr. *aile*, Lat. *alius*) in which the traditional rules of distribution do not predict the attested (velarized lateral) outcome.

Moreover, the attested pattern suggests no contradictory tendencies: there is only an այղ <aył> variant *up to a certain time* and only an այլ <ayl> variant *since a certain time* but not the other. In other words, the pattern suggests no socio-phonetic variation; it reflects a

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[9] "On sait que ce sign est employé dans les anciens manuscrits en des cas où ղ est précédé de յ (y), comme այղ', et aussi très souvent dans des mots transcrits du grec. Dans la mesure où il s'agit de mots indigènes, le ղ' ne s'est pas maintenu comme ղ, mais comme լ, et l'on écrit toujours այլ dans les éditions actuelles qui reposent non sur la graphie des plus anciens manuscrits, mais sur les habitudes graphiques du moyen âge. Les parlers actuels ont alors le représentant de լ, et non celui de ղ."

[10] Cf. Meillet 1894:298, "[L]a fin du mot est traitée comme toute fin de syllabe et, comme le nominatif n'a plus de désinence en arménien, il en est résulté des analogies entre ce cas et les autres, puis une hésitation entre *l* et λ : on trouve dans les manuscrits *ayl* et *ayλ*, *doyl* et *doyλ*, *gayl* et *gayλ*, etc."

prescriptively induced spelling change, i.e. all instances of the earlier ***այլ*** <aył> are from a certain point on simply spelled ***այլ*** <ayl>.

Godel (1975:10) feeds this phenomenon into the rules of the distribution of the two laterals and effectively makes the presumably palatal ***լ*** <l> the regular lateral outcome after ***յ*** *y*. This is, however, somewhat misleading, since this process clearly occurs in the historical period, and the presumed secondary articulation distinction sheds no light on the original ***ղ՛*** <ł'> in these forms nor on the overall distribution of the two laterals.

2.2.6. Voicing distinction and the distribution of the laterals

To briefly recapitulate the distributional patterns established by the previous scholarship, the two Armenian laterals are in the native lexicon in partial complementary distribution: the inherited lateral or PIE */l/ is word-initially reflected as OA ***լ*** <l> and before a consonant as OA ***ղ*** <ł>. The inherited laterals are contrastive between vowels and at the end of words.

In contrast, a lateral loaned prior to ca. 600 CE, is in all positions regularly reflected as OA ***ղ*** <ł>, and it is only after ca. 900 CE that the grapheme manifestly renders a (loaned) non-lateral segment. At around the same time, the traditional Armenian grapheme ***լ*** <l> is apparently also used retroactively in instances in which the conservative orthography preserves the earlier spelling/realization with (OA) ***ղ*** <ł>.[11] Additionally, while the oldest manuscripts still preserve spellings such as ***այղ*** *aył* (or ***այղ՛*** *aył'*), later manuscripts invariably show ***այլ*** *ayl*.

[11] There are some indications that the traditional ***ղ*** may also substitute for ***լ*** (arguably /l/) in archaizing spelling. For instance, Sköld (1927: 783) assumes that the spelling ***Կուպղիդուխտ*** *Kowpłidowxt* PN (attested ca. 1300 CE) may reflect such an instance.

In this chapter, I argue that a voicing distinction between the two original laterals captures the attested distribution straightforwardly. First, the distinction was initiated and completed already prior to the influx of the earliest Iranian loans into Armenian. This is manifested by the fact that the distribution of the laterals in the native lexicon follows a different pattern from the distribution in the loans; cf. PIE */l-/ > OA ***լ-*** <l->; PIE */-Cl-/ > OA -***ղ-*** <-ł->, but loaned */l-/ → OA ***ղ-*** <ł->; loaned */-Cl-/ > OA -C***ղ-*** <-Cł->, i.e. OA ***ղ*** <ł> in all positions.

OA ***ղ*** <ł> */l/ regularly reflects a foreign voiced lateral, while OA ***լ*** <l> */l̥$^{(h)}$/ was at this stage used to render a loaned lateral only if it was perceived as voiceless in the context of a foreign medial */-h-/; hence, ***պահլաւ*** *Pahlaw* 'Parthian' and ***դահլիճ*** *dahlič* 'hall', which still preserve the medial aspiration.

The historically attested spelling variation in loanwords is the result of reborrowing or scribal redaction. The historical spelling change of earlier ***այդ*** *ayd* to the traditional ***այլ*** *ayl* is due to the fact that the OA ***ղ*** <ł> (voiced lateral */l/) remained a lateral segment after OA *[j], whereas it was delateralized to /ʁ/ elsewhere.

2.3. Secondary articulation distinction and typological expectations

Meillet (1911: 209) sees a confirmation of his assumption that one of the laterals was formerly velar(ized) in the fact that such a realization would be the most natural precursor of the modern Armenian dorsal segment ***ղ*** <ł> /ʁ/ (or his velar /ɣ/), i.e. PIE */l/ > OA *[ɬ] > modern [ʁ].[12] In other words, Meillet's analysis apparently assumes that since the segment ended up as a

[12]Meillet (1911: 209) "Le sort de ***դ*** dans le développement de l'arménien parlé indique que le signe ***դ*** désignait cependant une *l* qui comportait un relèvement de la partie postérieure de la langue."

dorsal approximant, it must have been necessarily characterized by a retracted articulation while still a lateral.

While the development of *[ɬ] to [ʁ] is admittedly one of the possible diachronic trajectories, the evidence of languages with demonstrably velarized laterals shows that such segments are typologically expected to produce socio-phonetic variation; specifically, velarized laterals have a tendency to vocalization, i.e., *[ɬ] may become {[w, u, ɤ, o], etc.}.

For illustration, Classical Latin and its sister dialects are securely known to have had velarized realizations of preconsonantal or word-final laterals. The development of such segments within the Romance language family or even within mutually intelligible dialects of certain Romance languages bespeaks the earlier velarized realization of the inherited laterals; cf. Latin *alba* 'dawn' *[ałba] > Ital. *alba*, Sp. *alba* (*alva*), but Fr. *aube* [ob]; Lat. *resolvere* 'solve' *[-łv-] > Ital. risolvere, Sp. *resolver*, but Fr. *résoudre*, etc.; European Port. [sał] 'salt', [kałda] 'syrup' ~ Brazilian Port. [saw], [kawda], respectively, etc.

Similarly, palatalized laterals are diachronically prone to vocalization or other analogical developments, i.e. *[lʲ] > {[ʎ, j, ʝ, ʒ, ʃ], etc.}. The following data illustrate these points. To be sure, the argument is not that velarized or palatalized laterals necessarily vocalize, but that such inherited laterals show socio-phonetic variation across or within related languages/dialects; cf. Lat. *palea* 'chaff' *[pa.lʲe.a], *filia* 'daughter' *[fiː.lʲi.a], *melior* 'better' *[mɛ.lʲi.or] > Ital. *paglia* [ʎ(ː)], *figlia*, *meglio*, resp.; Sp. *paja* [x] (< *[ʃ, ʒ]), *hija*, *mejor*, resp.; Fr. *paille* [j], *fille*, *meilleur*, resp.; etc.; Lat. *callis* 'path; trail' > Ital. (Venetian) *calle* [lː], but Sp. *calle* [ʎ ~ j ~ (Argentina) -ʒ-]; etc.

In contrast, the original lateral phonemes are reflected in all Armenian dialects uniformly (as consonants): OA ļ <l> is invariably continued by modern /l/ and OA ղ <ł> is invariably continued by modern /ʁ/ (predictably devoiced to <x> [χ] before a voiceless consonant).[13] Given the traditional assumption of a front—back distinction between the precursors of the two modern Armenian phonemes, the uniform outcome of the original lateral values is typologically unexpected.

The two original laterals are in every single dialect of Armenian continued as /l/ and /ʁ/, respectively. By the comparative method, we would be led to believe that these respective realizations are inherited from the prehistoric Common Armenian, but Common Armenian logically predates historical OA (ca. 400 CE). At the same time, we know from philological evidence that the modern realizations could not be assumed for the dialects definitely prior to ca. 600 CE (cf. Vaux 2009: 22). Consider a selection of 20 Armenian dialects below (cf. Greppin and Khachaturian 1986).

Table 2.2: Development of OA ļ <l> and ղ <ł> in the Armenian dialects

DIALECT	mod. /l/ < OA ļ		mod. /ʁ/ < OA ղ		DIALECT	mod. /l/ < OA ļ		mod. /ʁ/ < OA ղ	
Agulis	*liwc*	*luc*	*oxt*	*ułt*	Mush	*lezu*	*lezu*	*həli*	*yłi*
	gʸəliwh	*glowx*	*yała*	*yłi*		*balnis*	*banali*	*axp*	*ałb*
Artial	*lal*	*lal*	*tʻuxtʻ*	*tʻułtʻ*	New Julfa	*lizu*	*lezu*	*ałper*	*ełbayr*
	lēṙ	*leaṙn*	*ałi*	*ałi*		*lev*	*law*	*təła*	*tłay*
Erznkay	*al*	*ayl*	*keł*	*giwł*	Polis	*anli*	*anali*	*jałeg*	*całik*
	ałal	*ałal*	*pex*	*beł*		*avlel*	*awelel*	*ałpar*	*ełbayr*
Goris	*kʸäl*	*gal*	*yeł*	*iwł*	Sasun	*lus*	*loys*	*äłoł*	*ułeł*
	lärtʻ	*leard*	*təła*	*tłay*		*häyli*	*hayeli*	*kʻałcʻuc*	*kʻałcʻac*

[13] Jahukyan (1927), followed by Vaux (1998: 7), assumes the existence of 36 basic dialects.

Hajin	*kal*	*gayl*	*eieł*	*iwł*	Shamaxi	*ləli*	*leli*	*ałil*	*ałel*
	eliy	*aliwr*	*oxb*	*ałb*		*heyli*	*hayeli*	*ałper*	*ełbayr*
Hamshen	*onli*	*anali*	*teł*	*deł*	Svedia	*äbril*	*april*	*ałutkʿ*	*aławtkʿ*
	äl	*ayl*	*kʿuxk*	*kʿołkʿ*		*lənnil*	*lnul*	*ułd*	*ałt*
Karchevan	*älür*	*aliwr*	*əleǰür*	*ałaǰur*	Tbilisi	*alur*	*aliwr*	*xiłč*	*xełč*
	cili	*aceli*	*cəcał*	*cicał*		*xapʿil*	*xabel*	*xuł*	*hoł*
Karin	*berel*	*barel*	*mełər*	*mełr*	Tigranakert	*kʿəril*	*grel*	*äxčʿig*	*ałǰik*
	olərel	*olorel*	*axper*	*ełbayr*		*kʿel*	*gayl*	*pʿułg*	*bołk*
Lori	*leṙ*	*leaṙn*	*ałotk*	*aławtkʿ*	Van	*kʸəleox*	*glux*	*kʸôł*	*goł*
	alir	*aliwr*	*yeł*	*iwł*		*arcəli*	*aceli*	*mʸełər*	*mełr*
Meghri	*lüzü*	*lezu*	*dexk*	*dełkʿ*	Xoy	*ołołel*	*ołołel*	*mełər*	*mełr*
	hillüril	*olorel*	*całek*	*całik*		*leṙ*	*leaṙn*	*ołormil*	*ołormil*

The obvious way to resolve the paradox is to assume that all the dialects underwent these changes *independently*. However, velarized and/or palatalized realizations of laterals are typologically expected to lead to independent developments reflected in diachronic and/or synchronic dialectal or socio-phonetic variation.

I propose that the assumption of an original voicing distinction between the inherited Common Armenian laterals leads to an analysis of the development based on universal phonological principles referring to systemic properties of the two original lateral phonemes. The following section starts by discussing the findings from experimental studies involving the articulation of laterals. The next two sections propose the possible phonological treatment of the historical development of the original laterals from the stage of the voicing contrast to their modern phonological values.

2.4. Feature Economy and markedness of [VOICE] in laterals

One of the features that all Armenian varieties arguably shared was the inherited phonological system with a single obstruent phoneme non-contrastive for [VOICE], the voiceless uvular fricative /χ/.[14] The articulatory and acoustic development of the voiced lateral phoneme (OA ղ <ł> */l/), which phonologically supplanted the voiced counterpart of /χ/, is argued to be in conformity with the Feature Economy Principle (Clements 2003); see (2.4.1.-2.4.3.). The remaining voiceless lateral phoneme (OA լ <l> */l̥$^{(h)}$/) became subsequently voiced across all Armenian varieties because voiceless sonorants are typologically unstable; see (2.4.4.)

2.4.1. Gestural analysis of /l/

According to Ladefoged and Maddieson (1996: 182), laterals are *sounds in which the tongue is contracted in such a way as to narrow its profile from side to side so that a greater volume of air flows around one or both sides than over the center of the tongue*.

Laterals are primarily characterized by two gestures: a tongue-tip raising gesture and a tongue-dorsum retraction gesture (Giles and Moll 1975; Sproat and Fujimura 1993; Scobbie and Pouplier 2010). The distribution of the allophones of /l/ typically depends on word or syllable boundaries; cf., most notably, the distribution of 'light' and 'dark' /l/ in many dialects of [American] English, Dutch, Portuguese, or the philologically and historically analogous realization of the Latin laterals (cf. Sihler 1995: 174; Weiss 2009: 82, 117; Sen Ranjan 2015:

[14] In the inherited lexicon, /χ/ is a product of a 'simplification' of the PIE cluster */(-)kh$_2$-/, i.e., a velar stop and a laryngeal (which very likely represented a pharyngeal fricative sound) merged into a single segment. The employment of [UVULAR] in its Armenian reflection seems to be a result of the compromise between the two categorically adjacent places of articulation. Since both of the original obstruents are originally voiceless, the product is a voiceless uvular obstruent (cf. Kümmel 2007: 66, fn. 41).

15ff.). The variation seems to always follow the same distribution: syllable-initial laterals are (relatively) 'light(er)', and syllable-final laterals are (comparably) 'dark(er)'.

In terms of articulation, the variants of alveolar laterals are primarily characterized by retraction of the tongue body or pharyngealization (Sproat and Fujimura 1993; Simonet 2015).[15] Experimental studies also reveal other robust tendencies. Giles and Moll (1975) show that one of the differences between the lateral variants in English is that the apical closure during the production of the segment is not always observed in the dark lateral. The absence of the apical closure or presence of the relatively weaker closure in the dark lateral has been confirmed in the studies of Sproat and Fujimura (1993) and Scobbie and Pouplier (2010). In addition, the variants also differ in temporal coordination of the two gestures and their relative duration. In light (or syllable-initial) /l/'s the tongue tip raising gesture is initiated prior to the forward movement of the tongue body, or simplistically the tongue tip raising gesture precedes the tongue dorsum retraction gesture. On the other hand, in dark (or syllable-final) /l/'s the retraction of the tongue body precedes the tongue tip raising gestures, which, as already mentioned, is relatively relaxed or weaker, such that the apical alveolar closure is incomplete, i.e. undershot.

Sproat and Fujimura (*ibid.* 304f) correlate the observed articulatory properties of the two variants with their phonological distribution: the apical (or tongue raising) gesture of /l/ is

[15] Both studies object to the term *velarization*. Based on experimental studies, dark laterals clearly involve retraction of the tongue dorsum resulting in a narrowed pharynx (cf. Ladefoged and Maddieson 1996: 186 on Albanian alveolar vs. dental laterals), rather than significant *raising* of the tongue dorsum towards the *velum*. In fact, Sproat and Fujimura (1993) paradoxically reports relative *lowering* of the tongue body alongside greater retraction in dark /l/'s (*ibid.* 302).

considered a 'consonantal' gesture; the dorsal retraction gesture is considered a 'vocalic' gesture, based on whether the gestures produce a radical constriction in the vocal tract or not. This provision has synchronic and diachronic consequences for the vocalization of dark laterals in preconsonantal positions or codas: the retraction or the vocalic gesture predominates, and this fact effectively makes the realization of dark laterals more vowel-like, phonetically and structurally.

Nevertheless, the light—dark variation in /l/ is far from universal. Languages reported to lack it are German (Sproat and Fujimura 1993), Spanish (Simonet 2015), and even some dialects of English (cf. Wells 1982, Carter 2002) such as Irish English (Jones 1957).

Sproat and Fujimura (*ibid.* 310) quite logically suggest that the laterals in languages without the variation do not involve retraction of the tongue dorsum, and this articulation safeguards the lateral's phonological status as a syllable-margin constituent, i.e. a consonant.

2.4.2. Synchronic properties of OA ղ <Ł> and Feature Economy

The absence of lateral vocalization in all Armenian varieties shows that tongue dorsum retraction was not a cognitively salient gesture of either of the original laterals, i.e. the two laterals could not have been distinct in this respect. Nevertheless, the hypothesis that the two original laterals were articulatorily characterized as 'neutral' with respect to the tongue body retraction gesture, i.e., that they phonologically contrasted only in terms of [VOICE], does not entail that they were in all other respects identical.

First, acoustic properties of voiceless laterals typically include increased spectral noise at higher frequencies (Fuchs et al. 2010; Blevins 2015) which makes voiceless laterals, even if

articulatorily approximants, more obstruent-like acoustically.[16] Typologically, it is also quite likely that the two lateral phonemes differed in terms of duration; as robustly observed by Gordon and Ladefoged (2001), voiceless sonorants often have longer duration than their voiced counterparts.

It also likely that they differed in terms of the 'stiffness' of the apical closure actuated by the tongue raising gesture, i.e., */l̥$^{(h)}$/ was more obstruent-like not only acoustically, but it is likely that it was produced with a relatively stronger apical closure than voiced */l/. This is phonologically possible since a loss of central occlusion in laterals leads to no impairment of the lateral percept.[17]

Further below, I argue that the phonemic split of the inherited PIE */l/ into two (pre)Armenian laterals (OA լ <l>) */l̥$^{(h)}$/ and (OA ղ <ł>) */l/ goes back to an allophonic distribution with the voiceless lateral in the syllable onset and voiced lateral in syllable codas. Such a distribution is compatible with the typological observation that voiceless lateral approximants are restricted to syllable-initial positions (Maddieson and Emmorey 1984: 187).

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[16] The articulation of sonorants phonologically marked for voice (i.e. voiceless) in some cases involves low amplitude vocal fold vibration (cf. Blevins 2015). In other words, voiceless sonorants do not have to be voiceless in a strictly phonetic sense. Gordon and Ladefoged (2001) describe a continuum in which the glottal aperture ranges from closed to open and phonation from voicelessness via breathy voice, modal voice, creaky voice to a glottal stop. A photoglottographic analysis of Icelandic voiceless sonorants in Bombien (2006) shows that, apart from the presence of frication in voiceless sonorants, the difference between voiced and voiceless laterals is that the vocal cords are adducted in a rather lax way during the production of the voiceless laterals compared to the voiced one, thus indicating that the former are produced with breathy phonation rather than true voicelessness. The contrast of voicing thus simply refers to an auditory contrast associated with control of vocal fold tension. Properly, voiceless laterals are thus phonologically simply not [MODAL VOICE], which is presumably the case for voiced laterals.

[17] Ladefoged and Maddieson (1996:185) report a study by Dent (1984) regarding the cluster /sl/ in British English: during the production of the cluster, the central escape channel which produces the alveolar fricative remains open also for the production of the lateral. In order to produce an authentic percept of a lateral, it is sufficient to narrow the profile of the tongue. Central occlusion in English laterals is thus a variable feature depending on phonological, prosodic, and sociolinguistic factors.

The assumption that the two laterals were articulatorily different in terms of the ‘stiffness’ of apical closure is in turn compatible with the above mentioned empirical studies of gestural-episodic realizations of English laterals in codas.

Ignoring OA ⱬ /h/,[18] OA ⱈ /χ/, a voiceless uvular fricative, was the only obstruent in the phonological system lacking a voiced counterpart. According to Clements (2003: 295), *the feature economy principle essentially predicts that a feature* [within the inventory of a phonological system] *which is not fully utilized will either tend to disappear or to acquire correlative partners*. A voiced lateral approximant realized with an incomplete central occlusion, i.e. a laxed tongue tip raising gesture—laxed both in terms of articulatory effort (‘stiffness’) and in terms of timing coordination of the laxed gesture—was acoustically the closest phonological entity to the uvular approximant realization of [ʁ̞]. It is quite likely that a lateral with a relaxed apical occlusion *[l̞] (alternating with a lateralized *[ʁ̞])[19] was one of the (originally perhaps conditioned) realizations of the pre-traditional ⴂ <ł> */l/. Conditioned alternations and reflexes based on such leniated lateral articulations of /l/ are, for instance, attested intervocalically in some Sardinian dialects; e.g. Genoni dialect *littɛra* ‘letter’ ~ *ũa ʁittɛra* ‘the letter’; *oʁia* ‘olive’, cf. Northern Sardinian *olia*, Lat. *olīva* ‘id.’ (cf. Molinu 2009: 130f; Scheer 2015: 323f).

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[18] Blevins (2015) characterizes /h/ as a voiceless laryngeal glide.

[19] Due to the absence of an explicit IPA symbol for a lateral without complete central occlusion, [l̞] is here intended to mark a lateral with the alveolar ridge as its target but with lowered or “lost” central occlusion. It is a curious fact that the modern /ʁ/ is generally still phonetically realized as an approximant (i.e. [ʁ̞]), rather than a fricative (cf. e.g. [mɛʁ̞u] ‘bee’, unless realized emphatically, cf. [ʁɑt] the name of the letter <ղ>, etc).

2.4.3. Effects of tongue tip raising gesture on [HIGH]

Meillet (1911) lists a handful of instances which are supposed to show that the influence of the presumably velarized lateral ղ <ł> *[ɫ] is seen on the quality of the preceding vowel; cf. **ուղեղ** *ułeł* 'brain' with an oblique **ուղղոյ** *ułłoy*. He is no doubt correct in reconstructing this alternation as a result of the internal -**ե**- /-e-/ being a reflex of an earlier */i/, i.e. *[ułíł] ~ *[ułiłóy], with a pretonic reduction of the high vowel in the oblique under the paradigmatic shift of stress. However, it is not clear how the lowering of */i/ is the result of the retracted (or velarized) articulation of the lateral, since retraction generally operates in the front—back dimension and not in the high—low dimension; e.g. Lat. *famulus* < *[famełos], cf. *familia*, Osc. **fameřias** 'household'; Gk. θεμέλιος 'foundation')

I argue that the lowering of */i/ is evidence that (either in a word-final position or before a tonic vowel?) the pre-traditional ղ <ł> */l/, at least in certain registers, exhibited an approximant allophone with incomplete apical closure, i.e. (a lateralized) [ʁ̞]. The lowering of */i/ to [ɛ] observed in the data adduced by Meillet may be due to the physiological fact that the front part of the tongue during the lowered realization of word-final *[ʁ̞] (for */l/) did not fully reach the domain of a [+HIGH] feature, and this phonetic fact is anticipated in the production of the preceding vowel, hence the non-high front [ɛ] instead of the intended high front */i/.[20]

[20] We may note that, in terms of relative chronology, this lowering has nothing to do with the original distribution of the laterals since it definitely postdates the high vowel reductions—otherwise */i/ would have changed to /e/ also in the oblique form *[ułiłóy]. Furthermore, this lowering is lexically (and perhaps also dialectally) conditioned; cf. **ուղիղ** *owłił* ~ **ուղղոյ** *ułłoy* 'straight', which together with many other lexemes, does not exhibit the change.

Conversely, the spelling realization of OA **այղ** *aył* (i.e. *[ɑjl]) as the traditional **այլ** *ayl*—with the voiced lateral consonant unchanged to [ʁ] as was the case elsewhere, i.e. OA **ղ** <ł> */l/ > trad. /ʁ/ except after *[j]—shows that the feature [+HIGH] of the preceding palatal glide (realized by the tongue tip raising gesture) prevented a complete relaxation of the apical occlusion of the following lateral causing the preservation of the lateral realization of the segment in this context.

2.4.4. Diachronic instability of voiceless laterals

Subsequent to the change of */l/ to /ʁ/, the originally voiceless lateral phoneme became voiced, since voiceless laterals are diachronically universally unstable. Typological parallels are found in Proto-Tai, which formerly possessed a distinction between /l/ and */l̥$^{(h)}$/, but most of the languages of the family merged the voiceless lateral into the voiced one (cf. Li 1977). Typologically, sonorants that either are or become non-contrastive are naturally expected to be realized as voiced; such a change is also reconstructed for Tedim /l/ from Proto-Chin*/l̥/ (Khoi Lam Thang 2001). The elimination of the voicing feature specification for the remaining single lateral in the inventory may be therefore descriptively ascribed to phonological markedness.

The fact that all Armenian dialects uniformly reflect the original lateral as a typical or 'neutral' lateral clearly indicates that the source phoneme had uniform 'neutral' articulatory characteristics, and that these are diachronically irrelevant.

2.4.5. OA ղ <Ł> from dissimilation

Further evidence against the secondary articulation distinction may be found in the pattern of the distribution of the laterals produced by indigenous dissimilation. Dissimilated

native */r/ and */n/ are also invariably reflected as OA ղ <ł> (trad. /ʁ/), never as OA լ <l> (trad. /l/), regardless of the position within a word or vocalic context; cf. **եղբայր** *ełbayr* 'brother' < PIE *b^{h}rātēr (= Go. *broþar*, Gk. φρᾱτηρ, Lat. *frāter*); **աղբիւր** *ałbiwr* 'well' < PIE *b^{h}rē-u̯r̥(= Gk. φρέαρ < *φρήϝαρ; cf. Goth. *brunna*); **եղունգ** *ełowng-n* 'fingernail' < *nu-n-g^{h}- (≈ ὄνυξ; cf. OHG *nagal*); **եղեամն** *ełea-mn* 'hoarfrost' < *ini-amn̥ < *h$_1$iH-n-i-? (≈ Lith. *ýnis*, SCr. *înje* < BSl. *ī˒nias < *h$_1$iH-n̥-i̯os; cf. *h$_1$ei̯H-s-om > PGmc. *īsą > Goth. *eis* 'ice' ; cf. Martirosyan 2010: 252; Derksen 2008: 213; Kroonen 2013: 271); **ողորմ** *ołorm* 'supplication' < */or-or-mo-/; etc.

In the case of */r/, Meillet (1894: 299; and already before him Hübschmann 1875) was of the opinion that PIE */r/ was in view of the Indo-Iranian reflexes "cacuminal" (i.e. retroflex). Such a realization seemed compatible with the back of the tongue being retracted, which would naturally feed into the allegedly velar(ized) lateral.[21] However, no such scenario can be conjectured for the alveolar nasal. If the distinction between the laterals was one of voicing, it is again straightforward that the voiced */r/ and */n/ invariably dissimilate into the voiced OA ղ <ł> */l/ (trad. /ʁ/), not into its voiceless counterpart OA լ <l> */l̥$^{(h)}$/ (trad. /l/), since [VOICE] simply subsisted in the dissimilation process.[22]

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[21] In fact, the exposition here is a mirror image of Hübschmann's and Meillet's assumptions regarding the rhotics and liquids. Indo-Iranian languages were thought to represent the *original* PIE situation with a single rhotic/liquid phoneme, say *R, which subsequently split into */r/ and */l/ in the "European" branch. According to Hübschmann (1875), one of the phonological features that identifies Armenian as an independent branch of IE is, on the one hand, this split of *R which it shared with the "European" languages, while on the other, Armenian still preservesd certain "archaic" lexemes from before the split (specifically **սրունք** *srown-kʿ*, *srōn-i-cʿ* 'shin, leg' which was aligned with Lat. *clūnis* 'tail-bone', Gk. κλόνις, Lith. *šlaunìs* 'thigh' < **k̂Rau̯nis*, cf. Ved. *śróni-* 'hip, loin, buttocks'). In this Neo-grammarian scenario, the "retracted" lateral is the basic and phonetically more direct reflex of *R, while the "fronted" (clear or palatalized) lateral is its conditioned allophone.

[22] Dissimilation of a borrowed */r/ into OA ղ */l/ is also attested in **սաղաւարտ** *saławart* 'helmet; tiara' from MIran. **sārawarti-* (clearly segmentable to *sār- 'head' and *var- 'to cover'). However, a Middle Iranian *[l] would be in any case reflected as OA ղ.

2.5. Native speaker description of OA *l* and *ղ* in *Ars Grammatica*

The anonymous Armenian commentator and translator (ca. 550 - 600 CE) of the "Art of Grammar" by Dionysius Thrax (originally written ca. 150 BCE) gets unfavorable reviews from probably the two most influential modern authorities on the subject. Hübschmann (1876: 61) discussing the subject harshly concludes: *Sie* [= *die Angaben des Autors*] *zeigen nur, dass er gar keinen Sinn für den Werth der armenischen Laute und ihr Verhältniss zu einander hatte.* Though with more kindness, Adontz ([1915=] 1970:cxlvii) similarly observes: *L'œuvre traduite de Denys accuse une certaine inconséquence dans sa façon de traiter les son arméniens inconnus en grec.*

Admittedly, the Armenian analysis of certain phonological features (such as the vowels) obviously apes the analysis of Greek in the original; however, the section on the Armenian consonants departs quite saliently from Thrax's on Greek consonants and arguably represents an original and authentic take of the commentator on the subject.

Indeed, it seems difficult to reconcile the commentator's analysis of the Armenian laterals with the traditional assumption of a front—back distinction. Nevertheless, if we follow the commentator's lead and look at the analysis in terms of the pattern that he describes, his classification is evidently based on introspective acoustic impressions and intuitions about his own native language.

First, let us assume that the Armenian commentator is truly seeking to implement the principles behind Thrax's analysis of the Greek consonants, rather than superimpose the analysis of Greek upon the Armenian phonological system. One of Thrax's principles is used to classify

what the great grammarian calls *voiceless* (ἄφωνα), or traditionally called "mute", sounds *because, more than the others, they are ill-sounding, just as we call an ill-sounding tragedian* voiceless (ἄφωνον).[23] By this, Thrax presumably means an actor with a disagreeably weak voice, and who is therefore difficult to hear distinctly. Nowadays, we classify these as stops, cf. Table 2.4 below.

The criterion Thrax invokes to arrange these sounds apparently involves (acoustic) "hairiness", thus δασέα 'shaggy [sounds]' ([p^h, t^h, k^h], i.e. our [aspirated]) vs. ψιλά 'bald [sounds]' ([p, t, k], i.e. our [unaspirated]) vs. μέσα '[sounds] in between' ([b, d, g], i.e. [voiced] or media).

Table 2.3: Thrax's analysis of Greek stops

ψιλά	μέσα	δασέα
'smooth, bald'	'medial'	'shaggy, hairy, rough'
π [p]	β [b]	φ [p^h]
τ [t]	δ [d]	θ [t^h]
ϰ [k]	γ [g]	χ [k^h]

The Armenian commentator extends Thrax's classification according to the principle of acoustic "hairiness" to almost all the consonants that exist in Armenian, not just stops[24]. The commentator obviously does not consider the degrees of "hairiness" to be technical terminology, since some of the labels are translated by different Armenian equivalents in the course of his analysis to either best fit the context or simply for rhetorical effect. Thus, while these

[23] Thrax "On elements": [ἄφωνα δὲ ἐστιν ἐννέα · β γ δ ϰ π τ θ φ χ. ἄφωνα δὲ λέγεται,] ὅτι μᾶλλον τῶν ἄλλων ἐστὶν ϰακόφωνα, ὥσπερ ἄφωνον λέγομεν τὸν τραγωιδὸν τὸν ϰακόφωνον.

[24] He actually leaves some out; e.g., ʒ Y*[j] is simply left unmentioned throughout the analysis.

characterizations apparently reflect broad acoustic descriptions and not strict phonetic categories as in modern linguistics, they still do not have to be linguistically inaccurate in terms of the presented pattern.

The commentator performs his analysis with observations like this one: *And* [these sounds] *are the ones "in between":* բ ([b]) [which is] *in between* մ ([m]) [and] պ ([p]) [on the one hand] *and* փ ([p^h]) [on the other]*;* [this is] *on account of* [its, i.e. [b]'s, being] *more "rough" than* [both] մ ([m]) *and* պ ([p])*, but more "subtle" than* փ ([p^h]).[25] He then goes on to discuss all the sounds in Table 2.5 in a parallel manner (see Appendix A). The arrangement is based on the commentator's discussion.

Table 2.4: Anonymous commentator's analysis of Armenian consonants

լերկ lerk, *նուրբ nowrb*, *բարակ barak*	*միջակք mijak-kʿ*	*թաւ tʿaw*, *թանձր tʿanjr*, *ստուար stowar*, *խաժ xaž*
'smooth, hairless, subtle'	'medial'	'shaggy, hairy, dense, rude'
պ [p] / մ [m]	բ [b]	փ [p^h]
կ [k]	գ [g]	ք [k^h] / խ [χ]
տ [t]	դ [d]	թ [t^h]
ս [s] / զ [z]	ջ j [ʤ]	ճ [ʧ^h]
ն [n]	ղ [ʔ]	լ [ʔ]
շ [ʃ]	ժ [ʒ]	ղ [ɣ^h]

The boxed correspondence ն /n/—ղ <ł>—լ <l> is the one we are interested in. Based on the apparent pattern, the Armenian ղ <ł> (> /ʁ/) of this speaker is in terms of

[25] The translation is mine; the original text of this passage in its full form can be found in the Appendix.

acoustic "shagginess" in between his ⲛ /n/ and his ⲗ <l>, or ⲗ̀ <ɬ> is "thicker" than ⲛ /n/ but "thinner" than ⲗ <l> just as ⲃ /b/ is "thicker" than ⲙ /m/ but "thinner" than ⲫ /p^{h}/, etc.

Based on the pattern established by the correspondences, I believe there is only one way we can make sense of this analysis: for this speaker, ⲗ̀ <ɬ> (trad. /ʁ/) is a *voiced* alveolar lateral *[l], and it is in the same relation to a *voiced* alveolar nasal ⲛ *[n] as is a voiced bilabial ⲙ *[m] to a voiced bilabial ⲃ *[b]; by the same token, the voiced alveolar ⲗ̀ <ɬ> *[l] is in the same relation to ⲗ <l> as is a *voiced* bilabial ⲃ *[b] to a *voiceless aspirated* bilabial ⲫ*[p^{h}]. Therefore, ⲗ <l> is virtually equivalent to a voiceless (aspirated) alveolar lateral *[l̥$^{(h)}$].

The different 'acoustics' of the two laterals are also confirmed by the author's treatment based on different principles. The details do not concern us here, but the fact of the matter is that the laterals are consistently treated separately from each other. For instance, the principle that determines the appurtenance among the διπλᾶ "doubles" (ⲕⲣⲕⲛⲁⲕ *krknak-k'*) subsumes ⲗ <l> but not ⲗ̀ <ɬ>. This may be due to the fact that voiceless (or "shaggy") laterals typically include increased spectral noise at higher frequencies (Fuchs et al. 2010) and this acoustic fricative component may have been perceived as an extra feature on the lateral. By the same token, ⲗ̀ <ɬ> is classified among the ὑγρά "liquids" (ⲛⲁⲓⲕ *nay-k'*), but not ⲗ <l>.

The consistent separation of the two lateral segments by the commentator can hardly be explained if we assumed the tradition front—back distinction between the laterals. I propose that this ancient analysis testifies to an acoustically heavily marked distinction between the two lateral phonemes, i.e., OA ⲗ̀ <ɬ> */l/ vs. OA ⲗ <l> */l̥$^{(h)}$/.

PART II: THE ORIGIN AND DISTRIBUTION OF PIE */l/ IN ARMENIAN

2.6. Phonemicization of allophones

Phonemic splits based on a reanalysis of a regular allophonic alternation are the most common way for languages to acquire new phonemes. For example, the Old English phoneme /s/ had two allophones, an unconditioned voiceless [s] and a voiced [z] conditioned by the environment between two vowels. Even though the vowel that followed the phoneme was lost through regular reduction of English final syllables, the initially conditioned voiced realization of the surface representation of /s/ persisted through language acquisition. Since this representation was no longer conditioned by the environment, it was reanalyzed as 'unconditioned' or phonemic; i.e. OE /s/ → [s ~ z] > ME /s/ : /z/.

The sources of the allophonic realization of a lateral segment as voiceless in Armenian are from a PIE perspective ubiquitous. Initial clusters of a voiceless consonant plus a liquid are extremely frequent, cf. e.g. *pleh$_1$- 'to fill', which underlies Armenian լի *li* 'full'. It is quite likely that clusters of this type were allophonically voiceless early on, on their way from PIE to Armenian, especially after the voiceless stops became spirantized (just as in English, cf. [pl̥eɪ] 'play'); i.e., PIE *[plē-i̯o-] > preArm. *[p$^{\text{h}}$lējo/*pl̥ējo] (= Gk. πλεῖος) > *[φl̥ēo/*φl̥io] > *[l̥i-o-] > OA լի *li* (= *[l̥i]); PIE *[k̂lu-to-] > preArm. *[ɕl̥uθ$^{\text{u}}$o] (= Ved. *śrutá-*) > *[(h)l̥uβ̬-o-] > OA լու *lu* (= *[l̥u]) 'heard', etc.

To be sure, this allophonic realization does not correspond to the distribution in the inherited lexicon that we determine from the point of view of OA (cf. լու *lu* *[l̥u] 'heard' < PIE *k̂lu-, but also լոյս *loys* *[l̥ojs] 'light' < PIE *leu̯k-os-), but it shows that in the history of the

language, voiceless laterals were plausibly present in the language allophonically.[26] Had this state of affairs persisted in the history of Armenian, the situation would be parallel to the distribution of the laterals in modern Icelandic; cf., *hlíða* [l̥iːða] 'slope' (< **k̂li-*) vs. *líða* [liːða] 'to feel' (< **li-*)

2.6.1. Partial complementary distribution in the native lexicon

Hübschmann (1883:72) recognizes two environments for the partial complementary distribution in the native lexicon. I argue that word initially the inherited voiced alveolar lateral was devoiced. Before a consonant, the inherited lateral remained voiced; i.e., PIE */l/ was realized in pre-Arm. as *[l̥-] ~ *[-lC-]. This hypothesis of a voicing distinction does not exlude that the voiced lateral may have been also phonetically velarized in preconsonantal position.

The 'preconsonantal' or coda reflex also shows up on the original word-final laterals since these resisted the later apocope; e.g., ***աստղ*** *astł* 'star' < PIE **h₂s(-)tēl (≈ Gk. ἀστήϱ); -***ավղ*** *-awł* [AGENT NOUN SUFFIX] < *-ȧ-θᵘul < PIE *-Ḫ-tōl (≈ Slav. *-tel-ь); ***ածուխ*** *acowx* 'coal' (~***ածուղ*** *acowł*) < *h₂n̥gᵘōl (≈ OCS *ǫglь*), etc. All instances of a synchronically word-final OA ***լ*** /l/ correspond to medial laterals prior to the loss of prehistoric final rimes; e.g. OA -***լ*** /-l/ [INFINITIVE SUFFIX] < pre-Armenian */-l-o-/ < PIE */-lo-/; ***ուլ*** *owl* 'kid' < PIE *pōl-o- (= Gk. πῶλος 'young of an animal'; Goth. *fula*); etc.

Original clusters with a post-consonantal lateral seem to be invariably reflected as OA ***ղ*** /ł/ (cf. Kümmel 2007: 282); e.g. ***եղեւ*** *eɫew* 'was; turned out' < *e-kᵘl-e-to (≈ Gk. ἔπλετο); ***յղի*** *y-ɫi*

[26] As they still may be in modern EA, in which laterals may devoice word-finally, esp. if pronounced in isolation, cf. ***այլ*** *ayl* [ɑjl̥] 'other', etc, even though this process occurs for a different reason.

'pregnant' < *i- + *iŋ(φ)li-o/a- < *en-pleh$_1$-; ջիղ *jił* 'sinew' < *g^{uh}ī-sl-ā (≈ Lith. *gýsla*); սիր-ող *sir-oł* 'lov-ing'< *k̂eir-o-tlo-, cf. ծն-աւղ *cn-awł* 'parent; begetter, one begetting' < *ĝenh$_1$-tōl (≈ Gk. γενέτωρ). The assumption of Olsen (1999: 35) that ամուլ *amowl* 'barren' goes back to PIE *n̥-putlo- (= Skt. *a-putra-*, Av. *a-puθra-* 'sonless'; Paelign. *puclois* 'pueris') rather than the traditional pre-Arm. *an- (< PIE *n̥-) + *φōl- (< PIE *pōl-) is undemonstrable and controversial (cf. Martirosyan 2010: 53).[27]

The two developments above, when factored into the traditional analysis of the complementary distribution, modify the traditional picture of the distribution into one in which the two prehistorical laterals are contrastive only intervocalically; i.e. PIE */l/ → */-l̥$^{(h)}$-/ vs. */-l-/, otherwise *[l̥$^{(h)}$-] ~ *[-l(C-)], which theoretically represent the environments of neutralization.

[27] The sequences of voiced (aspirated) stops and **-r-* undergo metathesis, but no secure examples of */-Cl-/ are attested. Perhaps the alternative forms *ewł-o-* ~ *eł-o-* 'oil' (dialectally almost exclusively **eł*, cf. Martirosyan 2010:272) also testify to a geminate reflex. Traditionally, եւղ *ewł* 'oil' was taken to somehow reflect **elai̯u̯om* (cf. Lat. *olīva*, *oleum*, Gk. ἔλαιον), but neither metathesis nor anticipation can explain the synchronically absolutely marginal alternation *e : i*, i.e. եւղ *ewł* : իւղոյ *iwłoy* (Meillet 1903:493). Thus, Matzinger 2006 proposes to derive the item from **sei̯b-lo-* (cf. Gk. εἴβω, Toch. A *sep-* 'to annoint', *sepal* 'salve, fat'), which would lead to a regular **éi̯u̯lo-* : **iu̯ló-* alternation. The diphthong **ei̯* (Matzinger's closed /ẹ/) would then change to an open [ɛ] before */u̯/ (cf. դեւ *dew* 'demon' : *diwi* < Iran. **dai̯u̯a-*). However, this derivation does not explain the forms without /u̯/, as is justly observed by Kortlandt 2008, who essentially reconstructs **selpo-* (cf. Gk. ἔλπος, Alb. *gjalpë* 'butter', Ved. *sarpís*, Toch. A *ṣälyp*, B *ṣalype*, German *Salbe*). This reconstruction, in turn, assumes an ad hoc **-po-* > **-o-* and still does not explain the alternation. Perhaps both the alternation and the original absence of /u̯/ (contra Clackson 2004-05:157, if I understand his gloss correctly) and also the fact that we have a voiced */l/ (which develops into /ʁ/ which may have been responsible for the "excrescent" /u̯/) could be explained if we take Matzinger's reconstruction **sei̯blo-* to a stage in which **-bl-* lenited to **-βl-*, which assimilated into a voiced **-ll-*. Thus, the complex coda in the stem, cf. *['hɛjl.lo] : *[hɛjl.'loj.jo], could have simplified in the dialects into *['ɛl.lo] : *[ɛl.'loj.jo] while in the standard language into *['ɛj.lo] : *[ɛj.'loj.jo] > *[ejl] : *[iloj] > *[eʁ] : *[iʁoj] ~ *[e^{w}ʁ] : *[i^{w}ʁo] > [(j)ɛwʁ] : [juʁo], and this is what we find in the "oldest" manuscripts alternating with the related [(j)ɛʁ] simplified from a geminate **ɛllo*.

2.6.2. Vocalization of laryngeals

I argue that the distribution of the Armenian phonemes in the native lexicon are to a great extent predictable if we assume that the original allophonic distribution of the inherited lateral was based on its position within a syllable—the voiceless allophone occurring in the onset, and the voiced allophone in the syllable coda. This pattern may be obtained by considering the following assumptions:

(i) Allophonic distribution in which the inherited lateral stays voiced in the coda but is devoiced syllable initially;

(ii) The allophony occurs at the prehistoric stage of Armenian with undominated *COMPLEXCODA, allowing only for simplex codas to surface in the output;

(iii) The existence of phonetic processes which eliminate post-lateral consonants. Such an analysis is already partially offered in Olsen (1999:778ff), in which a pre-laryngeal lateral develops into OA ղ <ł> before the laryngeal segment disappears, e.g. PIE *$g^{u}\underline{l}h_2$-ēn (cf. Gk. βάλανος) > *K_{α}l.Hin > OA *կաղին kałin* 'acorn'. The author, however, unfortunately operates with Meillet's concept of a velarized lateral, and as a consequence, some laryngeals for her do not trigger the presumed lateral retraction.[28]

We will see below that all laryngeals may be assumed to have participated in the development, since what mattered was the structural position of the laryngeals in the syllable,

[28] Olsen (*l.c.*) "It appears that **-l-* is velarized, emerging as *-ł-* under the influence of a following **-h_2-* or **-h_3-*, while the more weakly articulated **-h_1-* does not have this effect."

not their phonetic substance. Olsen's account therefore needs to be modified for the laryngeal analysis to be fully exploited.

(iv) I propose that the realization of a supporting vowel on the laryngeal in specific positions was subject to a high-ranking WEIGHT-TO-STRESS principle. The epenthetic vowel was realized 'to the right' of a laryngeal (i.e. *-H̥- > *[-H$_{ɑ}$-]) in all positions except if the vowel occurred in a penultimate syllable, which carried primary word stress. In stressed penultimate syllables, the epenthesis had to produce a closed or heavy syllable, in which case the epenthetic vowel may have regularly occurred 'to the left' of the laryngeal, except when the syllable would have otherwise been long by position. Structurally, this provision may be essentially reduced to two original linear sequences of segments: (i) *-CH̥C- > *[- C$_{ɑ}$H.C-], on the one hand, and (ii) *-CH̥CC- > *[-C. H$_{ɑ}$C.C-], on the other.[29]

A related assumption is that the vocalization of word-medial resonants predates the vocalization of a specific subset of the inherited laryngeals, the ones resulting from the inherited *-CRHC- sequences; i.e. PIE *-CR̥HC- > (1) *[-C$_{ɑ}$RH.C-] > (2) *[-Cɑ.R$_{ɑ}$H.C-] (via a

[29] This assumption may be generalized to the reflexes of PIE *-RH- ; cf. the distinction between OA ր /r/ (< *-r-) and ռ /r̄/ (< *-r.r- < *-r.H-); cf. հարաւ *haraw* 'south' < PIE *p$_{\text{̥}}$rH-u̯o- (Skt. *pūrva-* 'first; eastern', Av. *pauruua-* 'first; southern') via *[φ$_{ɑ}$rH.wo] > *[φɑ.rH̥.wo] > *[φɑ.r$_{ɑ}$H.wo] vs. առաջ *arāǰ* 'first' < PIE *p$_{\text{̥}}$rH-u̯-i̯o- (Skt. *pūrvya-* 'first; former, old') via *[φ$_{ɑ}$rH.wjo] > *[φɑ.rH̥w.jo] > *[φɑr.H$_{ɑ}$w.jo] > *[φɑr.rɑw.jo]; cf. also քառասուն *kʿarasown* '40' < *(k$^{\text{ʷ}}$)tu̯r̥-HK̂ont- (cf. Lat. *quadrāgintā*) via *[θγ$^{\text{ʷ}}{}_{ɑ}$rH.tʃon.θi] > *[θγ$^{\text{ʷ}}$ɑ.rH̥.tʃon.θi] > *[θγ$^{\text{ʷ}}$ɑr.H$_{ɑ}$.tʃun.ni] > *[k$^{\text{h}}$ɑr.rɑ.su.ni]; գառն *gaṙn* 'lamb' < PIE *u̯r̥h$_1$-ēn (= Gk. FAPHN) via. *[γ$^{\text{ʷ}}{}_{ɑ}$r.Hin] > *[γ$^{\text{ʷ}}{}_{ɑ}$r.rin]. OA արաւր *arawr* < *h$_2$erh$_3$-tro-m (= Gk. ἄροτρον) entails that the inherited cluster *TR was at this stage still syllabified as a complex onset, i.e. *[Hɑ.r$_{ɑ}$H.θ$^{\text{ʷ}}$ro] > *[ɑ. ɾɑβ.ro]; cf. աղաւրի *aławri* 'mill; miller; i.e. *a grinder' < PIE *h$_2$l̥h$_1$-tr-ih$_2$- (= Gk. ἀλετρίς) via *[HɑlH.θri.$^{\text{j}}$ɑ] > *[Hɑl.H$_{ɑ}$.θri.$^{\text{j}}$ɑ]; etc.

theoretical *[-Cɑ.RH̥.C-]).[30] The vocalization is assumed to be mediated through a supporting vowel reflected as /-ɑ-/.[31]

2.7. Diachrony and distribution in three stages

The relevant structures are typically composed of a root in the prototypical shape *CRH-, an optional suffix with one or two consonants (*-CCV) and an ending (*-CV). The sequence PIE */CRH(C)CV/ therefore effectively exemplifies this development, as other structures may be easily derived by added or reducing segments in various positions within the prosodic word.

2.7.1. Stage I: Complex margins inherited

Armenian inherits complex margins from PIE. By the end of this stage, syllabic resonants are vocalized in medial positions (cf. fn. 30). Thus, PIE */CRH(C)CV/ is at the end of the first stage syllabified as Proto-Armenian (PA) *[$C_{ɑ}$RH.(C)CV].

2.7.2. Stage II: *Complex Coda and Weight-to-Stress

The shape of the inherited Armenian words (with reduced vowels and final rhymes that later disappear reinstalled) can be invariably fit into a maximal syllable template with simplex codas. This can be first of all seen in the invariable prehistoric reductions of complex codas in

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[30] Syllabic resonants are in this proposal assumed to be vocalized extremely early in medial position, while in final position they stay syllabic until much later (cf. the different treatment of PIE **-om* vs. **-m̥*). Laryngeals are first lost in the sequences *-VHC- > *V:C (already in PIE?); later, laryngeals are realized as vocalic or consonantal based on PIE syllabification. Syllable-final inherited laryngeal consonants after resonants are in Proto-Armenian either deleted in the context of *R_N (Mondon 2008 [2010]) or 'revocalized'; e.g.*[sl̥h_2.sk̂i̯e.mi] > *[hɑl.Hɑʧʰ.ʧʰe.mi] >**աղաչեմ** *ałačʿem* 'I entreat'.

[31] I obviously do not subscribe to the 'triple reflex' realization of laryngeals, which is controversial. Sporadically, however, a vocalized laryngeal is arguably influenced by a strong labial environment *[polh$_1$.u̯ih$_2$] > *[φo.lɑH.wī] > **φolɑw* ~ **φolow*, cf. **յոլով** *y-olov* 'many'; cf. also **հոլան֊ի** *holan-i* ~ dial. *holon-i* 'uncovered' ←< *[φɑ.lɑm] < *[φɑl.Hm̥] < **pĺ̥h_2m* (cf. Lat. *palam* 'openly'; see III. 3.3.3.2.).

word formation and composition; e.g., the prefixation of ընդ *ənd* ‘with; towards; instead of; in, on; at the time of’, which reflects a merger of PIE *$h_2$ent-i ‘at the front’ (Gk. ἀντί, Lat. *ante*) with PIE *en-to- (Gk. ἐντός ‘within, inside’); e.g. OA ընկեր *ənker* ‘companion’ ← */ənd-ker-/ ‘with-eat.AOR’; ընկալա- *ənkala-* ‘receive’ ← */ənd-kala-/ (suppletive aorist stem of ընդունի- *ənd-owni-*, i.e. [ən.du.ni-], with the underlying consonant parsed as onset); etc.

Second, the evidence for simplex codas may be observed in the system of Armenian deictic particles, the synchronically asymmetrical forms of which can be arguably reduced to */ɑi̯+DEICTIC+ADVERBIAL/; cf. Table 2.5, below.

Table 2.5: OA deictic system and *COMPLEXCODA

ADVERBIAL	/-s-/ ‘HIC-DEICTIC’			/-d-/ ‘ISTIC-DEICTIC’			/-n-/ ‘ILLIC-DEICTIC’		
*/-dɛ/ ‘at’	աստ	*a-s-t*[32]	< *[ɑjs.dɛ]	այդր	*ay-d-r*	< *[ɑjd.dɛ][33]	անդ	*a-n-d*	< *[ɑjn.dɛ]
*/-ɾ̥/ ‘to’	այսր	*ay-s-r*	< *[ɑ́j.sɾ̥]	այդր	*ay-d-r*	< *[ɑj.dɾ̥]	անդր	*a-n-dr*	< *[ɑj.nɾ̥][34]
*/-ti-V/ ‘from’	աստի	*a-s-ti*	< *[ɑjs.tí-]	այտի	*ay-ti*	< *[ɑjd.tí-][35]	անտի	*a-n-ti*	< *[ɑjn.tí-]

Moreover, the attested OA or traditional complex codas are invariably the result of either the final syllable apocope (or reduction) or high vowel reduction in pretonic syllables; e.g. անդ *and* ‘there’ < *[ɑ́n.dɛ] (cf. անդէն *andēn* ‘at the very place’ ← */ande+in-/); գառն *gaṙn* ‘ram’ < *[ˈɣ$^{\text{u̯}}$ɑr.rin] (< *u̯r̥h_1-ēn, cf. Gk. FAPHN); ընթերցցիս *əntʰercʿcʿis* (traditionally)

[32] *[ɑjs.dɛ] (cf. անդ *and* ~ անդէն *andēn*) > (assimilation) *[ɑjs.tɛ] > (*COMPLEXCODA) *[ɑs.tɛ] > աստ [ɑst]

[33] *[ɑjd.dɛ] > (dissimilation) *[ɑjd.ɾɛ] > այդր [ɑj.dɾ̥] (apocope and resyllabification; cf. լիտր *litr* *[li.tɾ̥] a unit < Gk. λίτρα)

[34] *[ɑj.nɾ̥] > (Excrescence) *[ɑjn.^{d}ɾ̥] > (*COMPLEXCODA) անդր [ɑn.dɾ̥]

[35] *[ɑjd.ti.-V-] > *[ɑjt.tí.-V-] > այտի [ɑj. ti] (with the preservation of /ɑi-/ due to OBLIGATORY CONTOUR PRINCIPLE)

[ən.t^{h}ɛɾts^{h}.ˈts^{h}is] < *[ən.t^{h}ɛɾ.ts^{h}ə.ˈts^{h}i.si] ← /ənd-tʿercʿ-icʿ-i-si/; *թարգման tʿargman* 'interpreter' (trad.) [t^{h}ɑrg.mɑn] < *[t^{h}ɑr.gu.mɑ́.nu]; cf. Akkadian *targumanu*, Class. Arab. [tur.dʒu.maː.nu].

Let us assume that the weight effect triggered by the stress and the elimination of the complex margins are of such a date that they affect the vocalization of the inherited consonantal laryngeals. There are two patterns which depend on the number of consonants after the laryngeal sequence, i.e., */CɑRHCCV/ > *[CɑR.H$_{ɑ}$C.CV] and */CɑRHCV/ > *[Cɑ.ˈR$_{ɑ}$H.CV].

In the first instance, from an underlying */CɑRHCCV/ we obtain *[CɑR.ˈH$_{ɑ}$C.CV], i.e. the laryngeal 'vocalizes' to the right, since the unattested *[Cɑ.ˈR$_{ɑ}$H.CCV] contains a complex margin which, had it ever existed, gradually died out in the speech community. In the second instance, from */CɑRHCV/ we obtain *[Cɑ.ˈR$_{ɑ}$H.CV], in which the laryngeal 'vocalizes' to the left, since *[CɑR.ˈH$_{ɑ}$.CV] contains a stressed syllable which is light (and *[CɑR.ˈH$_{ɑ}$C.V] of course does not have an onset). Since the speech community optimally preferred to have a stressed heavy syllable (hence the high-ranking WEIGHT-TO-STRESS Principle), the forms in which the laryngeal vocalized to the right (had they existed) did not make it as input to the next stage.

2.7.3. Stage III: Complementary allophonic distribution

At this stage, laterals that are syllabified as syllable onsets correspond to OA ļ <l> phoneme, the ones syllabified in the codas to OA ł <ł>. With the vocalized reflexes of the laryngeals still present, pre-laryngeal (in terms of the previous stage) laterals are syllabified in the coda positions. Once the laryngeals are lost, the conditioning environment is obscured in the intervocalic position, and since presumably devoicing is no longer operative, the voiced laterals

are re-syllabified as such. This is the basis of the partial complementary distribution that we observe since Hübschmann 1883 in the native lexicon.

2.7.4. Why voiceless allophones?

As we have discussed earlier, voiceless sonorants are not necessarily voiceless in a strictly phonetic sense. They may be properly characterized as not [MODAL VOICE] (cf. Bombien 2006).

Since the distribution of the laterals is determined by syllabification, the motivation for the process is clearly related to the principles underlying syllabification. Syllabification is conventionally defined in terms of organization of segments for phonological purposes. This usually entails that a syllable may be, and very frequently is, a domain of phonological processes. This definition takes a syllable as a given: syllables exist to organize segments. But why do segments need to be organized in the first place? Why does a language need to have phonological processes operating at a local organizational level? An intuitive answer to these questions may be that sounds need to be organized (by definition into syllables) in order to be 'optimally heard' (i.e. cognitively processed) and that phonological processes (in a syllable) are the reflection of an optimal realization of a segment in the context of other local segments or morphological markers.

The most optimal syllable is one with maximal rise in sonority at the beginning and minimal drop in sonority at the end (cf. *the Dispersion principle* of Clements 1990). In terms of sonority, the main acoustic correlate of which is intensity (Parker 2003), voiced laterals are, right after glides and rhotic approximants, the most sonorant consonantal segments. In terms of the sonority index (calculated from the mean intensity measurements of English coda consonants;

cf. Parker 2011), laterals are right in the middle (index 9) between the most sonorous low vowels (index 17) and voiceless stops (index 1).

At the stage assumed for the Armenian allophonic distribution, the laterals may phonologically pattern only as syllable margins, not as nuclei. However, in terms of their relative intensity they may qualify as both. What seems to have happened in the prehistory of Armenian is that syllable-initial laterals altered the feature [MODAL VOICE] to avoid an ambiguously sluggish sonority transition and to ensure a maximum sonority rise in the initial semisyllable. The abrupt sonority rise created a transition that provided phonetic enhancement of the optimal clues into the featural substance of both the lateral and the vowel in the onset-nucleus configuration.

2.8. Distribution and etymological data

Cognate forms which are in the synchronic system of Old Armenian attested with different lateral phonemes are the best testing ground for the proposed algorithm. For starters, de Lamberterie (2005:352) is reluctant to completely dismiss Olsen's laryngeal analysis, but in the face of the discrepancy between ***կեղ*** *keł* 'wound'(= Gk. βέλος < PIE *$g^{u}elh_1$-os-) and ***կալաւ*** *kalaw* 'seized; had' (> *(e-)$g^{u}l̥h_1$-to) in the end still leans toward Meillet's rule of intervocalic OA ***լ*** <l> vs. word-final OA ***ղ*** <ł>. However, in my proposal, the cognates are reconciled with the proposed recontructions: PIE *$g^{u}elh_1$-os- > *['kel.Hoh] > ***կեղ*** *keł* *[kel], where the lateral is originally in the coda, vs. PIE*e-$g^{u}l̥h_1$-to > *[e.ka.'lₐH.βo] > ***կալաւ*** *kalaw* *[kal̥$^{(h)}$aw], where the lateral is originally in the onset, since in penultimate syllables stress motivated the laryngeal vocalization 'to the left' of the laryngeal consonant to close the syllable.

Other examples may be adduced; cf. ***յոլով*** *y-olov* 'many' *[joḷow] < *[φo.ˈlaH.wi] < PIE *polh$_1$-u̯-ih$_2$-, in which the lateral syllabifies into the onset, since the stress triggers the vocalization that creates a heavy syllable; the same can be assumed for ***ալաւունք*** *alawown(-kʿ)* 'Pleiades'< *[ha.ˈlaH.u̯un] < PIE *pḷh$_1$-u̯ōn, if we assume that the form is based on the singular.

2.8.1. Intraparadigmatic vs. inter-lexeme analogy

The verb ***կեղեմ*** *kełem* 'torment' may be mechanically retrojected into an original root present (cf. Lith. *gélti*, OE *cwelan*),[36] in which case it could be argued that the form contradicts the proposed algorithm which predicts an unattested **կելեմ* **kelem*—however, this form may also plausibly go back to a thematic present with laryngeal onset before the lateral, namely PIE *g$^{\text{u̯}}$elH-e-, or simply represent an inner-Armenian denominal verb derived from ***կեղ*** *keł* 'wound.' Thus, it is true that the proposal does not magically explain every single lateral in every attested OA form, but compared to the traditional application of ad hoc inter-lexical, semasiologically based analogy, it takes the discussion to a level of derivational and morpho-phonological possibilities which have a potential to limit or expand these possibilities further.

To be sure, a certain amount of analogy has to be assumed to derive all the attested forms; however, the analogy assumed for my proposal is intra-paradigmatic, i.e. based on alternations occurring within the paradigm of a particular lexical item, which has to be assumed for the attested inflectional system in any case; see (3.4.1.).

Thus, the lateral in ***աստղ*** *astł* *[astəl] 'star' is from a regularly voiced coda in the reflexes of PIE *h$_2$stēl (sic!; cf. Olsen 2010) but the plural ***աստեղք*** *asteł-kʿ*, for instance, should have

[36] Cf. LIV 2001:207, fn. 2; "Durch eine athematische bildung läßt sich das Fehlen der Resonantengemination in Germ. erklären."

strictly speaking given a voiceless lateral (assuming of course that it directly continues the PIE NOM.PL *h_{2}stel-es, which is questionable).

Similarly, OA ***աղի*** *ał-i* 'salty' traditionally allows for two derivations (cf. Olsen 1999:435). It may be a derived adjective from the phonetically regular OA ***աղ*** *ał* 'salt' (< *[hɑl] = Gk. ἅλς < PIE *sāl-s) produced by the addition of a synchronically productive adjective marker OA ***-ի*** *-i*, or it may be purely mechanically taken to reflect PIE *sal-i̯o- (= Gk. ἅλιος). In the latter scenario, the lateral should have been syllabified into the onset and devoiced. Note, however, the Cilician (=MArm.) form ***անաղի*** *an-ali* 'unsalted' (Martirosyan 2010: 24), which continues the inherited adjective (= Gk. ἅλιος) and indicates that OA ***աղի*** *ał-i* goes back to */ɑl-/ + */-i-/.

Moreover, there may be some evidence that the different dialects leveled different forms of the same paradigm. In the oblique cases of PIE *sal-, e.g. *sal-es (= Lat. *salis*), the lateral would have been devoiced. Is that what we see in a peculiar rendition of the word in the glossary of Autun going back to ca. 900 CE (cf. Weitenberg 1983), in which the Latin word *sal* 'salt' is glossed by a dialectal Armenian *ahl*, i.e. perhaps dialectal */a$l̥^{(h)}$/? Feydit (1964:60[32]) thinks that the spelling reflects an open low vowel before a 'guttural,' i.e. [ɐ], but that is clearly ad hoc.[37] The peculiar spelling *ahl* produced by a Latin speaker with no voiceless lateral in the inventory of his or her language may thus likely approximate the sound of a voiceless (Middle) Armenian *[a$l̥^{(h)}$].

[37] Cf., *puelc* (= OA ***փողք*** *pʿołkʿ*) ˙ *gula*; *hualn* (= OA ***ողն*** *oł(n)*) ˙ *spina*; *cuelc* (= OA ***կողք*** *kołkʿ*) ˙ *dorsum*; *astil* (= OA ***աստղ*** *astł*) ˙ *stella*, etc., which render the usual, i.e. voiced lateral.

2.8.2. Conditioning environment: onset vs. coda

I argue that the analyses of Meillet (1936) and Greppin (1986) are inadequate. Meillet's regular intervocalic or prevocalic type ***կաղին*** *kałin* 'acorn' is a special case of a coda (preconsonantal) lateral checked by a laryngeal onset which later disappeared; i.e., PIE *$g^{ʷ}l̥h_2$-en-V- > preArm. *[$g^{(ʷ)}$ɑl.Hi.nV] > OA ***կաղին*** *[kɑ.lin]. Greppin's regular type ***դալար*** *dalar* 'fresh; green' reflects the cases in which the supporting vowel is in a penultimate syllable and develops to the left of the laryngeal to produce a heavy stressed syllable which causes the syllabification of the lateral into the onset; i.e., PIE *$d^{h}alh_1$-ro- > preArm. *[d̪ɑlH.ro] > *[d̪ɑ.$l_{ɑ}$H.ro] > OA ***դալար*** *[dɑ.$l̥^{(h)}$ɑr].

Since word-initial position is automatically syllable-initial, and preconsonantal position is syllable-final, the traditionally assumed partial complementary distribution, *[#l-] ~ *[-łC-], to which we can securely add the inherited final laterals, *[-ł#], is just a special case of the allophony conditioned by the positions within a syllable, i.e. PIE */l/ → PA *[-$l̥^{(h)}$-] ~ *[-l$-].

Both traditional analyses misgenerate as far as the OA final laterals are concerned, since they erroneously assume that the relevant sound changes occurred after the apocope of final rhymes, in the relatively quite recent Sassanian period. However, the majority of the synchronic final laterals became final only after the apocope and show the same distribution as other medial laterals.

The following is a list of intervocalic and synchronically word-final lateral phonemes in OA that corroborate the present proposal.

2.8.3. OA ղ <Ł> from original coda laterals

PIE /CRHCCV#/ > PA *[CɑR.ˈHɑC.CV][38]

աղաչեմ *ałačʿem* 'I entreat' *[ɑlɑʧʰɛm] < *[hɑl.Hɑʧʰ .jɛ.mi] < *sl̥h₂-sk̂-i̯e-mi (Gk. ἰλά-σκ-ο-μαι)

աղաւրի *aławri* 'mill(er)' *[ɑlɑwri] <*[ɑl.Hɑ.θri.jɑ] < *h₂l̥h₁-tr-iḭ̯h₂ (Gk. ἀλετρίς)

PIE /CRHCV/ > PA *[CɑR.Hɑ.ˈCV]

աղաւնի *aławn-i* 'dove' *[ɑlɑwəni] < *[φɑl.Hɑ.β̯u.n-i.i̯ɑ-] < *pl̥h₂-bʰ-ōn- (Lat. *palumbēs*)

PIE /C(V)RHV/ > PA *[ˈCɑR.HV]

կաղին *kałin* 'acorn' *[kɑlin] < *[gɑl.Hi.nɔ] ←< *gᵘl̥h₂-en-o- (Gk. βάλανος)

ծաղր *całr* 'laughter' *[ʦɑləɾ] ←< *[ʦal.Hu] < *ĝelh₂-ōs (Gk. γέλως)

հող *hoł* 'ground' *[hol] < *[φol.Hoh] < *polh₂-os- (cf. Hitt. *palḫi-* 'wide')

դեղ *deł* 'verdure; herb' *[d̯ɛl] < *[d̯el.Hoh] < *dʰelh₁-os- (cf. Gk. θάλος, θαλλός 'sprout')

եղն *ełn* 'hind'*[ɛlən] < *[Hɛl.Hin] < *h₁elh₁-ēn (Lith. *élnis*, OCS *jelenь*)

կեղ *keł* 'wound' *[kɛl] < *[ˈkɛl.Hoh] < *gᵘelh₁-os- (Gk. βέλος)

գող *goł* 'thief' *[gɔl] < *[ɣᵘol.Ho]- < *u̯olh₁-ó- (cf. Lith. *vìlti* 'to deceive')

PIE */CVR(CV)/ > PA *[CVR.(CV)]

գեղձք *gełj-kʿ* 'glands' *[gɛlʣəkʰ] ←< *[g̈ɛl.ʣɑ] < *gʰelĝʰ-eh₂- (OCS *žlězy* 'id.')

աղտ *ałt* 'dirt; salt' *[ɑlt] < *[hɑl.di] < *sal-d- (Goth. *salt*)

աղ *ał* 'salt' *[ɑl] < *[hal] < *săl-s (Gk. ἅλς)

ծնաւղ *cnawł* 'parent' *[ʦənɑwl]< *ĝenh̥₁tōl (Gk. γενέτωρ 'id.', cf. OCS *-tel-ь*)

աստղ *astł* 'star' *[ɑstəl] < *h₂stēl (Gk. ἀστήρ)

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[38] The melodic templates solely indicate relevant syllable boundaries and the historical position of the Armenian accent.

ասեղն *aseł(n)* 'needle' *[ɑsɛln] < *asil + *-n- < *$h_2e\hat{k}$-ēl (cf. Kortlandt 1985; Olsen 1999:409f)[39]

2.8.4. OA *լ* <L> from original onset laterals

PIE /CRHCV/ > PA *[Cɑ.ˈRɑH.CV]

յոլով *y-olov* 'many' *[joˌlow] < *[φo.ˈlɑH.wi] < *polh$_1$-u̯-ih$_2$- (Gk. πολύς 'much')

ալիւր *aliwr* 'flour' *[ɑˌliwɾ] < *[Ha.ˈli.wr̥] < *h_{2}leh$_1$-u̯r̥ (Gk. ἄλευρον 'id.')

հոլանի *holani* 'uncovered' *[hɔˌlɑni] ← *[hɔ.ˌlɑn] *'openly' < *[φɔ.lN̥] < *[φɑl.Hm̥][40] < *p$\acute{l}h_2$m (Lat. *palam*)

փլաւ *pʻlaw* 'fell (into ruin)' *[p^{h}əˌlɑw] < *[p^{h}u.ˈlɑH.θ^{u}o] < *Hpō.lH̯.to < *$h_2$po(-)h_3lh_1-to

դալար *dalar* 'fresh; grass' *[dɑˌlɑɾ] < *[dɑ.ˈlɑH.ro] <*[dɑlH̯ro] < *d^{h}alh$_1$-ro- (Gk. θαλερός)[41]

կալաւ *kalaw* *[kaˌlaw] 'seized' < *[ɛ.gɑ.ˈlɑH.θ^{u}o] < *e-g^{u}l̥h$_1$-to

PIE */(CV)RV/ > PA *[(CV).RV]

լոյս *loys* 'light'*[lˌojs] < *leu̯k-os- (Gk. λευκός 'white')

լի *li* 'full' *[lˌi] < *[φlˌi^{j}ɔ] < *pleh$_1$-i̯o- (cf. Gk. πλεῖος)

ալիք *alikʻ* 'gray' *[ɑˌlik^{h}] < *[φo.li.^{j}o] < *pol-i̯o- (Gk. πολιός)

ուլուլալ *ulul-a-l* (dial.) 'to lament' < *[u.lu.la-] (Ved. *ululí-*, Lat. *ululāre*, Lith. *ulūlóti*)

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[39] The medial *ե* e in this form goes back to a lowered /i/; the reconstruction *$h_2\hat{k}$-el-m̥ (Martirosyan 2010: 115) does not explain the oblique ***ասղան*** *asłan*, i.e. */ɑsil-ɑn-/.

[40] The laryngeal in *[φɑl.Hm̥] is lost in the environment PIE */R_N/ (Mondon 2010). For the syllabification of the lateral, compare ***հողմ*** *hołm* 'wind' < *[hol.mo] < *[hon.mo] < *[Hon.Hmos] < *$h_2$ónh$_1$-mo-s (cf. Gk. ἄνεμος). Further, cf. ***հոլանեալ*** *holan-eal* 'openly', ***հոլանեցի*** *holan-ecʻ-i* 'I uncovered' which indicate that *-an-* is etymologically not a present formant; also, cf. ***հոլոնիմ*** *hol-on-i-m* 'I strip myself'; ***հոլաթեւեմ*** *hol-a-tʻew-e-m* 'I stretch my arms' may go back to a reanalyzed **holan* 'open(ly)' → *holan-e/i-m* 'I uncover' → *hol-an-e/i-m*, hence synchronic stem *hol-(an-)*.

[41] The mere fact that ***-ար-*** *-ar-* is a productive suffix within OA is not necessarily an argument against the origin of this specific form (*contra* Clackson 1994:118f.). Since ***-ար-*** *-ar-* from PIE */-ero-/ is phonologically improbable and reconstructions such as PIE *-r̥(r)o- are clearly ad hoc, the suffix is best seen as based on a reanalysis of a phonetically regular sequence in words like *d^{h}alh$_1$-ró-s (θαλερός), i.e. */d̪alar-o-/ →*/d̪al-ar-o-/ 'verdant; not dry'.

ուլն *uln* *[ul̥ən] ‘neck; nucklebone’ < *[u.lin] < *Hōl-ēn (i.e. *Heh$_3$l-en-; Gk. ὠλένη ‘elbow’)

ուլ *owl* ‘kid’ *[ul̥] < *[φu.lo] < *pōl-o- (Gk. πῶλος)

գոլ *gol* ‘warmth’ *[gɔl̥] < *[γ^{u}ɔ.li] < *u̯ol-ih$_2$- (OHG *walī* ‘lukewarmness’)

իլ *il* ‘spindle’*[il̥] <*[Hi.lɔ] < *Heh$_1$l-o- (Gk. ἠλακάτη ‘distaff’)

-**լ** *-l* *[-l̥] < *[THEMVOWEL-.lɔ-] < *-lo- (cf. OCS *-lъ* [RESULTATIVE.PTCPL])

դալ *dal* ‘colostrum’*[d̤ɑl̥] < *[d̤ɑH.lɑ] < *d^{h}h̥$_1$-l-eh$_2$- (cf. Gk. θηλή ‘mother’s breast’)

ջլեմ *jlem* ‘to plow’ *[ʤəl̥ɛm] < *[ĝ^{h}ō.lV.mi] ← *ĝ^{h}ōl-o- > (cf. Skt. *hala-* ‘plow’ < *ĝ^{h}h$_1$-el-o-)[42]

եկուլ *e-kowl* ‘(s)he swallowed’ *[ɛkul̥] < *[egu.lo] < *e-gul-o (cf. Lat. *gula* ‘throat’, PSlav. *glъtati ‘to swallow’; LIV^2: 192)

մոլոր *molor* ‘erred; misled ADJ.’ *[mol̥oɹ-] < *[mo.lo.rV] ←< *mol-V- (Lith. *mãlas* ‘lie’, Latv. *màlds* ‘error’)[43]

աւելի *aweli* ‘greater; more’ *[ɑwɛl̥i] < *h$_3$b^{h}el-ii̯o- [GERUNDIVE] (Gk. ὀφέλλω ‘increase’)

[42] Cf. **ջող** *jol* ‘log’ < ?*/juł/ < *g^{h}ōl (i.e. *ĝ^{h}oh$_1$-(ō)l) ‘stake; plow’ (cf. Lith. *žúolis* ‘log’); cf. Martirosyan 2010: 437.

[43] Cf. *mel-s-eh$_2$- > *[mɛl.lɑ] > **մեղ** *meł* *[mel] ‘sin’ (OIr. *mell* ‘destruction; sin’; cf. Gk. βλασ-φημέω ‘speak profanely’ < *ml̥s-).

CHAPTER 3

INHERITED FINAL NASALS

3.1. Introduction

Armenologists, for the most part, agree to disagree on whether an inherited final nasal is preserved or lost in OA in a given environment. Curiously, however, virtually all scholars unanimously echo Meillet's hypothesis that the PIE final nasals are exceptionally preserved in monosyllables; cf., Meillet (1936: 56); Pisani (1951: 47f.); Godel (1975: 99f.); Kortlandt (1985: 19 = 2003: 63); Hamp (1988); Stempel (1990); Clackson (1994: 55); Olsen (1999: 5f.), etc.

In this chapter, I argue that counting syllables does not account for all the inherited lexemes that were monosyllabic at some point in the prehistory of OA. I propose that the inherited nasals in PIE final syllables are lost after original short vowels, while nasals in inherited final syllables are preserved if those syllables originally contained either a long vowel or a syllabic nasal, i.e., PIE *-ŏN, *-ĕN, *-ăN, *-ĭN, and *-ŭN are lost, whereas PIE *-ōN, *-ēN, *-āN, *-īN, *-ūN,[44] and *-N̥ are all reflected as OA *-ն -n*. The assumption that nasals after long vowels (PIE */-V:N/) and syllabic nasals (PIE *-m̥, *-n̥) were preserved in Proto-Armenian (PA) but nasals after short vowels were not (PIE */-VN/) may be explained by reference to the presence or absence of nasalization in the original nuclei, e.g. */-ōN/ → *[-õːN], *[-m̥] vs. */-ŏN/ → *[-oN].

[44] This structure is hypothetical, I have found no data on PIE *-ūN in Armenian, since atonic *-uH-m is reflected as *-u̯H̥n.

Such a distribution would rely on a synchronically and diachronically well-established observation that long vowels are phonetically more prone to become nasalized, exhibit nasality contrast or diachronically preserve nasalization than short ones; cf. Hombert (1986, 1987), Hajek (1997); Hajek and Maeda (2000); Whalen and Beddor (1989); Beddor (1993).[45] The assumption of vocalic nasalization would also explain why final long vowel plus nasal sequences and syllabic nasals patterned alike; namely, the attested OA final nasals that correspond to the inherited PIE final nasals are reflexes of the nasalized vocalic components of the pre-Armenian final syllables and historically shows up as OA final **-ն** *-n*, i.e. PIE *[V:N] and *[-N̥] > OA **-ն** *-n*.[46]

Monosyllables which are in the literature adduced as evidence for the conditioning based on syllable-count invariably continue forms with a long vowel. They preserve inherited final

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[45] WALS (see <http://wals.info/chapter/10>) additionally reports on a related phenomenon: in some languages such as Lango (Nilotic; Uganda) nasalized vowels only appear in bimoraic sequences, e.g., [cɔŋ] 'knee' vs. [cɔ̃.ɛ̃] 'knees', [ʔo.rã.ã] 'sterile'.

[46] It is possible to think of the inherited long vowel plus nasal sequences as phonetically nasalized long vowels already in the proto-language; since the long vowel hosted the nasal feature, the word-final nasal consonant was dropped (perhaps first in sandhi), i.e. PIE */-V:N/ → *[Ṽ:], e.g. */h$_2$eĥk-mōn/ → *[ħakʲmõː$^{(N)}$], cf. Ved. *áśmā*, Lith. *akmuõ*, despite Gk. ἄκμων, which can easily be due to restoration (cf. Hom. δῶ < *dōm). Based on Greek, we may assume that the final nasal in these sequences had been restored in the pre-history of Armenian, but, of course, it is equally possible that the original input already consisted of nasalized vowels. In any case, consonantal nasals (in the short vowel plus nasal sequences) are in Armenian lost together with the rest of the final obstruent codas, i.e. *mr̥tom > *m$_{ɑ}$rðo > **մարդ** 'man', just like *eb^{h}eret > *eb̈ere > **եբեր** *eber* 'brought', a process which was apparently blind to the nuclear content, cf. *u̯r̥h$_2$-ēn *[-ēː(n)] > *[γ$^{ʷ}_{ɑ}$r.ħĩ$^{(N)}$] > **գառն** *garn* *[gɑ.rn̥] (traditionally [gɑ.rəˌn]) 'lamb', just as *septm̥ > *[hɛφ.t^{h}n̥] (> *[^{h}ɛβ.t^{h}ã$^{(n)}$])> **եւթն** *ewtʻn* *[ɛw.t^{h}n̥] (traditionally [jɛʊ.t^{h}əˌn]) '7'. For my reconstructed postconsonantal OA **-ն** *-n* *[-n̥] becoming (traditional) [-ən], compare the disyllabic traditional realization of **դուռն** *dowrn* [du.rən] or **լեառն** *leaṙn* [ljɑ.rən], which puzzle Godel (1975: 17). An assumption of classical *[du.rn̥], *[lɛ̯ɑ.rn̥] accounts for both the 'hardening' of /-ɾ-/ before a nasal and the attested disyllabic realization. Namely, the syllabic nasals are lost historically, cf. mod. Arm. **դուռ** *dur* 'door', **լեռ** *leṙ* 'mountain', **շարժում** *šaržum* (obl. **շարժման** *šaržman*) 'movement' from OA **շարժում-ն** *[ʃɑɾ.ʒú.mn̥] but not consonantal nasals in the coda, cf. mod. Arm. **անուն** *anown* 'name'. In OA **-իւն -եան** *[(-)iw(n̥)] the final nasal resyllabifies into the coda prior to the loss, cf. trad. [(-)ju(n)] (= EA **-յուն -յան** *-yun -yan*). The traditional pronunciation [dú.rən] of the orthographic **դուռն** *dowrn* (= *[dú.rn̥]) with an intervening schwa is an artifact of the period in which the syllabic nasals were already lost in the spoken language and no longer "pronounceable" by the native tradition without the supporting schwa in this environment.

nasals precisely because the nasal feature was preserved as a feature of prehistoric nasalized long nuclei, e.g. ք**ան** *kʻan* 'than' (= Lat. *quam*, Osc. **paam** 'id.') < PIE *k$^{\text{u}}$ám (< *k$^{\text{u}}$éh$_2$-m); շ**ուն** *šown* 'dog' (= Gk. κυών, Ved. *śvā́* 'id.') < *k̂u̯ón; տ**ուն** *town* 'house' (cf. Gk. δῶ, Av. *dąm*) < PIE *dóm (< **dŏm-s and **dŏm-m̥), etc.[47] That all of the above cited monosyllabic forms contained a long nucleus in PIE is assured by their morphological formation; however, there is also a possibility that in individual daughter languages, in fact, any *accented*, i.e. non-clitic monosyllabic word may have been phonologically conditioned to contain a long (or bimoraic) nucleus (cf. Byrd 2013:113f.). If such was the case for the pre-historic phonological input to OA, the most secure way to figure out the reflexes of short vowel plus nasal sequences in inherited monosyllables is to look at clitic elements such as preverbs or adpositions. Fortunately, we have a secure reflex of monosyllabic PIE *ĕn 'in' (> Gk. ἐν, OLat. *en*, Goth. *in*) which is in Armenian continued by a form *without a nasal*, i.e. PIE *ĕn > OA *ի ~ յ- i ~ y-* 'in'.

The following section (3.2) presents a brief overview of the previous scholarship on the subject. The scholarly disagreement is a result of the fact that none of the currently proposed solutions finds a way of utilizing phonological arguments to settle the overall distribution of the inherited final nasals in their entirety. As a result, all of the treatments so far rely on intricate

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[47] Kortlandt (1985:19) also lists **ինչ** *inčʻ* 'anything' (cf. Ved. *kíṃcit* 'what, pray?' < *k$^{\text{u}}$im=k$^{\text{u}}$id); however, this form is best considered a relic of a fossilized form univerbated already in the proto-language. This makes the preservation of the inherited non-final nasal regular. Neither *ին- *in-* (virtually from *k$^{\text{u}}$im) nor *-չ *-čʻ* (in the relevant sense) figure as independent morphological elements. Moreover, **ինչ** *inčʻ* (in its pronominal function!) is synchronically indeclinable: traditionally listed forms such as GEN.SG **իրիւք** *irikʻ*, DAT.SG **իմիւք** *imikʻ* or INSTR.SG. **իւիւք** *iwikʻ* are arguably built on the pronominal stem **ի-** *i-* '(some)thing' (cf. Lat. *quid* < *k$^{\text{u}}$id), which can also mean 'what?' (cf. Ved. *kíṃ* < PIE *k$^{\text{u}}$í-m), plus -**ք** *-kʻ* (< *-k$^{\text{u}}$e). The integrity of the morpheme as such, and specifically of the sequence *-nčʻ-*, is also seen in the secondary (i.e. inner-Armenian) nominalization of the form: **ինչ**(**ք**) *inčʻ(-kʻ)* 'property; goods', cf. GEN.PL **ընչից** *ənčʻ-i-cʻ*. The only regular reflex of the isolated PIE *k$^{\text{u}}$im is therefore **ի-** /i-/ without a nasal, which based on its function apparently phonetically merged with the reflex of *k$^{\text{u}}$id.

arguments involving analogical leveling with multiple sources for the attested outcomes. A solution based solely on phonological conditioning that encompasses all the attested data is proposed in section (3.3). Section (3.4) investigates the evidence for the phonological preservation of the final nasal in the inherited *-āN sequence.

Phonetically regular reflexes of the inherited final *-āN sequences are preserved as such in the isolated ք*ան k'an* 'than' (from *k^{u}ām, cf. Osc. paam) as well as in ո*մն o-mn* 'someone', ո*մ*ա*նք o-man-k'* (NOM.PL) 'some people' from *k^{u}os-māN (cf. Dor. μάν, Ion. μήν 'indeed', perhaps related to Ved. *sma*). A paradigmatic preservation of the sequence is argued to be also reflected in դ*ուռն dowr̄-n* (< *d^{h}ur-eh$_2$-m, cf. Gk. θύρᾱν 'id.') in the meaning 'door' (NOM.PL դ*ուրք dowr-k'*), which phonetically merged with *d^{h}ur-h$_3$ōn (cf. Gk. θυρών 'hall') reflected in the meaning 'gate' (NOM.PL դ*ռունք dr-own-k'*). The assumption of the phonetic merger straightforwardly explains why դ*ուռն dowr̄-n* (1. 'house-door'; 2. 'portal, gate') exhibits the peculiar dual semantics precisely in the singular, while the respective plural forms are semantically distinct; cf. դ*ուրք dowr-k'* 'door(s); θύραι', դ*ռունք dr-own-k'* 'gates; πύλαι'.

The preservation of the nasal in *-āN indicates that the syncretism of the nominative and accusative singular cases of the inherited feminine *ā-stems in the synchronic *a*-stem inflection has to be analogical since the regular reflexes of the inherited ACC.SG */-ā-m/ would have preserved the nasal and logically resulted in a synchronic *n*-stem paradigm (cf. դ*ուռն dowr̄-n* above and ո*ղջամբ oł̌j-am-b* 'safe-and-sound' further below). In any case, it is shown that the securely reconstructed feminine *ā-stems (< *-eh$_2$-) reflected as OA synchronic *a*-stems did not play as significant a role in the creation of the paradigm as was previously thought (*pace* Meillet

1936: 74). The overwhelming majority of the synchronic *a*-stems follow either the original neuter collective *-h̥$_2$- (> -ă-) stem formation or stems in *-iH- or *-uH-, which are regularly reflected as pre-OA *-i̯ă- or *-u̯ă-, respectively. All of these would contain a short vowel before the nasal of the original final ACC.SG marker */-m/. In other words, in the majority of nominals that are synchronically inflected as OA *a*-stems, the merger of NOM.SG *-$^{\text{i}}/_{\text{u}}$̯ă (< *-$^{\text{i}}/_{\text{u}}$H-s) with ACC.SG *-$^{\text{i}}/_{\text{u}}$̯ă-N (< *-$^{\text{i}}/_{\text{u}}$H- +*-m) is, according to this analysis, phonologically regular.

Finally, a new analysis is proposed for the inherited diminutive suffix ***-իկ*** *-ik*, cf. e.g. ***աղջիկ*** *ałǰ-ik* 'girl' (cf. ***աղիջ/ճ*** *ałiǰ/č* "virgin; prostitute'), which exhibits synchronically suppletive *n*-stem inflection in the oblique forms, i.e. ***աղջկան*** *ałǰ-k-an*, ***աղջկունք*** *ałǰ-kown-kʿ*, etc. The origin of this anomaly has been up till now unexplained. I argue that these forms reflect earlier paradigms based on the inherited *-Kŏn (NOM/ACC.SG NEUTER), *-kn̥- (oblique cases) and *-Kon- (NOM/ACC.PL), which were in the non-oblique cases of the singular (i.e. cases without further morphological material) subject to the regular loss of the final nasal after a short vowel, i.e. NOM.ACC.SG *-ŏn > OA -Ø but *-n̥- > OA ***-ան*** *-an* and *-ŏn- > OA ***-ուն-*** *-own-*.

3.2. Previous scholarship

Based mainly on the reflexes of the inherited final nasals in the OA numerals, it has been almost[48] unanimously assumed that the original final nasals are preserved in OA when they correspond to the original *syllabic* nasals; see Table 3.1, below.

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[48] Pisani (1951: 47ff.) and Stempel (1990) assume that final *-m was lost (except in monosyllables), but final *-n was preserved. Thus, ***եւթն*** *ewtʿ-n* '7' and ***տասն*** *tas*-n '10' acquired the nasal by analogy to the regular ***ինն*** *in-n* '9' (from *enu̯n̥ supposedly a metathesized version of *neu̯n̥). The nasal was restored in exactly the two remaining units which had final syllabic nasals in the proto-language based on forms such as ***-տասան*** *-tasan* '-teen' and ***եւթանասուն*** *ewtʿan-a-sown* '70' with the original nasals preserved medially. Even though a superficially similar process takes place in post-Classical Armenian with number '8', i.e. CA

Table 3.1: Reflexes of the inherited final nasals in OA numerals

PIE	GLOSS	CF.,	OA
*penk$^{\underline{u}}$e	5	Lat. *quīnque*, Goth. *fimf*	հինգ *hing*
*s(u)u̯e$\hat{k}$s	6	Lat. *sex*, Goth. *saihs*	վեց *vecʿ*
*septm̥	7	Lat. *septem*, Goth. *sibun*	եւթն *ewtʿ-n*
*o$\hat{k}$tō(u̯)	8	Lat. *octō*, Goth. *ahtau*	ութ *owtʿ*
*neu̯n̥	9	Lat. *novem*, Goth. *niun*	ինն *in-n*
*de$\hat{k}$m̥	10	Lat. *decem*, Goth. *taihun*	տասն *tas-n*

The preservation of the original syllabic nasals also accounts for the original neuter *men-stems, such as գեղումն *gel-owmn* 'commotion; distortion' from PIE *u̯elū-mn̥ (cf. Gk. εἴλῡμα, Lat. *volūmen*), and the *n*-stem inflection of the inherited root nouns, which can be taken to reflect the respective original accusative singular forms, such as ոտն *ot-n* 'foot' from PIE *pód-m̥ (= Gk. πόδα), cf. NOM.PL ոտք *ot-kʿ* (= Gk. ποδες, Ved. *pā́das*) < PIE *pód-es, and ձեռն *jeṙ-n* 'hand' (Gk. χεῖρα) from PIE *ĝ^{h}ésr-m̥, cf. NOM.PL ձեռք *jeṙ-kʿ* (= Gk. χεῖρες) < PIE *ĝ^{h}ésr-es, etc.

Beyond the assumption that the nasals are preserved in monosyllables and the near-consensus concerning the outcome of the syllabic nasals, the current scholarship fans out into a permutation of all conceivable solutions. The relevant scholarly discussion is summarized in Table 3.2 below. For further details, the reader is referred to the primary sources: Pedersen (1905: 215ff.), Meillet (1936: 56, 79f.), Pisani (1951: 47ff.), Kortlandt (1984: 91= 2003: 63ff.), Hamp (1988), Stempel (1990), or compendia such as Olsen (1999: 5ff.), Godel (1975: 99ff.), etc.

ութ *owtʿ* → ութն [ut^{h}ən] (cf. WA ութը [ut^{h}ə]), an analysis based on analogy does little to illuminate the fate of the inherited final nasals beyond these two (or three) isolated items in the numerical system.

Table 3.2: Previous scholarship on inherited final nasals in OA

PIE	*-m	*-n	*-N̥
Pedersen	**lost** *mard* 'man' < *mr̥-to-m *hars-n* 'bride' < *pr̥k̂-no-m		**preserved (also PIE *ºN-m̥)** *ewtʿ-n* '7' < *septm̥ *gaṙ-n* 'lamb' (≈Skt. *uraṇ-am*) *town* 'house' (≈ Gk. δῶμ-α)
Meillet Olsen	**lost in polysyllables** *mard* 'man' < *mr̥t-o-m		**preserved** *ewtʿ-n* '7' < *septm̥
Pisani Stempel	**lost in polysyllables only** *mard* 'man' < *mr̥-to-m **vs.** *kʿan* 'than' (≈ Lat. *quam*)	**preserved** *gaṙ-n* 'lamb' < *u̯r̥-ēn *in-n* '9' < *enu̯n̥ ← *neu̯n̥	**lost (CA *-n* < singulative suff.)** *tas-n* '10' ← *dek̂m̥ + *-n *ot-n* < *pod- + *-n
Godel Hamp	**lost in polysyllables only** *ēš* 'donkey' < *ek̂u̯-o-m	**preserved** *gaṙ-n* (≈ Gk. ἀρήν) *hars-n* 'bride' < *pr̥k̂-ōn	**preserved** *tas-n* < *dek̂m̥ *ot-n* < *pod-m̥
Kortlandt	**lost in polysyllables** *mard* < *-ũ < *mr̥-to-m *jiwn 'snow'* < *ĝʰiᵉ/ₒm-m *šown* 'dog' < *k̂won-m **vs.** *inč*ʿ 'something' (≈Ved. *kíṃ-cid*) *kʿan* 'than' (≈Lat. *quam*)		**preserved** *tas-n* < *dek̂m̥ *ot-n* < *pod-m̥

The diversity of opinion on the outcome of the inherited final nasals in Armenian is obviously related to one's opinion regarding the development of the NOMINATIVE-ACCUSATIVE syncretism in the singular of particular nominal categories. For instance, the nasals in the Armenian NOM.ACC.SG forms may either reflect NOM.SG forms in lengthened grade, i.e. PIE *-ēn/-ōn > PA *-in/-un > OA **-ն** *-n*, in which case the synchronically homophonous ACC.SG forms are analogical, or they may reflect ACC.SG forms in full grade covered by the original accusative singular ending that subsequently either merged with the stem or was lost, in which case the synchronically homophonous NOM.SG forms are analogical and final nasals continue medial stem consonants, i.e. PIE *-en-m̥/-on-m̥ > PA *-in(n)/-un(n) > OA **-ն** *-n*.

It seems that all of the previous analyses have focused on the distribution of the inherited final nasals in specific OA word-forms relative to their possible sources, including analogical ones. This approach has produced a rich inventory of equally-well justified sources for the attested distribution. The approach of the present analysis is to evaluate these possibilies and establish a list of forms that are compatible or harmonize with the most economical analysis of the phenomenon. It seems that such a solution involves reference to the original quantity of the vowel preceding the nasal. The following section argues that the most economical solution of the distribution of the attested final nasals and their determined possible PIE sources correlates with the once arguably inherited quantities of the preceding vowels.

3.3. Data overview

The principal assumption of this chapter is that the etymological data relevant to the distribution of the inherited final nasals is amenable to a strictly phonological analysis. Specifically, the inherited final nasals are preserved in prehistoric nuclei with syllabic nasals or with long vowels. There is no trace (directly or within a paradigm) of an inherited final nasal after an original short vowel. The data in Table 3.3 below also strongly suggest that the distribution of the final inherited nasals has nothing to do with syllable-count.

Table 3.3: Distribution based on the quantity of the preceding vowel

PIE	COGNATES	OA	GLOSS
*ĝ^{h}iu̯ōm	Gk. χιών, Av. *ziiå̊*, cf. Lat. *hiem-s*	ȝիւն *jiwn*	snow
*dōm	Gk. δῶ, Ved. *dấm*, cf. Av. *dąm(-i)* LOC.SG	տուն *town*	house
*stel-ōn	Lat. *stolō, -ōnis*	ստեղն *steġn*	branch
*-ti-(h$_3$)ōn	Lat. *-tiō, -tiōn-*	-իւն *-iwn*	NOMINAL SUFFIX
*k̂u̯-ōn	Gk. κυών, Ved. *śvấ*	շուն *šown*	dog

*$h_1$ed-u̯ōn	cf. Gk. ὀδύνη (< * $h_1$ed-on-eh_2)	*երկն erkn*	labor pain
*u̯r̥h_1-ēn	Gk. FAPHN; cf. Ved. *úraṇ-a-* (< *u̯r̥h_1-en-o-)	*գառն gaṙn*	lamb
*(p)st-ēn	Gk. στήνιον, Av. *fštāna*, ON *speni*, Lith. *spenỹs*	*ստին stin*	breast
*k^{u}os *māN	Doric, Aeolic μᾱ́ν, Ion. μήν PARTICLE	*ոմն o-mn*	someone
*k^{u}ām	Lat. *quam*, Osc. **paam**; cf. Ved. *kā́m* ACC.SG	*քան kʻan*	as, than
*sm-ī-m	Gk. μίᾰν ACC.SG (< *sm-i̯h$_2$-m)	*մին min*	one, single
*so(-s) *īm	cf. Gk. οὑτοσ-ί́ν, Ved. *-ī́m* PARTICLE	*սոյն so-yn*	this same one
*dek̂m̥	Gk. δέκα, Ved. *daśa*, Lat. *decem*, Goth. *taihun*	*տասն tasn*	ten
*septm̥	Gk. ἑπτά, Ved. *saptá*, Lat. *septem*, Goth. *sibun*	*եւթն ewtʻn*	seven
*neu̯n̥	Gk. ἐννέα, Ved. *náva*, Lat. *novem*, Goth. *niun*	*ինն inn*	nine
*Hno(H)-mn̥	Gk. ὄνομα, Lat. *nōmen* NOM.ACC.SG.NEUTER	*անուն anown*	name NOM.ACC.SG
*pod-m̥	Gk. πόδ-α, Ved. *pād-am*, Lat. *pedem*	*ոտն otn*	foot NOM.ACC.SG
*ĝ^{h}esr-m̥	Gk. χεῖρ-α (< *χέhρα) ACC.SG	*ձեռն jeṙn*	hand NOM.ACC.SG
*su̯idr-os-m̥	Gk. ἱδρῶ (< *-óh-α) ACC.SG	*քիրտն kʻirtn*	sweat NOM.ACC.SG
*mr̥-to-m	Gk. βροτ-ό-ν, Ved. *mr̥-tá-m* ACC.SG	*մարդ mard*	man NOM.ACC.SG
*to-m	Gk. τόν, Ved. *tám*, Lith. *tą* ACC.SG	*այդ (ay-)d*	that NOM.ACC.SG
*(h_1)en	Gk. ἐν, OLat. *en*, OPruss *en*, Goth. *in*	*ի ~ յ- i ~ y-*	in
*k^{u}im	Cf., Ved. *kím*, Lat. *quem*, Gk. τινά (← *τιν)	*զի z-i*	what ≈ *զինչ z-i-nč‘*

3.4. Nominative-accusative syncretism and PIE *-ām

The NOM.ACC.SG form *ամ am* ‘year’, which reflects PIE *sam-ā (≈ Ved. *sám-ā* ‘season’ < *sm̥h_2-eh_2-Ø), is often cited as evidence for the loss of the nasal in the original ACC.SG desinence *-ā-m (i.e. *-eh_2-m); Olsen (1999: 794). The objective of this section is to argue that the absence of reflexes of final nasals in the synchronic *a*-stem inflection is not decisive in determining the outcome of the inherited final *-ā(-)m (or *-āN) sequences. The conventional hypothesis is based on the presumed implicational relation between the two following assumptions:

(i) the nominative and accusative cases in OA *o*-stems are represented by a single form; therefore, the nominative-accusative syncretism in the OA *o*-stems is a result of a phonetic

merger of the desinences for the two respective cases, i.e. PIE */-o-s/ NOM.SG × */-o-m/ ACC.SG > OA /-Ø/ NOM.ACC.SG;

(ii) NOM.ACC.SG forms of other (vocalic) stem inflections must be the result of a phonetic merger, i.e. 𑖪𑖽 *am* (= Ved. *sám-ā*, *sám-ā-m*) < PIE *sm̥h$_2$-eh$_2$-Ø × *sm̥h$_2$-eh$_2$-m.

Note that assumption (i) may still hold, while assumption (ii) is based on the speculative and undemonstrable assumption that a morphologically analogous formal opposition between */-ā-Ø/ and */-ā-m/ was treated phonetically in the same manner as the opposition between */-o-s/ and */-o-m/ (*/-u-s/ and */-u-m/, or */-i-s/ and */-i-m/). In the following, I discuss five arguments that argue against such an assumption.

First, I argue that synchronic inflections are not necessarily reducible to case syncretism caused by the phonetic merger of particular inherited cases, since not all specific word-forms of OA synchronic inflectional classes directly continue specific word-forms of the inherited inflectional classes. Rather, synchronic inflectional classes are analogical extensions of specific inherited morphological word-forms (or proto-types) that prevailed over all the other case forms in the original paradigm presumably due to syntactic usage and/or frequency of occurrence. This assumption finds radical support in synchronic classes of lexemes whose stem inflection is entirely derivable from only a single inherited case form in the original PIE *s-stem paradigms, such as OA *o*-stems built from the inherited NOM.ACC.NEUTER form, OA *r/u*-stems built from the inherited NOM.SG.MASC form, or OA *n*-stems built from the inherited ACC.SG.MASC form.

Second, unlike synchronic *o*-stems, *i*-stems or *u*-stems, OA *a*-stem inflection actually preserves only a handful of securely reconstructible inherited *ā-stems (i.e. *eh$_2$-stems). The

overwhelming majority of the synchronic *a*-stems continue various originally neuter plural or *plurale tantum* formations in *-$\underset{\circ}{h}_2$- or stems in *-$^{i}/_{u}$H-, which were in Armenian syllabified as *-$\underline{i}$ɑ- (i.e. *-$\underline{i}\underset{\circ}{H}$-) and *-$\underline{u}$ɑ- (i.e. *-$\underline{u}\underset{\circ}{H}$), respectively. The merger of NOM.SG *-$^{\underline{i}}/_{\underline{u}}$ă (< *-$^{i}/_{u}$H-s) with ACC.SG *-$^{\underline{i}}/_{\underline{u}}$ă-N (< *-$^{i}/_{u}$H- +*-m) is, according to this analysis, phonologically regular. Therefore, assumption (i), i.e. the assumption of a phonetic merger of these two case forms, still holds for the overwhelming majority of the synchronic *a*-stem forms, just not the few original ones from */-ā/ and */-ā-m/.

Third, extra-paradigmatic evidence for final *-āN sequences shows a preservation of the nasal; cf. ***քան*** *k‘an* ‘than’ (= Osc. **paam**); ***ոմն*** *o-mn* ‘someone’ from *k^{u}o-s *mān (= Gk. μήν). Since monosyllables such as ***ի*** *i* ‘in’ (= Gk. ἐν, Goth. *in*) do not retain the nasal, the only argument that the preservation of the nasal in ***ոմն*** *o-mn* or ***քան*** *k‘an* was due to their monosyllabicity is this very assumption itself.

Finally, the isolated form OA ***ողջամբ*** *oł̌j-am-b* (Luke 15:27) alongside later ***ողջաց*** *oł̌j-a-c‘* may be regularly traced back to a paradigm based on the original ACC.SG *(H)ol(-$\underline{u}$)-$\underline{i}$ā-m or *solh$_2$(-$\underline{u}$)-$\underline{i}$ā-m and plural *(H)ol($\underline{u}$)-$\underline{i}$ā- or *solh$_2$($\underline{u}$)-$\underline{i}$ā-, respectively (cf. the decidedly more frequent ***ողջ*** *oł̌j*, ***ողջոց*** *oł̌j-o-c‘* ‘whole; safe’ < *Hol($\underline{u}$)-$\underline{i}$o-; ≈ OIr. *uile* — or *solh$_2$-$\underline{u}$-$\underline{i}$o-; ≈ Gk. ὅλος, Lat. *sollus*). Similarly, OA ***դուռն*** *dowr̄-n* is argued to reflect ACC.SG *d^{h}ur-ā-m (> Gk. θύρᾱν ‘id.’), since its specific meaning ‘house-door’ (cf. ***դուրք*** *dowr-k‘*, ***դրաց*** *dr-a-c‘* ‘id.’) cannot be *a priori* attributed to PIE *d^{h}ur-h$_3$ōn, which is itself convincingly reconstructed for the lexeme ***դուռն*** *dowr̄-n*, ***դրունք*** *dr-un-k‘* ‘gate; portal’ (Olsen 1999: 129). Originally, I posit two inherited PIE paradigms *d^{h}ur-ā- (Gk. θύρᾱ) and *d^{h}ur-h$_3$ōn (Gk. θυρών). The ‘house door’ paradigm is

continued by OA */d̰ur-an-/ (→ դուռ-ն *dowr̄-n*, դր-ան *dr-an*) in the singular, */d̰ur-a-/ (→ դուր-ք *dowr-k‘*, դր-աց *dr-a-c‘*) in the plural; the ‘gate’ paradigm is continued by OA */d̰ur-un-/ (→ դուռ-ն *dowr̄-n*, դր-ուն-ք *dr-un-k‘*), */d̰ur-an-/ (→ դր-ան *dr-an*). The singular paradigms are in OA homophonous, which superficially creates the appearance of a form with dual semantics in the singular but distinct plural forms for each of the two specific meanings.

3.4.1. Morphological bases of OA nominal inflection

Since Meillet (1913: 45f.), OA nominal inflection have been classified into two types based on the integrity of stems: nominals with *variable* stems and nominals with *invariable* stems. The distinction is in certain inflectional categories historically traceable to the presence or absence of ablaut within suffixes of the inherited morphemes (Klein 2007: 1053). Also, the synchronically variable stems end in a consonant -ն- *-n-*, -ր- *-r-* or -ղ- *-l-*, while the invariable stems end in a vowel -(ւ)ո- *-(w)o-*, -(ե)ա- *-(e)a-*, -ի- *-i-* or -ու- *-u-*.

In this section, I argue that we can assume with absolute certainty that the inherited OA nominal paradigms are based on specific case forms from an inherited paradigm, not on a specific inherited paradigm. Whether syncretism was a result of phonetic mergers of particular cases (e.g. nominative and accusative) or not, may only be true for specific inflectional classes but not for the entire OA morphological system. For some paradigms, specifically the invariable ones, there are multiple candidates for the specific case forms upon which a particular OA stem inflection is based, which might have contributed to some extent to the diachronic transfer between the intial and final morphological stages but cannot be considered to have determined that transfer in any systematic way. Before we delve into further detail, the two apparent

exceptions to my proposed assumption are pronominal paradigms (personal pronouns, relative pronoun, indefinite pronouns, etc.) and a handful of irregular inherited lexemes such as words denoting family members, i.e. paradigms with irregular/suppletive morphology; cf. **հայր** *hayr* 'father.NOM.ACC.SG' (< PIE *ph$_2$-tḗr), **հաւր** *hawr* 'id. GEN.DAT.SG' (< PIE *ph$_2$-tr-ós × *ph$_2$-tr-éi̯);[49] **դու** *dow* 'thou' (< PIE *tŭ), **քեզ** *kʿez* 'thee' (< PIE *tu̯e-ĝʰi); or **քոյր** *kʿoyr* (< PIE *su̯e-sōr), **քեռ** *kʿeṙ* (< PIE *su̯e-sr-o/es), **քորք** *kʿork-kʿ* (< PIE *su̯e-sor-es), etc. The lexemes denoting family members are arguably some of the most frequent words in the language, and their respective synchronic case forms are apparently related by morphological suppletion, not systemic morphological relations.

Otherwise, when two (or more) case forms from an inherited paradigm are attested, they seem to be invariably reflected as distinct synchronic lexemes; cf. **այգ** *ayg* (*u*-stem) 'morning', said to somehow continue the original LOC.SG *h$_2$us-(e)s-i (Clackson 1994: 223) of *h$_2$eu̯s-ōs (Gk. Ἠώς 'Dawn'; Ved. *uṣ-ás*, Lat. *Aurōr-a*), while the synchronic formant **-աւ-** *-aw-* in **առաւաւտ** *aṙ-aw-awt* 'morning' is thought to continue the NOM.SG of the same original paradigm (Martirosyan 2010: 56). We may have two case forms of an original paradigm demonstrably continued in the synchronic morphological system, but apparently only as two separate synchronic lexemes.

Concerning the OA *o*-stem inflection, which includes a substantial portion of the basic vocabulary, Olsen (1999: 3) writes:

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[49] Note that PIE ACC.SG */ph$_2$-tér-m/ would have regularly syllabified as *[ph$_2$.té.rm̥] (> Gk. πατέρα, Ved. *pi-tár-am*), which would have yielded OA ˣ**հայրն** ˣ*hayr-n* under the assumption that syllabic nasals were preserved in the langauge.

> "[W]hen an inherited noun follows the *o*-stem paradigm there always seems to be a very good reason for it: Either the word goes back to a primary or secondary thematic formation [...] or we are dealing with an old neuter *s*-stem where the nominative singular is of course identical with that of a masculine o-stem."

While this provision is certainly true in some abstract sense, the actual original case forms are far from being directly superimposable on the attested morphological forms. The discussion in Table 3.4 below roughly recapitulates Matzinger (2005: 26ff.). Synchronic stems derivable by regular phonetic changes are marked by a check (✓). STEM includes the characteristic thematic vowel; the 'basic' form is diachronically the result of post-tonic deletion, i.e. pre-OA */mard-o-Ø/ → *[mȧr.do] > մարդ *mard* NOM.ACC.VOC.LOC.SG.[50]

Table 3.4: Contribution of analogy and phonetic regularity in the attested *o*-stem

CASE	PIE FORM	EXPECTED STEM FORM	ATTESTED STEM FORM	COMMENTS
NOM.SG	*mr̥-to-s	*mard-o-Ø	մարդ *mard*	✓
VOC	*mr̥-te-Ø	*mard-e		= STEM (or NOM.SG)
ACC	*mr̥-to-m	*mard-o-Ø		✓
LOC	*mr̥-to-i̯	*mard-o-Ø		✓ (not systematically)
GEN	*mr̥-to-si̯o	*mard-o-jjo	մարդոյ *mard-o-y*	✓
DAT	*mr̥-t-ō(i̯)	*mard-u ⇒		= GEN.SG
ABL	*mr̥-t-ō/ād	*mard-u/a ⇒		= (uniquely) DAT.SG
INST	*mr̥-t-ō/ē ⇒	*mard-u/i-βi ⇒	մարդով *mard-o-v*	= STEM + *-b^{h}i
NOM.PL	*mr̥-t-ōs	*mard-u-k^h	մարդք *mard-kʿ*	✓ or STEM + *-s (< -k^h)
ACC	*mr̥-to-ns	*mard-o-ss	մարդս *mard-s*	✓ (or STEM +*-ns)
LOC	*mr̥-to(-i̯)-su	*mard-o/ei̯-Ø ⇒		= ACC.PL
GEN	*mr̥-t-ōm	*mard-u-(N?) ⇒	մարդոց *mard-o-cʿ*	= STEM + *-sk-V
DAT.ABL	*mr̥-to-b^h(i̯)os	*mard-o-βo(-k^h) ⇒		= GEN.PL
INST	*mr̥-t-ōi̯s ⇒	*mard-u(-βi)-k^h ⇒	մարդովք *mard-o-v-kʿ*	= STEM + *-b^{h}i + *s or INST.SG + *-s

[50] I believe that this is also true for the *synchronic* morphophonological system, but this assumption does not affect the argument.

Let us start with the plural forms. The original NOM.PL form */mr̥t-ōs/ is phonetically directly superimposable on the attested **մարդք** *mard-kʿ* 'men', but it does not explain the synchronic *o*-stem inflection (*mr̥tōs > *mard̥-u-k^{h}). The only such form is the inherited ACC.PL */mr̥-to-ns/ (if *-o-ns > *-o-ss, not *-uns > *-u-ss); however, the reflexes of the ACC.PL forms in other stem inflections are not always compatible with the assumption that regular phonetic reflexes of PIE ACC.PL forms correpond to a specific inflectional type; cf., e.g. OA **լուծ**(**ք**) *lowc(-kʿ)*, **լծոց** *lc-o-cʿ* 'yoke(s)' (= Ved. *yugá[ni]*, Gk. ζυγ-ά, Lat. *iug-a*, OCS *ig-a*, Goth. *juk-a*) < PIE *i̯ug-é-h$_2$ NOM.ACC.PL. Compare this with a synchronic *a*-stem form **միտք** *mit-kʿ*, **մտաց** *mt-a-cʿ* 'mind; intellect', the inflection of which can only continue the original NOM.ACC.PL form */mēd-es-ă/ (i.e. */mēd-es-h$_2$/; cf. Gk. μῆδος NOM.ACC.SG, Hom. μήδεα 'counsels; plans' NOM.ACC.PL).

It is common practice in the historical phonology of Armenian to superimpose inherited (*read* reconstructed) PIE forms on forms isolated from their attested stem inflection. For illustration, Olsen (1999: 175) equates OA **ոտք** *ot-kʿ* 'feet.NOM.PL' with PIE *pód-es (> Gk. πόδες) and **ոտս** *ot-s* 'foot-ACC.PL' with PIE *pod-n̥s (> Gk. πόδᾰς); however, the oblique stem of this lexeme synchronically inflects as an *i*-stem; cf. GEN.DAT.ABL.PL **ոտից** *ot-i-cʿ* from virtual or inner-Armenian *pod-isko- (← PIE *p(o)d-ŏm; Olsen ibid.). The direct equation of the forms is legitimate as a kind of long-distance etymology, but it effectively obscures the morphological diachrony of the language, since both **ոտք** *ot-kʿ* and **ոտս** *ot-s* may arguably continue intermediate pre-Armenian forms */φot-i-x/ (← PIE *pod-es) and */φot-i-s/ (← */φod-ã^{n}s/ < PIE *pod-n̥s), respectively. An analysis that includes the hypothesis of an abstract *i-stem

inflectional prototype correctly predicts the entire paradigm; cf., e.g. INST.PL **ոտիվք** *ot-i-w-kʻ* < */φot-i-βi-x/, i.e. STEM-INSTR-PL (← PIE *$p_ə$d-$b^{hí}$-s), etc. Actually, all innovative inflectional forms may be subjected to such prototypes; cf. GEN.DAT.SG **ոտին** *ot-in*, which is apparently not based on */ot-an-/ (⇔ *pod-m̥), which was the original trigger for the synchronic *n*-stem inflection in the singular (just not the subtype predicted by regular phonetic developments). Thus, to equate a specific original PIE inflection (e.g. *o-stems) with a specific attested OA inflection (here, *o*-stem) is inaccurate precisely because it obscures the morphophonological diachrony of the language.

The reflexes of original PIE *s-stems seem to be particularly well suited to argue for the preference for certain case forms. The synchronic *r/u*-stem form **ծաղր** *cał-r*, **ծաղու** *cał-u* 'laughter' (≈ Gk. γέλως 'id.') may be derived only from NOM.SG.MASC word-form */ĝelh$_2$-ōs/; the other case forms had a stem terminating in either */-os-/ or */-(e)s-/. Had the inflection been based on, say, ACC.SG, the lexeme would have ended up as an *n*-stem, which is exactly the case with OA **քիրտն** *kʻirt-n* 'sweat', apparently based on */su̯idr-os-m̥/ (= Gk. ἱδρῶ < *hϝιδρ-óh-α). For comparison, the synchronic *o*-stem **հոտ** *hot* 'odor' may be derived only from an *s-stem NOM.ACC.SG.NEUTER word-form */h$_3$ed-os-Ø/, since all the other forms of the paradigm had a stem terminating in */-(e)s-/ (cf. Matzinger 2005: 34f.). Outside of Armenian, this specific lexeme is attested as a masculine (cf. OLat. *odōs* < *h$_3$ed-ōs), so its existence as a neuter noun in PIE may be argued solely based on the inflectional class of the Armenian cognate.

Similarly, the original PIE *i-stem and *u-stem inflections exhibited oblique forms with characteristic ablaut, cf. Ved. *agnís* 'fire'(< *n̥gn-í-s), but DAT.SG *agnáye* (< *n̥gn-éi̯-ei̯); Hom.

πόλις ‘citadel’ (< *-i-), DAT.SG. πόλεϊ (< PGr. *-ē̥i̯ < *-ēi̯-i LOC.SG); yet these forms are not preserved or reflected as features of the Armenian paradigms. The synchronic *i*-stem and *u*-stem inflections are simply characterized by the relevant stem vowel /-i-/ or /-u-/ generalized throughout the paradigm.

The assumption that OA inflectional stems are reflexes of a specific case form is compatible with case syncretism based on phonetic merger, but not the other way round. The fact that a particular synchronic case, such as (*ի*) *մարդ (i) mard* ‘in a man’, may be regularly derived from the inherited LOC.SG *mr̥-to-i̯ (cf. Gk. οἴκοι ‘at home’ < *u̯oi̯k̂-o-i̯, Lat. *domī* ‘at home’ < *dom-e/o-i̯), does not mean that all synchronic locative forms are the result of a phonetic merger, precisely because the equivalence of regular phonetic development with a particular case form is haphazard; cf. *բայի bay-i* ‘in a word’ (= *i*-stem, GEN.DAT.SG) ← PA *[bɑj] < PIE *b^{h}h$_{2}$̥-t-ēi̯ (cf. OCS *gost-i* ‘guest-LOC.SG’, Hom. πόλ-ηϊ ‘citadel-DAT.SG’, Goth. *anst-ai* ‘grace-DAT.SG’).

Even if the syncretism of the nominative and accusative singular cases was plausibly a result of a phonetic merger of the relevant case endings, a particular inflection of individual lexemes does not necessarily have to reflect this phonetic merger. This is particularly clear in the synchronic *n*-stems based on the original animate ACC.SG ending *-m̥, in which the syncretism of NOM.SG and ACC.SG is transparently[51] analogical; cf. NOM.ACC.SG *ձեռն jeṙ-n* from ACC.SG *ĝ^{h}es-r-m̥ (> Gk. χεῖρ-α), while the original NOM.SG *ĝ^{h}es-r̥ (> Hitt. *keššar*) would be regularly reflected as OA **ձար* **jar* (< *ʤ^{h}ɛhɑr) or perhaps **ձեռ* **jeṙ* (if from *ʤ^{h}ɛhr). The attested

[51] That is to say, the analogy is transparent only if one rejects the possibility of a *singulative* suffix /-n/ (cf. Winter 1965: 104).

stem inflection demonstrably depends on the assumption that specific inherited word-forms functioned as stem prototypes. Logically, then, forms based on the inherited NOM.SG ending */-ā/ would be synchronically reflected as OA (invariable) *a*-stems, and forms based on the inherited ACC.SG ending */-ā-m/ would be synchronically reflected as OA (variable) *n*-stems. This is exactly what we see when we compare **ամ** *am* 'year' < PA */ham-a-/ < PIE */sm̥h$_2$-eh$_2$-Ø/ *vis-à-vis* **դուռն** *dowṙ-n* 'door' < PA */dur-an-/ < PIE */d^{h}ur-eh$_2$-m/.

3.4.2. PIE sources of OA *a*-stem inflection

Table 3.5: Biblical attestation of OA *a*-stems from PIE *ā-stems

OA	GLOSS	PIE	COGNATES
ամ *am*	'year'	*sm̥h$_2$-eh$_2$-	Ved. *sámā* 'season'
թամբ *t'amb*	'ham; saddle'	*tm̥p-eh$_2$-	Lith. *tìmpa* 'sinew', ON *þǫmb* 'bowstring'[52]
տիկ *tik*	'goat skin bottle'	?*dikk-eh$_2$-	Hes. δίζα· αἶξ, OHG *zigga*, *zicki*, OE *ticcen*
ջիղ *jił*	'sinew'	*g$^{\mathrm{u̯h}}$ī-sl-eh$_2$-	Lith. *gýsla*, OCS *žila*
դուրք *dowr-kʿ*	'house-door'	*d^{h}ur-eh$_2$-	Gk. θύρᾱ

The importance of the inherited *eh$_2$-stem formation in the synchronic *a*-stem paradigm turns out to be overestimated (*pace* Meillet 1936: 74).[53] Olsen (1999: 59-73) lists only five *eh$_2$-stem forms that belong to the synchronic *a*-stem inflection which are attested as *ā-stems elsewhere in IE; see Table 3.5 below. The decisive majority of OA *a*-stems are reflexes of the inherited stem formants with *-iH-, *-uH-, or *-Ḫ-. All of these would be arguably reflected by forms with short *-ă- stem vowel in the original or innovative pre-Armenian accusative singulars due to the phonologically regular process of *breaking*, i.e. PIE */-ih$_2$-m/ > PArm. *-i̯h$_2$-m >

[52] Apparently a derivative of **temp-* 'spannen; dehnen' (cf. Lith. *tem̃pti* 'id.'; LIV^2 626), hence the Armenian meaning 'ham' from "flesh or meat strung onto the (thigh)bone", vel sim.

[53] Meillet (*l.c.*): "Les thèmes arméniens en -a- représentent les thèmes indo-européens en -ā-."

*-i̯ăn;[54] PIE */-uh$_2$-m/ > PArm. *-u̯h$_2$-m > *-u̯ăn, and the short vowel reflecting original plural (or collective) formations without accusative singular inputs, i.e. PIE */-h$_2$/ > PArm. *-h$_2$ > *-ă (→ ACC.SG *-ă-N). If we focus on the main sources of OA synchronic stem inflections—including OA *a*-stems—all include forms with a phonetically regular loss of the inherited ACC.SG ending, see Table 3.6.

Table 3.6: Prototypes of the vocalic inflectional paradigms

OA	PRE-ARM.	PIE STEM SOURCES		EXPECTED REFLEXES OF PIE ACC.SG
o-stem	*-o-	*-o-	thematic masc., neut.	*-ŏ-m > -Ø
	*-o(h)-	*-os	*s-stem neuter	ACC.SG = NOM.SG, i.e. -Ø
u-stem	*-u-	*-tu-	*tu-stem	*-ŭ-m > -Ø
	*-u-	*-ōi̯	*i-stem	The original ACC.SG */-oi̯-m̥/ is clearly replaced.
	*-u̯u-	?*-u̯-i-	*i-stem after °u̯-	*-u̯ĭ-m (> ?*-u̯ŭ-m) > -Ø
i-stem	*-i-	*-i-	i-stem	*-ĭ-m > -Ø
	*-i-	*-Ø-	root nouns	The original ACC.SG */-m̥/ is clearly replaced.
	*-i(h)	*-ēs	*s-stem adjectives	The original ACC.SG */-es-m̥/ is clearly replaced.
a-stem	*-ā-	*-eh$_2$-	*ā-stem feminine	Only 5 securely reconstructed forms in the Bible! The original ACC.SG */-ā-m/ is clearly replaced.
	*-i̯ā-	*-i̯eh$_2$-	*yā-stem feminine	
	*-i̯ă-	*-ih$_2$-	*ī-stem	*-i̯ă-m > Ø
	*-u̯ă-	*-uh$_2$-	*ū-stem	*-u̯ă-m > Ø
	*-ă-	*-h$_2$-	neuter collective	Clearly suplanted with analogical SG forms.

[54] According to Kortlandt (2003: 59), CA **մին** *min* 'one' continues the original PArm. ACC.SG *smī-n < PIE *sm-ih$_2$-m (cf. Gk. μίᾱν 'id.'), in which the sequence *-iH- did not undergo *breaking* presumably due to its structural position in PArm. tonic initial syllable; cf. *sm-ih$_2$-o- > **մի** *mi* 'one', *sm-ih$_2$-iHno- > **միայն** *mi-ayn* 'only' vs. *sm-i̯h$_2$-deḱm̥-ti- > **մեհասան** *me-tasan* '11'.

3.5. OA *-մն -mn* from *(-)māN

The original reflexes of final *-āN most clearly preserve the final nasal in the positive polarity suffix *-մն -mn* 'some-PRO' (= Dor. μάν, Ion. μήν 'indeed; definitely'); cf. e.g. *ոմն o-mn* 'someone' reflecting the locution PIE *k^{u}ó-s *māN "who, indeed" vel sim.; *իմն i-mn* 'something' < PIE *k^{u}í-d *māN "which, indeed" (cf. Klein 2007: 1064). The original stem vocalism surfaces as such in the plural, i.e. in historically word-medial syllables when covered by further morphology, cf. *ոմանք o-man-kʿ*, *ոմանս o-man-s*, *ոմանց o-man-cʿ*, *ոմամբք o-mam-b-kʿ*. In the singular, the original vowel surfaces only in the INST.SG *ոմամբ o-mam-b* (< *-māN-b^{h}i), and this fact indirectly testifies that the synchronic final nasal continues an original word-final consonant; cf. GEN.SG *ուրումն owrow-mn* < *[ɔj.ˈɾɔ.mɑn] or *[ɔj.ˈɾɔ.mã] (cf. *որր oyr* 'whose' < */ɔi̯-ɾɔ/ GEN.SG of *ո[վ] o[v]* 'who').

The origin of the affirmative particle μάν, μήν is unclear. Mayrhofer (Kewa III: 547) compares it with the enclitic Ved. *smă* 'precisely; *in the same way' if from the pronominal stem PIE *sem- 'same'. Since in Greek, just as in Armenian, both PIE *-m and PIE *-n show up as *-ն -n* word-finally, the original nature of the nasal cannot be precisely determined. The pronominal stem PIE *sem- may have perhaps developed a feminine by-form in *sm-eh$_2$- (~ *sm-ih$_2$ < Gk. μία 'one'); cf. similar alternation PIE *s-eh$_2$ (> Ved. *sā́*, Gk. ἡ, Goth. *so*, etc.) ~ *s-ih$_2$ (> OIr. *sí*, Goth. *si*, OHG *siu*, etc.). The adverbial function of the accusative singular *sm-ā́-m (*/sm-éh$_2$-m/) of this form may have been the formal as well as functional precursor of Gk. μήν and OA *-մն -mn* (*-ման- -man-*).

3.6. դուռն *dowrī-n* 'door' and դուռն *dowrī-n* 'gate'

The dual semantics of դուռն *dowr-n* 'gate, portal' is convincingly employed by Olsen (1999: 129f.) to argue for the reconstruction *d^hur-$h_3$ón (> Gk. θυρών -ῶνος 'antechamber, hall'). The semantics of the Armenian noun would then be due to metonymy, i.e. *d^hur-$h_3$ón *'place having doors', via 'hall' (= Gk. θυρών) and *'[the door(s) that lead(s) to] the hall' (vel sim.) to 'gate, portal' (= դուռն *dowr-n*); cf. դրունք *dr-own-kʿ* (< *d^hur-$h_3$on-es), դրանց *dr-an-cʿ* (< *d^hur-h_3n̥-). Part of Olsen's argument capitalizes on the fact that inherited PIE *n-stems regularly continue as synchronic *n*-stems not only in the singular but also in the plural. In contrast, forms based on the original accusative singular inflect as *n*-stems in the singular only; e.g., ոտն *ot-n* (= Gk. πόδα) from PIE *pód-m̥ entails ոտին *ot-in* (GEN.DAT.LOC.SG) but not ոտք *ot-kʿ* (NOM.PL); or ձեռն *jeī-n* (= Gk. χεῖρα) from PIE *ǵʰés-r-m̥ entails ձեռին *jeī-in*, but not ձեռք *jeī-kʿ* (NOM.PL). Thus, a synchronic paradigm based on the ACC.SG form *d^húr-m̥, which is conventionally reconstructed as the formal precursor of դուռն *dowr-n* (cf. Schmitt 1981: 199; Kortlandt 1985: 19, 23; Martirosyan 2010: 244), is an unlikely foundation for the entire paradigm.

Olsen's analysis is, however, not absolutely tight, since PIE *d^hur-$h_3$ón accounts only for the meaning 'gate, portal'; however, the form դուռն *dowrī-n* also means 'door' and is synonymous with (the conventionally considered) *plurale tantum* դուրք *dowr-kʿ*, դրաց *dr-a-cʿ*.[55] The basic meaning 'door' is also attested in all dialects of modern Armenian; in fact, the basic word for

[55] Cf., the Biblical evidence: Mk. 2:2 առ դրանն *aṙ dran-n* = πρὸς τὴν θύραν 'near/at the door'; Lk. 13:25 փակեսցէ զդուռնն *pʿakescʿē z-dowrn-n* = ἀποκλείσῃ τὴν θύραν 'will shut the door'; բախել զդուռնն *baxel z-dowrn-n* κρούειν τὴν θύραν 'to knock at the door'; cf., also Mt. 27, 60; Mk. 15: 46; Jh. 10:1, 2, 7, 9: Jh. 18:16, etc. (see Künzle 1982 II:191).

'house door' is դուռ *dowṙ* [dur], which obviously continues CA դուռն *dowṙ-n*, not CA դուրք *dowr-kʿ*. The latter is preserved solely in the paradigmatically isolated adverbial դուրս *dowrs* [.dúrs.] 'outdoors, outside'.

Because of the semantics and because the *n*-stem is seen only in the singular, some scholars seem to take a middle ground. The singular *n*-stem դուռն *dowṙ-n* is thought to reflect an original ACC.SG of a root noun (cf. NOM.ACC.DUALVed. *dvā́rā(u)* < *d^hu̯ór-) based on a zero-grade of the root, i.e. *d^hur-m̥ (e.g. Martirosyan 2010: 244). The *plurale tantum* form դուրք *dowr-kʿ*, դրաց *dr-a-cʿ*, on the other hand, continues a different form, which is based on the original *ā-stem, i.e. *d^hur-ā- or *d^hur-eh_2- (> Gk. θύϱᾱ 'door'). The former reconstruction is, however, not unproblematic either, namely the hypothetical reconstruction *d^hur-m̥ affords no comparative parallels.

The canonical form of the original ACC.SG of this root noun is *d^hu̯ór-m̥, not the hypothesized *d^húr-m̥; cf. Ved. *dvā́ram*, Av. *duuarəm.* The strong stem is also abundantly attested in secondary thematizations: Lat. *forum* 'public square; market' (< NOM.ACC.SG *d^hu̯or-o-m *'door-yard' vel sim.), Lith. *dvãras* (MASC) 'estate; court(yard)'; cf. also Slavic **dvorъ* 'id.', Toch.B *twere* 'door' (< *d^hu̯or-o-s). The zero-grade is attested only in the plural of consonantal stems (or in composition): Ved. *dúraḥ* (< ACC.PL *d^hur-n̥s), OHG *turi* (< NOM.PL *d^hur-es), Lat. *for-ēs* (< *d^hur-); and the *ā-stem: *d^hur-eh_2- > Gk. θύϱᾱ, Lat. *forās* (orig. ACC.PL), *forīs* (orig. INSTR.PL), Alb. *derë* (< *d^hu̯ōr-ā-), etc. A neo-zero-grade is attested in OCS *dvьr-i* 'door' (< *d^hu̯r̥-) and Gk. θαιϱός 'door-pivot' (< *d^hu̯r̥-i̯o-).

There have been attempts to equate the OA *n*-stem singular with *d^hu̯or-m̥ (Viredaz 2001-02: 25) which would bypass the problem of comparative evidence; unfortunately, there are no phonological parallels for the change of *-u̯o- to (tonic) *-ու- -u-* within Armenian. In my opinion, reflexes of the initial sequence *Cu̯V- (other than *du̯-, which arguably yielded *-րկ- -rk-*) seem to regularly obscure (i.e. drop) the original postconsonantal labio-velar glide, cf. ձայն *jayn* 'sound; voice' < *ĝ^{h}u̯n̥- (cf. *ĝ^{h}u̯on-o- > Alb. *zë* 'id.'; Slavic **zvonъ* 'chime'), i.e. *Cu̯n̥- = *-Cn̥-; շուն *šown* 'dog' < *k̂u̯ōn, քո *kʿo* 'your' < *tu̯o-s, i.e. *Cu̯ŏ- = *-Cŏ-; քեզ *kʿez* 'to thee' < *tu̯e-ĝ^{h}i, i.e. *Cu̯e- = *-Ce-, etc. The hypothetical *d^hu̯or-m̥ would have thus most likely regularly yielded an unattested ˣդռուն *ˣdoṙ-n*.

There is a way out of the conundrum, if we assume that the singular paradigm of դուռն *dowṙ-n* (դրան *dr-an*) is based on a regular reflex of the inherited ACC.SG *d^hur-ā-m (i.e. PIE *d^hur-eh_2-m), a form with ample comparative support (e.g. Gk. θύρ-ᾱ-ν 'id.'). This form is the basis of the *n*-stem paradigm in the singular only, while the plural is based on the *n*-less forms of the "bare" stem */d^hur-eh_2-/ (cf., Gk. θύρ-α-ι, θύρ-ᾱ-ς, θύρ-α-ις, etc.). This is exactly the pattern we see in inflections based on inherited ACC.SG forms.

The dual semantics of դուռն *dowṙ-n* in the singular is the result of a regular phonetic merger. The synchronic singular forms of the lexeme դուռն *dowṙ-n*, դրան *dr-an* 'door' (< *d^hur-ā-m) are homophonous with the synchronic singular forms of դուռն *dowṙ-n*, դրան *dr-an* 'gate' (< *d^hur-Hōn), while their respective phonetically regular plural forms are semantically distinct; i.e. (PIE *d^hur-ā-s >) դուրք *dowr-kʿ* and (PIE *d^hur-Hon-es >) դրունք *dr-own-kʿ*;

respectively.[56] This is also the most economical solution since it explains the attested forms by only two inherited stems (*d^hur-eh$_2$- and *d^hur-h$_3$on-), instead of the traditional three (*d^hur-eh$_2$- , *d^hur-h$_3$on- and the root noun *d^hur- or phonetically uncertain *d^hu̯or-).

Additionally, the original feminine accusative suffix *-ām is also possibly preserved in a paradigmatically isolated form **ողջամբ** *oǰǰamb* 'safe-and-sound', which is apparently a fossilized instrumental of an *n*-stem, lit. "with/by health" *vel sim.* Olsen (1999: 274) suggests a basic adjective abstract, *solu̯i-h$_3$ōn 'wholeness, wealth' (cf. Lat. *tālis* → *tāliō* 'Vergeltung mit Gleichem') → *solu̯i-h$_3$n̥-b^{h}i > *(h)oli̯ɑɑmbi > *oǰǰamb*. Obviously, the only thing clear is that the lexeme is related to the adjective **ողջ** *oǰǰ* 'healthy', attested as a synchronic *o*-stem in the oldest manuscripts. Later manuscripts also record the plural form **ողջաց** *oǰǰ-a-cʿ*;[57] thus, it cannot be excluded that the same alternation seen in **դրամբ** *dr-am-b*, **դրաց** *dr-a-cʿ* (< *d^hur-ān-b^{h}i : *d^hur-ā-sk-) is also actually preserved in these two items as well; i.e., **ողջ** *oǰǰ* continues both masculine *solu̯-i̯o- and feminine *solu̯-i̯ā-(m), the latter preserved in isolated forms **ողջամբ** *oǰǰamb* and **ողջաց** *oǰǰacʿ*.

3.7. Diminutive **-իկ** *–ik* and other regularities

The reflexes of short vowel plus nasal sequences, which are regularly lost word-finally, are preserved in inflection in at least one peculiar synchronic *n*-stem: the suffix seen in lexemes such as **աղջիկ** *aǰǰ-ik*, **աղջկան** *aǰǰ-k-an*, **աղջկունք** *aǰǰ-kown-kʿ* 'girl', which is in this analysis argued

[56] Cf., e.g., **դրունք դժխոց** *drunkʿ džxocʿ*, which translates πύλαι ᾅδου (Matt. 16:18) 'gates of hell (or rather, *Sheol*)', a reference to the global worship of false gods as exemplified by the region of notorious pagan worship at the foot of Mt. Hermon in Cæsarea Philippi, also known by its ancient Biblical name of Bashan, where Christ utters the words.

[57] **Ոչ է պիտոյ բժիշկ ողջաց** *Očʿ ē pitoy bžišk oǰǰacʿ* (Mk 2:17); cf. http://212.34.228.170/bible_28E/tFootnotes_Mk..htm (fn. 33).

to reflect the original stem configuration (inner-Armenian) NOM.ACC.SG *-Kŏn-Ø,[58] OBLIQUE *-kn̥-, *-Kon-es (← PIE *-Kōn <) *-Kŏn-h_2, respectively. We may analogically treat the unique collective form **մարդիկ** *mard-ik* 'people; men' (if) from the originally neuter compound *(s)mr̥-ti-kĕn-Ø 'mortal-kind' *vel sim.*, cf. Olsen (1999: 460f.). The root is attested also in OIr. *cenél* 'race, people, gender' (< *ken-et-lo-m), and OCS *-čę-* (~ *-čьn-*) 'originate; conceive'; *štenę* 'cub' < *s-ken-n̥t- (with *s*-mobile, cf. LIV^2 351). The original *(s)mr̥-ti-kĕn (> PArm. *[m_ar.dí.Kin] > OA **մարդիկ** *mardik*) was apparently reanalyzed as */m_ard-iK-in/ and treated as the suffix */-ik-n-/, whence the GEN.SG form **մարդկան** *mard-k-an* (as if from *m_ard-iK-n̥-).

This analysis also easily unifies analytically distinct incarnations of the interrogative and relative PA pronoun */i-/, i.e. (**հ**)**ի**- (*h*)*i*- and **զի** *z-i* 'thing; what?; why?' (< PIE *k^ui-m × *k^ui-d, which are both attested in **զինչ** *z-inč'* 'id.' (< PIE *k^uim=k^uid) and **իք** *i-k'* 'anything' (< PIE *k^uid=k^ue), respectively.

3.8. Conclusion

Previous scholarship treats monosyllabicity as one of the conditioning factors for the retention of inherited final nasals in OA; e.g. **քան** *k'an* 'than' (< PIE *k^uám), **ոտն** *ot-n* 'foot' (< PIE *pód-m̥), **անուն** *anow-n* 'name' (< PIE *Ḫnō-mn̥) vs. **մարդ** *mard* 'man' (< PIE *mr̥-tó-s × *mr̥-tó-m), **ամ** *am* 'year' (< PIE *sm̥h_2-éh_2-Ø × *sm̥h_2-éh_2-m), **մեծ** *mec* 'big' (< PIE *meĝh_2-s × *meĝh_2-m), etc. In this chapter, I have argued that reference to syllable count does not

[58] The equation of the Armenian diminutive suffix with *-kon- goes back to J̌ahukyan (1998: 66), cf. Gk. ὄκκον (Lat. *oculus*) from *$h_3$ék^u-Kŏn-Ø. An original velar *k, which is otherwise expected to be reflected by *-k'-*), regularly yields *-k-* before a nasal; i.e., the suffix was apparently leveled based on the oblique *-kn̥- (> **-կան-** *-kan-*), cf. **ակն** *akn* (**ական** *ak-an*) 'eye' (i.e. *[ˈɑ.kn̥] < *$h_3$ék^u-m̥), presumably via intermediate voicing of the original *-k$^{(u)}$n- to PA *-g$^{(u)}$n- (cf. Klingenschmitt 1982: 168).

explain the attested distribution. First, there is at least one monosyllable that is incompatible with the traditional assumption: *ի ~ յ- i ~ y-* 'in' (< PIE *en). Second, there is a host of polysyllables, the least complex morphological analysis of which involves retention of the inherited final nasals; e.g. *գառն gaṙ-n* 'lamb' (< PIE *ǵr̥h$_1$-ēn, NOM.SG), *ստեղն steł-n* 'branch' (< PIE *stel-ōn, NOM.SG), *-իւն -iwn* ABSTRACT NOUN SUFFIX (< PIE *-ti-h$_3$ōn, NOM.SG).

I have proposed that inherited final nasals are preserved after original long vowels and lost after original short vowels, i.e. *քան kʻan* (< PIE *kʷām), *տուն town* (< PIE *dōm), *շուն šown* (< PIE *k̂u̯ōn), *մի min* 'one' (< PArm. *smīn < PIE *smih$_2$-m), *սոյն so-yn* 'the same' (< PIE *k̂o + PIE *īm), *ձիւն jiwn* 'snow' (< PIE *ǵʰiu̯ōm, cf. Gk. χιών 'blanket of snow', YAv. *ziiå̊* 'winter'), *դուռն dowṙ-n* 'door' (< PIE *dʰur-ā-m, the singular of *դուրք dowṙ-kʻ*), etc. In contrast to short vowels, long vowels became nasalized and therefore pattern together with inherited syllabic nasals, e.g. *ոտն ot-n* 'foot' (< PIE *pod-m̥), in preserving the nasal feature as a phonologically distinctive property of the original final nuclei.

Finally, the absence of the nasal feature in final short vowels fully explains the attested distribution; cf. *ի յ- i y-* (< PIE *ĕn), *զի՞ zi?* 'why?' (< PIE *kʷim), *-իկ -ik -կան -kan* DIMINUTIVE NEUTER SUFFIX (< PIE *-ŏn-Ø, *-n̥-).

CHAPTER 4

THEORETICAL BACKGROUND TO THE FOLLOWING CHAPTERS

This chapter gives brief overviews of the theoretical frameworks and concepts utilized in the following analyses. Four out of six chapters of this dissertation are concerned with the interaction of morphology with the wellformedness of prosodic or syllabic structure. The morphophonological analyses in chapters 5-8 are formalized in the framework of OPTIMALITY THEORY (Prince and Smolensky 2004), specifically CORRESPONDENCE THEORY (McCarthy and Prince 1995b); see (4.1).

The representational concepts behind the PROSODIC HIERARCHY (Selkirk 1978, 1986, 1995, 2004) are introduced in (4.2), and basic morphophonological assumptions behind the mechanism of GENERAL ALIGNMENT (McCarthy and Prince 1993) are introduced in (4.3).

All the following analyses utilize the so-called *Weak Bracketing* approach to the representation of metrical structure (Hyde 2001, 2002, 2008, 2014) introduced in section 4, which argues for improperly bracketed (or 'overlapping') feet. This approach is originally employed to avoid a set of erroneous predictions that overgenerate with regard to the attested typology of metrical systems under *Weak Layering* and *Proper Bracketing* (Itô and Mester 1992); see (4.4).

4.1. Optimality Theory

An explicit or implicit conviction of all work in Optimality Theory (OT) is that linguistic patterns can be best analyzed by modeling the grammar as an interaction of violable constraints on the well-formedness of the output representations. The extent to which the linguistic properties that are present in the corresponding input representation are preserved and/or modified in the output representation is determined by the ranking of violable constraints.

The basic tenets of OT are summarized below:

a) Language-specific ranking of universal constraints

The observable differences between grammars of specific languages invariably result from the language-specific ranking of violable constraints, which are assumed to be part of Universal Grammar (UG), i.e. part of an innate knowledge that guides and limits the development of grammars of specific languages.

b) Faithfulness vs. markedness

There are two basic constraint types: *faithfulness* constraints demand identity between inputs and outputs, and *markedness* constraints penalize particular output structures. Functionally speaking, faithfulness constraints serve to preserve lexical contrast in the output forms, and markedness constraints are designed to reduce markedness of output forms (in terms of articulation, perception, prosodic organization, etc.).[59]

[59] In fact, making the determination of which specific markedness constraints should be included as part of the theory has made the precise definition of *markedness* theoretically possible: marked structures are defined as *structures that violate markedness constraints* (McCarthy and Prince 1994: 333).

c) "Strict domination"

The output is strictly determined by the relative ranking of the constraints: higher ranked constraints always take *absolute* precedence over lower ranked constraints. In other words, the lower ranked constraints can never 'gang up' against (a) higher ranked constraint(s); cf. McCarthy (2004: 535).[60]

d) "The richness of the base"

The universal constraints operate exclusively at the level of the output. The underlying input cannot be subject to any (universal or language-specific) constraints since it is construed from a universal set of representations which are in principle freely available to any language. This principle ensures that languages differ *by definition* only in the way the constraints handle or resolve the input representations; in other words, the surface output structure is *exclusively* derived from the interaction of markedness and faithfulness constraints (cf. McCarthy 2002: 70f).

e) Parallel evaluation

Another fundamental principle in the classical OT theory is the assumption that all of the constraints should be evaluated in *parallel*. Many influential scholars, however, do not consider parallelism to be an essential component of the theory (cf., e.g., Coleman 2000, Kiparsky 2000, etc.) or explicitly argue against it (cf.

[60] A good analogy to illustrate the *strict domination* is the alphabetization of sequences such as <azzzz> *vs.* <baaaa>, in which the order is determined based on the first letter, regardless of the overall alphabetical makeup of the forms (McCarthy 2002: 4).

Kiparsky 2003, 2014; Bermúdez-Otero 2003; etc.). The analyses in the following studies do not presuppose parallel evaluation.

More technically, grammar in OT is thought of as a function $\mathcal{P}$ which maps input representations (In_k) onto the corresponding output (Out_{real}) by means of the function $\mathcal{G}en$ (or GEN) which is nested in the function $\mathcal{E}val$ (or EVAL). The function $\mathcal{E}val$ *evaluates* the relative harmony of the competing candidate output *generated* by the function $\mathcal{G}en$, see (1) below, adopted from Prince and Smolensky (1993/2004).

(1) a. $\mathcal{P}(In_k) = \mathcal{E}val(\mathcal{G}en(In_k))$

b. $\mathcal{G}en(In_k) \rightarrow \{Out_1, Out_2, ...\}$

c. $\mathcal{E}val(Out_i, 1 \leq i \leq \infty) \rightarrow Out_{real}$

Output representations are constructed out of objects or relations that are available, e.g., phonological representations contain nodes of the Prosodic Hierarchy, features, precedence relations, etc.; cf. de Lacy (2011: 1493).

The version of OT used in this analysis subsumes the *Correspondence Theory* of McCarthy and Prince (1995b), which replaces the notion of *Containment* in the original version of Prince and Smolensky (1993/2004). Under Containment, segments or features of the input are conceived to be literally present at the level of the output, even if not overtly realized. For instance, under Containment, segments deleted in the output used to be conceptualized as segments that were present but were not parsed into syllables, and hence were unpronounced. Epenthetic (or inserted) material, on the other hand, was assumed to be distinguishable in the output by virtue of not having been contained in the input. The apparent derivational paradox

resulting from this conception was that, since all of the information present in the input together with all of the derivational history of the forms was contained in the output, grammar need only refer to the level of output.

The theory of Containment thus did not make it possible to characterize various relations between the levels of grammar in terms of the measure of similarity between the input and output, base and derivative, base and reduplicant, etc. An additional problem with this theory was of course that segments can be associated to higher levels of prosody beyond syllables, namely feet (FT) or prosodic words (PW); see section (4.2).

4.2. Prosodic Hierarchy

One of the fundamental—and currently, in fact, indispensable—notions in linguistic theory is the concept of *constituency*. A *constituent* may be pre-theoretically defined as an element or a grouping of elements that function(s) as a single unit within some hierarchically organized (linguistic) structure. For all theoretical purposes up to date (though this definition is originally associated with American structural linguistics, cf. Bloomfield 1933), a constituent is any string of elements targeted by a grammatical process (traditionally a rule) and manipulated as a single unit.

In generative grammar (cf. Chomsky 1955, 1957), constituents are additionally conceptualized as *domains* within which rules may apply. Thus, in Chomsky and Halle (1968), re-adjustment rules convert the syntactic string (the output of the syntactic component that organizes morphosyntactic constituents) into a form that can be interpreted by phonology (the input to the phonological component which organizes phonological constituents). More

specifically, in Chomsky and Halle (1968), the edges of syntactic constituents are in the phonological component encoded by linearly-ordered boundary-defined domains indicated by symbols which are primarily of two kinds: #, used to indicate major syntactic constituents, and +, used to indicate boundaries between morphological constituents. Crucially, phonological rules can only refer to these (diacritic) boundary symbols; they cannot refer directly to syntactic edges.

The actual number of the boundary edges and their relative prominence became subjects of active debate (e.g., McCawley 1968; Selkirk 1972)—together with their formal existence as valid linguistic objects in mental representations (cf. Pyle 1972)—until influential proposals were advanced and elaborated which disposed of the boundary diacritics by organizing the phonological constituents into a prosodic hierarchy on a par with the syntactic one (Liberman 1975; Liberman and Prince 1977; Selkirk 1978, 1980, 1984, 1986, 1995; Nespor and Vogel 1982, 1986; Hayes 1989, 1995; etc.).

Theoretical or typological predictions, which are in the linearly-ordered boundary theory articulated as mere stipulations with reference to the interfacial diacritics, are in *Prosodic Phonology* (Nespor and Vogel 1986) argued to be properties of a hierarchically organized set of *prosodic categories* such as the originally posited ones in (2) below.

(2) The PROSODIC HIERARCHY (Selkirk 1978)

UTT	UTTERANCE
IP	INTONATION PHRASE
PPH	PHONOLOGICAL PHRASE
PW	PROSODIC WORD
FT	FOOT
σ	SYLLABLE

The main focus of the literature on *Prosodic Phonology* in the subsequent period is the *non-isomorphism*, or mismatch, between prosodic constituency (phonological boundaries), on the one hand, and morpho-syntactic constituency (morpho-syntactic structure), on the other. For example, the Sanskrit rule of nasal assimilation applies between the edges of prosodic constituents at the domain of the PROSODIC WORD (PW) and higher; cf. (3a), as can be seen by its non-application in (3b); cf. Selkirk (1980). This generalization is far from explicit in (3c-d), which can only rely on a vague notion of prominence. It is also not immediately obvious why a "weaker" boundary (+) blocks the assimilation, while it freely applies at a "stronger" one (##).

(3) a. $[[\text{tat}]_{\text{PW}}\ [\text{manas}]_{\text{PW}}\ ...]_{\text{UTT}}$ 'this mind'→ [tənmənəḥ]

b. $[[\text{admi}]_{\text{PW}}\ ...\ ]_{\text{UTT}}$ 'I eat' → [ədmi] (not *[ənmi])

c. #tat##manas# → [tənmənəḥ]

d. #ad+mi# → [ədmi]

Hungarian vowel harmony, on the other hand, applies only within the domain of PW, such as in stem-suffix configurations in (4a-b), but not in compounds or prefixed verbs such as in

(5a-b); cf. Nespor and Vogel (1986). Notice also the assignment of Pw-initial primary stresses (").

(4) a. ["œlɛleːʃ]$_{Pw}$ 'hug' → ["œlɛleːʃ-nɛk]$_{Pw}$ 'id.-DAT.SG
b. ["hɔjoː]$_{Pw}$ 'ship' → ["hɔjoː-nɔk]$_{Pw}$ 'id.-DAT.SG

(5) a. [["bɛ]$_{Pw}$ ['utɔzni]$_{Pw}$]$_{Pw'}$ 'to commute in' (lit. "in-commute")
b. [["o.dɔ]$_{Pw}$ ['mɛnːi]$_{Pw}$] $_{Pw'}$ 'to go there' (lit. "there-go")

Prefixes seem to be also parsed as Pw's in northern Italian, in which the intervocalically voiced /s/ occurs exclusively stem-internally, cf. (6a-d); see Nespor and Vogel (1986: 125); Krämer (2009: 207).

(6) a. a/s/ola 'button hole' → [aːzola]$_{Pw}$
b. ca/s/-a 'house' → [kaːza]$_{Pw}$
c. a-/s/ociale 'un-sociable' → [[a]$_{Pw}$[sotʃaːle]$_{Pw}$] $_{Pw'}$
d. tocca-/s/ana 'magic cure' (lit. "touches-[and]-cures") → [[tokːa]$_{Pw}$[saːna] $_{Pw}$] $_{Pw'}$

4.3. Constraints on prosodic domination

The principles responsible for the hierarchically organized prosodic constituency are conceptualized as universal and violable constraints on prosodic domination adopted from Selkirk (1995: 443 [= 2004: 466]) in (7) below.

(7) LAYEREDNESS = No C^i dominates a C^j, j > i
"A prosodic category of a lower level may not dominate a prosodic category of higher level", e.g., no σ (SYLLABLE) dominates a FT (FOOT).

HEADEDNESS = Any C^i must dominate a C^{i-1}
"Assign a violation if a higher category does not dominate some immediately lower category", i.e., all categories must be headed by some constituent of an immediately lower category"

NONRECURSIVITY = No C^i dominates C^j, j = i
E.g., "No FT (FOOT) dominates a FT (FOOT)."

EXHAUSTIVITY = No C^i immediately dominates a C^j, j > i – 1
E.g., "No PW (PROSODIC WORD) may immediately dominate a σ (SYLLABLE)."

The principles behind LAYEREDNESS (i) and HEADEDNESS (ii) are considered universally inviolable and are better thought of as principles of organization than constraints in the classical OT sense (cf. Selkirk 1995: 444/2004: 467; Krämer 2009: 205). Together they represent the essence of the notion of *Strict Layering*.

NONRECURSIVITY (iii) and EXHAUSTIVITY (iv), on the other hand, have been generally argued to be violable (cf. Inkelas 1989, Hayes 1991, Itô and Mester 1992, Kager 1993, Prince and Smolensky 1993/2004, Selkirk l.c., etc.). In the studies that follow, all phonological input segments are assumed to be parsed exhaustively; nevertheless, the constraint is argued to be dominated by a morphophonological ALIGNMENT constraint on the NOMINAL SUFFIX /-k^h/, which is arguably deliberately underparsed. This nominal suffix is thus a function word that prosodically represents a free clitic in the sense of Selkirk (ibid.).

Itô and Mester (2007, 2009) propose a modification of the original prosodic hierarchy shown in (2) by granting three levels of projection of PW, referred to here as EXTENDED PW, and PHONOLOGICAL PHRASE (PHP); cf. (8).

(8) EXTENDED PROSODIC WORD projections

...
|
PHP
|
PW' MAXIMAL PROSODIC WORD
|
PW PROSODIC WORD
|
PW, MINIMAL PROSODIC WORD
|
FT
|
...

4.4. General Alignment

General Alignment constraints are abstract formulae belonging to a constraint schema that demands that constituent edges coincide. The schema is composed of two category arguments, each with an edge specification. The first argument qualifies universally, i.e. "all or every instance of a category", the second existentially, i.e. "some instance of a category" (cf. McCarthy 2002: 17f).

For illustration, in the analysis of modern Armenian plural allomorphy in Chapter 8, the alignment constraint ALIGN PL-L, PW-R (= ALIGN PW-PL for convenience) demands that the L[EFT EDGE] of <u>every</u> PL[URAL MORPHEME] coincide with the R[IGHT EDGE] of <u>some</u> PROSODIC WORD constituent. In other words, this constraint makes no demands on prosodic structure; the behavior of P[ROSODIC]W[ORD]s is immaterial for the specific alignment purpose targeted by

this constraint. The constraint specifically penalizes all instances of the plural morpheme that are present in the output but misaligned with respect to the specified edge of some specified prosodic constituent, in this case left edge of a PROSODIC WORD.

4.5. Relation-specific Alignment

General Alignment constraints in Prince and Smolensky (1993/2004) are typically gradient, i.e., they are construed as being sensitive to the distance of misalignment. The need to re-conceptualize this approach was first identified in Eisner (1997). Distance-sensitivity not only relies on counting syllables, it also creates erroneous predictions referred to as *Midpoint Pathology* (coined in Hyde 2008), i.e., the *General Alignment* generates unattested systems in which the alignment favors center-of-the-prosodic-category configurations.

In the so-called *Relation-Specific Alignment* approach of Hyde (2008, 2012), a set of categories (listed within ‹ ›) is prohibited from occurring in the specified misalignment configuration. In this approach, alignment does not globally "count syllables" to assess the distance from the specified category; rather, every element (e.g. σ = SYLLABLE) is assessed locally as to whether it intervenes between another element (e.g. σ_{Hd} = HEAD of a FOOT).

Since the degree of misalignment of specific morphemes to prosodic structure in the analyses that follow is never decisive, the operation of the morphophonological constraints is effectively categorical and for simplicity based on the notion of *General Alignment*. The morpheme in the winning candidate of an evaluation either fulfills the specified alignment requirement or "ties" on the misalignment with its active competitors, i.e., it is equally misaligned to the prosodic structure as its active competitors.

On the other hand, constraints that are actively distance-sensitive, such as the ones that enforce alignment of prosodic categories with respect to each other, are based on the notion of *Relation-Specific Alignment*; cf. (9) below adapted from Hyde (2014: 305). The motivation for the constraints and their theoretical advantages are discussed in the next section.

(9) ALL-HEADS-RIGHT
"Assess a violation mark for every ‹Pw, σ_{Hd}, σ› such that σ_{Hd} precedes σ within Pw."

ALL-HEADS-LEFT
"Assess a violation mark for every ‹Pw, σ_{Hd}, σ› such that σ precedes σ_{Hd} within Pw."

4.6. Motivating Weak Bracketing

The familiar *Weak Layering* (Itô and Mester 1992) in the previous treatments of metrification (e.g. McCarthy and Prince 1993; Kager 2001, 2005; Alber 2005) allows for syllables that would potentially create degenerate structures to remain unfooted. In OT, this is achieved by ranking PARSE (which enforces exhaustive parsing of segments into prosodic constituents) under the dominating FTBIN (which requires feet to be strictly binary), as shown in Tableau 4.1, below. The cover constraint FAITH is typically conceptually decomposable into the faithfulness constraints MAX (which militates against a deletion of the input material) and DEP (that militates against an addition of the output material, i.e. against epenthesis); see (10).

(10) FTBIN
"Feet are binary under moraic/syllabic analysis, i.e., feet represent pairs of μs/σs."
(Prince and Smolensky 1993: 50; Kager 1999: 161; McCarthy 2008: 226)

FAITH (-INPUTOUTPUT) = MAX and DEP (e.g. Yip 2003).

(i) MAX

"Input segments must have output correspondents; i.e. no deletion."

(Kager 1999: 67; McCarthy 2004: 82, 257)

ii) DEP

"Output segments must have input correspondents; i.e. no epenthesis."

(Kager 1999: 68; McCarthy 2004: 82, 252)

PARSE

"Incur a violation for every SYLLABLE that is not parsed into a FOOT."

(Prince and Smolensky 1993: 94; Kager 1999: 152, 162; McCarthy 2004: 168)

Tableau 4.1: *Weak Layering Hypothesis*

σσσ		FTBIN	FAITH	PARSE
a.	(σσσ)	*!		
☞ b.	(σσ)σ			*
c.	(σσ)(σσ)		*!	
d.	(σσ)		*!	

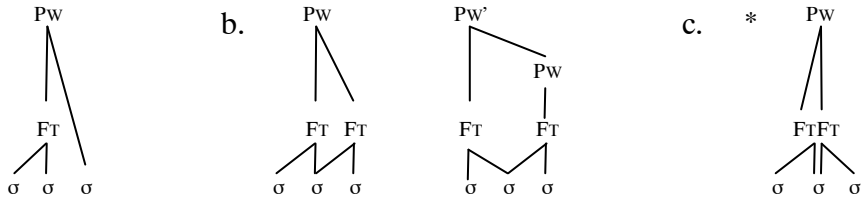
This conception of metrical structure, however, creates a set of erroneous predictions under OT (see Hyde 2002, 2014; Hermans 2011). The permutation of the ranking of the constraints in Tableau 4.1 above predicts typologically unattested (and highly implausible) languages that exclusively surface with even numbers of syllables. This is theoretically modeled by re-ranking FAITH under PARSE and FTBIN, i.e. by requiring exhaustive footing but allowing for deletion or epenthesis, as shown in Tableau 4.2, below.

Tableau 4.2: *Even Output Problem* under *Weak Layering*

σσσ		FTBIN	PARSE	FAITH
a.	(σσσ)	*!		
b.	(σσ)σ		*!	
☞ c.	(σσ)(σσ)			*
☞ d.	(σσ)			*

Hyde (2001, 2011) refers to this as the *Even Output Problem* and proposes a solution in terms of the representation of feet that allows for a so-called *weakly bracketed* foot. This is in essence a bi-pedal structure—a union of two feet that share a syllable—or from the point of view of the syllable, a structure in which a single SYLLABLE may belong to two distinct FEET, provided each FOOT has a unique HEAD. The tree structures below compare prosodic structures under the *Weak Layering* (11a) and *Weak Bracketing* (11b) approaches, respectively. The structure in (11c) contains illegally over-lapping feet, since the two feet are headed by the same syllable.

(11) a. b. c. *



Under *Weak Bracketing*, the candidate (f) in Tableau 4.3, contains a bi-pedal SYLLABLE that is shared by both FEET. By definition, this syllable may be a HEAD of only one FOOT (or neither), but it may belong to both FEET to satisfy an undominated FTBIN constraint, cf. the

unbounded candidate (a) and candidate (b) with a degenerate foot. Moreover, the winner represents an exhaustive parse, cf. sub-optimal candidate (c), which is faithful to the input.[61]

Tableau 4.3: *Even Output Problem* under *Weak Bracketing*

σσσ		FTBIN	PARSE	FAITH
a.	(σσσ)	*!		
b.	(σσ)(σ)	*!		
c.	(σσ)σ		*!	
d.	(σσ)(σσ)			*!
e.	(σσ)			*!
☞ f.	(σ(σ)σ)			

Apart from the *Even Output Problem* illustrated in Tableau 4.3, the *Weak Bracketing* approach solves two other previously problematic issues: i) asymmetries in the typology of Quantity-Insensitive (QI) iterative systems, i.e. metrical systems involving secondary stress patterns; cf. Hyde (2014) and ii) the *Odd Heavy Problem* (Hyde 2008, 2009). For illustration, let us look at the said asymmetries. The trochaic pattern in (12) below with a lapse at the LEFT EDGE of a PW is attested in Garawa, varieties of Spanish, Norwegian, or Indonesian.

(12) a. Even-parity forms; e.g. $[\acute{\sigma}_1\ \sigma_2\ \acute{\sigma}_3\ \sigma_4\ \acute{\sigma}_5\ \sigma_6]_{PW}$

b. Odd-parity forms; e.g. $[\acute{\sigma}_1\ \sigma_2\ \sigma_3\ \acute{\sigma}_4\ \sigma_5\ \acute{\sigma}_6\ \sigma_7]_{PW}$

[61] Due to a substantial ease of exposition, I have not adopted the notation of Hyde for the purposes of this study. The modifications are the following: In place of his $\overset{\sigma\sigma\sigma}{\leftsquigarrow}$ or $\overset{\sigma\sigma\sigma}{\rightsquigarrow}$ which represents a weakly bracketed foot, I am simply using $(\sigma_{(}\sigma)\sigma_{)}$. The position of the head is indicated by an underline in this dissertation, i.e., his $\overset{\sigma\sigma\sigma}{\leftsquigarrow}$ is represented by $(\sigma_{(}\underline{\sigma})\underline{\sigma}_{)}$ and his $\overset{\sigma\sigma\sigma}{\rightsquigarrow}$ by $(\underline{\sigma}_{(}\underline{\sigma})\sigma_{)}$. Gridmarks representing stressed syllables are indicated by an acute, i.e., his $\overset{x}{\overset{\sigma\sigma\sigma}{\leftsquigarrow}} = (\sigma_{(}\underline{\acute{\sigma}})\underline{\sigma}_{)}$, etc.

In rule-based metrical phonology, this pattern may be generated by placing a single trochaic binary foot at the LEFT EDGE of the form—in even-parity $[(\acute{\sigma}_1\sigma_2)_{\text{FT-L1}}\ \sigma_3\sigma_4\sigma_5\sigma_6]_{\text{PW}}$ and in odd-parity forms $[(\acute{\sigma}_1\sigma_2)_{\text{FT-L1}}\ \sigma_3\sigma_4\sigma_5\sigma_6\sigma_7]_{\text{PW}}$—and by an iterative alignment of binary FEET, this time starting from the opposite RIGHT EDGE—in even-parity $[(\acute{\sigma}_1\sigma_2)_{\text{FT}}(\acute{\sigma}_3\sigma_4)_{\text{FT-R2}}(\acute{\sigma}_5\sigma_6)_{\text{FT-R1}}]_{\text{PW}}$ and in odd-parity $[(\acute{\sigma}_1\sigma_2)_{\text{FT}}\ \sigma_3(\acute{\sigma}_4\sigma_5)_{\text{FT-R2}}(\acute{\sigma}_6\sigma_7)_{\text{FT-R1}}]_{\text{PW}}$. Under *Weak Layering*, the third syllable from the LEFT EDGE remains unfooted in odd-parity forms, whereby a lapse is created.

In OT, this pattern is generated by ranking FTBIN and ALIGN (PW, L, FT, L) over PARSE, and the latter one in turn over ALL-FEET-RIGHT (which penalizes every FOOT not aligned with the RIGHT EDGE of a PROSODIC WORD), cf. (13). The distance of misalignment is for every FOOT measured in SYLLABLES; see Tableau 4.4, below.

(13) ALIGN (PW, $^{\text{R}}/_{\text{L}}$, FT, $^{\text{R}}/_{\text{L}}$)
"The $^{\text{RIGHT}}/_{\text{LEFT}}$ EDGE of every PW coincides with the $^{\text{RIGHT}}/_{\text{LEFT}}$ EDGE of a FOOT".
(McCarthy and Prince 1994: 6; Kager 1999: 169)

FTFORM=$^{\text{IAMB}}/_{\text{TROCHEE}}$
"FEET are $^{\text{Right}}/_{\text{Left}}$-headed." (Kager 1999: 172; McCarthy 2008: 227)

ALL-FEET-$^{\text{RIGHT}}/_{\text{LEFT}}$
"Every FOOT stands at the $^{\text{RIGHT}}/_{\text{LEFT}}$ EDGE of the Pw."
(McCarthy and Prince 1994: 6; Kager 1999: 193, 300; McCarthy 2008: 488, 497)

Tableau 4.4: Trochaic QI system with a lapse in odd-parity: [σ́σσ́σσ] vs. [σ́σσσ́σσ] (attested)

	$\sigma_1\sigma_2\sigma_3\sigma_4\sigma_5\sigma_6$	FtBin	FtForm= Trochee	Align (Pw, L, Ft, L)	Parse	All-Ft-R	All-Ft-L
☞	a. $(\acute{\sigma}_1\sigma_2)(\acute{\sigma}_3\sigma_4)(\acute{\sigma}_5\sigma_6)$					6	6
	b. $(\acute{\sigma}_1\sigma_2)\ \sigma_3\ \sigma_4\ (\acute{\sigma}_5\sigma_6)$				*!*	4	4
	c. $(\acute{\sigma}_1\sigma_2)\ \sigma_3\ (\acute{\sigma}_4)(\acute{\sigma}_5\sigma_6)$	*!			*	6	7
	$\sigma_1\sigma_2\sigma_3\sigma_4\sigma_5\sigma_6\sigma_7$						
	c. $(\acute{\sigma}_1)(\acute{\sigma}_2\sigma_3)(\acute{\sigma}_4\sigma_5)(\acute{\sigma}_6\sigma_7)$	*!				12	9
	d. $\sigma_1\ (\acute{\sigma}_2\sigma_3)(\acute{\sigma}_4\sigma_5)(\acute{\sigma}_6\sigma_7)$			*!	*	6	9
☞	e. $(\acute{\sigma}_1\sigma_2)\ \sigma_3\ (\acute{\sigma}_4\sigma_5)(\acute{\sigma}_6\sigma_7)$				*	7	8
	f. $(\acute{\sigma}_1\sigma_2)(\acute{\sigma}_3\sigma_4)\ \sigma_5\ (\acute{\sigma}_6\sigma_7)$				*	8!	7

With a simple modification of the relevant alignment parameters, including the replacement of FootForm=Trochee by its metrical analogue FootForm=Iamb, an exact mirror image may be generated just as easily, cf. Tableau 4.5, below. However, the problem with this pattern is that it is typologically unattested.

Tableau 4.5: Iambic QI system with a lapse in odd-parity: [σσ́σσ́σ] vs. [σσ́σσ́σσ] (unattested)

	$\sigma_1\sigma_2\sigma_3\sigma_4\sigma_5\sigma_6$	FtBin	FtForm= Iamb	Align (Pw-R, Ft-R)	Parse	All-Ft-L	All-Ft-R
☞	a. $(\sigma_1\acute{\sigma}_2)(\sigma_3\acute{\sigma}_4)(\sigma_5\acute{\sigma}_6)$					6	6
	b. $(\sigma_1\acute{\sigma}_2)\ \sigma_3\ \sigma_4\ (\sigma_5\acute{\sigma}_6)$				*!*	4	4
	$\sigma_1\sigma_2\sigma_3\sigma_4\sigma_5\sigma_6\sigma_7$						
	c. $(\sigma_1\acute{\sigma}_2)(\sigma_3\acute{\sigma}_4)(\sigma_5\acute{\sigma}_6)(\acute{\sigma}_7)$	*!				12	9
	d. $(\sigma_1\acute{\sigma}_2)(\sigma_3\acute{\sigma}_4)(\sigma_5\acute{\sigma}_6)\ \sigma_7$			*!	*	6	9
☹	e. $(\sigma_1\acute{\sigma}_2)(\sigma_3\acute{\sigma}_4)\ \sigma_5\ (\sigma_6\acute{\sigma}_7)$				*	7	8
	f. $(\sigma_1\acute{\sigma}_2)\ \sigma_3\ (\sigma_4\acute{\sigma}_5)(\sigma_6\acute{\sigma}_7)$				*	8!	7

The trochaic-iambic asymmetry exemplified by Tableaux 4.4 and 4.5 above has been a recognized and well-known problem for a long time in the metrical literature (e.g., Hayes 1995). In Hyde's system (2014), the weakly bracketed FOOT representation is shown to derive not only the attested Quantity-Insensitive secondary stress patterns in Tableau 4.4 above, but it also motivates an analysis in which the unattested patterns such as the one in Tableau 4.5 are harmonically bound.[62]

In order to force every SYLLABLE to be parsed into a binary FOOT, the constraint PARSE and the markedness constrained FTBIN are assumed to be undominated. Hyde's approach retains the phonologically and typologically well-motivated constraints such as FTBIN, PARSE, MAX, DEP, but significantly simplifies metrical analysis by disposing of the traditional constraints encoding headedness (FTFORM=$^{\text{IAMB}}/_{\text{TROCHEE}}$) and parsing directionality (ALL-FEET-$^{\text{RIGHT}}/_{\text{LEFT}}$) by replacing them by a single distance-sensitive alignment constraint ALL-HEADS-$^{\text{RIGHT}}/_{\text{LEFT}}$, which requires each SYLLABLE HEAD to be aligned to the relevant edge of a PROSODIC WORD; see (14). The RIGHT EDGE parameter simultaneously forces a trochaic alternation, the LEFT EDGE parameter an iambic one.

(14) ALL-HEADS-RIGHT

"Assess a violation mark for every ‹Pw, σ_{HD}, σ› such that σ_{HD} precedes σ within Pw."

ALL-HEADS-LEFT

"Assess a violation mark for every ‹Pw, σ_{HD}, σ› such that σ precedes σ_{HD} within Pw."

[62] Harmonic bounding is a situation in which one input to output mapping pair receives a set of constraint violations that is a proper subset of the set of constraints violations received by a different input-output pair. A hormonically bound candidate is therefore bound to be sub-optimal.

A very important feature of Hyde's system is the assumption that stress (and by extension rhythm) is assumed to be independent of the hierarchically organized prosodic structure. The assignment of stress itself is represented by the assignment of a GRIDMARK. While only SYLLABLES that are HEADS of FEET may be assigned GRIDMARKS, HEADS themselves may be unstressed, i.e. lack a GRIDMARK.

Metrical patterns may thus be effected by metrical constraints such as INITIAL STRESS (which enforces an assigment of a GRIDMARK on the initial syllable, which consequently must function as a HEAD), NONFINALITY (which requires that final syllables lack a GRIDMARK, i.e. be unstressed), *LAPSE and *CLASH (which require and militate against GRIDMARK occurring on adjacent SYLLABLES, respectively), etc.

Finally, the assignment of GRIDMARKS (i.e. stresses) is also regulated at the level of FEET by the markedness constraint MAP GRIDMARK, which requires that every FOOT have a GRIDMARK within its domain. This has special consequences for the shared or bi-pedal syllables within the domain of a weakly bracketed structure, since the assignment of a GRIDMARK on this SYLLABLE satisfies the requirements of this constraint. Thus, the lapse in the attested trochaic pattern generated by Tableau 4.6 below is created in spite of the violation of this constraint; see the winning candidate (a), in which the second shared FOOT does not carry a GRIDMARK within its domain (i.e. remains completely unstressed).

(15) INITIALSTRESS
"The initial syllable of the PW is stressed"
(Prince 1983; Hyde 2002, 2014: 303)

*CLASH

"Foot-level gridmarks do not occur on adjacent syllables."

MAP GRIDMARK

"A foot-level gridmark occurs within the domain of every foot."

(Hyde 2003: 4; 2014: 303)

Tableau 4.6: The attested trochaic pattern with a lapse in odd-parity input [σσσσσσσ]

$\sigma_1\sigma_2\sigma_3\sigma_4\sigma_5\sigma_6\sigma_7$	FTBIN	ALL-HDS-L	INITIAL STRESS	*CLASH	MAP GRIDMARK
☞ a. $(\underline{\acute{\sigma}}_1\,(\underline{\sigma}_2)\sigma_3)(\underline{\acute{\sigma}}_4\sigma_5)(\underline{\acute{\sigma}}_6\sigma_7)$		9			*
b. $(\underline{\acute{\sigma}}_1\,(\underline{\acute{\sigma}}_2)\sigma_3)(\underline{\acute{\sigma}}_4\sigma_5)(\underline{\acute{\sigma}}_6\sigma_7)$		9		*!	
c. $(\underline{\sigma}_1\,(\underline{\acute{\sigma}}_2)\sigma_3)(\underline{\acute{\sigma}}_4\sigma_5)(\underline{\acute{\sigma}}_6\sigma_7)$		9	*!	*	
d. $(\underline{\acute{\sigma}}_1)(\underline{\acute{\sigma}}_2\sigma_3)(\underline{\acute{\sigma}}_4\sigma_5)(\underline{\acute{\sigma}}_6\sigma_7)$	*!	9			

INITIAL STRESS requires that the initial SYLLABLE of a PW carry a GRIDMARK. Crucially, there is no analogous constraint, which would require the final SYLLABLE of a PW constituent to be stressed. Thus, there is no equivalent constraint to INITIAL STRESS, which could be ranked high and force the unattested candidate (b) in Tableau 4.7 below as the optimal output. This candidate is harmonically bound by the winning candidate (a), exclusively generating only an attested quantity-insensitive iterative pattern (e.g., Araucanian).

Tableau 4.7: The unattested candidate *[σσσσσσσ] is harmonically bound by [σσσσσσσ]

$\sigma_1\sigma_2\sigma_3\sigma_4\sigma_5\sigma_6\sigma_7$	FTBIN	ALL-HDS-R	INITIAL STRESS	*CLASH	MAP GRIDMARK
☞ a. $(\sigma_1\acute{\underline{\sigma}}_2)(\sigma_3\acute{\underline{\sigma}}_4)(\sigma_5(\acute{\underline{\sigma}}_6)\underline{\sigma}_7)$		9	*		
☺ b. $(\sigma_1\acute{\underline{\sigma}}_2)(\sigma_3\acute{\underline{\sigma}}_4)(\sigma_5(\underline{\sigma}_6)\acute{\underline{\sigma}}_7)$		9	*		*!
c. $(\acute{\underline{\sigma}}_1\sigma_2)(\sigma_3\acute{\underline{\sigma}}_4)(\sigma_5(\acute{\underline{\sigma}}_6)\underline{\sigma}_7)$		10!			
d. $(\sigma_1\acute{\underline{\sigma}}_2)(\sigma_3\acute{\underline{\sigma}}_4)(\sigma_5\acute{\underline{\sigma}}_6)(\acute{\underline{\sigma}}_7)$	*!	9	*		

The impossibility of a mirror image lapse near the RIGHT EDGE of the PROSODIC WORD and the typologically curious asymmetry in the iambic system is in Hyde's system due to the fact that the asymmetrical stressability of the LEFT EDGE of the PROSODIC WORD as opposed to its RIGHT EDGE evaluates a marked position of stress within a weakly bracketed structure differently. In other words, the marked structure with an unstressed shared FOOT is tolerated at the beginning of a PROSODIC WORD, but not at the end. There, only properly mapped weakly bracketed structure $(\sigma_(\acute{\sigma})\sigma_)$ may emerge. Allowing for the representation of a weakly bracketed FOOT generates the attested typologies of quantity-insensitive secondary-stress systems and avoids pathologies created by the *Weak Layering* such as the *Even Output* problem.

The chapters that follow further testify to the relevance of *Weak Bracketing* in analyses of phenomena at the interface between phonology and morphology.

CHAPTER 5

(NON-)REALIZATION OF FINAL PALATAL GLIDES

5.1. Introduction

The realization of word-final *-յ -y* [-j] is one of the few minor ways in which the traditional pronunciation of Classical Armenian (CA) departs from the original orthography designed to record the earliest attested Old Armenian (OA) language. The didactic rules of the classical orthography dictate that word-final *-յ -y* [-j] be left unpronounced, see Table 5.1—with the exception of *monosyllabic nouns*, see Table 5.2.

Table 5.1: Pollysyllables and (monosyllabic) verbs with OA *-յ -y*

Traditional orthography (ca. 400 Ad)	Transcription	Traditional Pronunciation (ca. 1100+ Ad)	Gloss
արքայ	*arkʿay*	[ɑɾ.ˈkʰɑ]	‘king’
քահանայ	*kʿahanay*	[kʰɑ.hɑ.ˈnɑ]	‘priest’
քրիստոնեայ	*kʿristoneay*	[kʰə.ɾis.tɔ.ˈnjɑ]	‘Christian’
սիրոյ	*siroy*	[si.ˈɾɔ]	‘of/to/from love’
բերանոյ	*beranoy*	[bɛ.ɾɑ.ˈnɔ]	‘of/to/from mouth’
Տիգրանայ	*Tigranay*	[tig.ɾɑ.ˈnɑ]	‘of/to/from Tigran’
ստացայ	*stacʿay*	[əs.tɑ.ˈtsʰɑ]	‘I obtained’
գոյ	*goy*	[ˈgɔ]	‘exists’
կայ	*kay*	[ˈkɑ]	‘remains’

Table 5.2: Monosyllabic nominals and interjections with OA -յ *-y*

Հայ	*Hay*	[ˈhɑj]	‘Armenian’
խոյ	*xoy*	[ˈχɔj]	‘ram’
կայ	*kay*	[ˈkɑj]	‘station’
գոյ	*goy*	[ˈgɔj]	‘existence’
բայ	*bay*	[ˈbɑj]	‘word, utterance’
նայ	*nay*	[ˈnɑj]	‘humid, wet’
վայ	*vay*	[ˈvɑj]	‘woe’
այ	*ay*	[ˈɑj]	‘oh!, ho!’

Crucially, the final palatal glide is traditionally pronounced in all pollysyllables when covered by further morphology, i.e. before case endings and in composition, see Table 5.3. It is commonly assumed that the word-final palatal glide deletes as a phonological segment in all polysyllables and monosyllabic verbs when in word-final position, cf., Godel (1975: 24); Schmitt (1981: 32); Vaux (1998: 20), etc.

Table 5.3: Polysyllablic nominals with OA -յ *-y*

արքայք	*arkʿay-kʿ*	[ɑɾ.ˈkʰɑ$_{(.)}$**j**(ə)kʰ]	‘kings’ (NOM.PL)
արքայս	*arkʿay-s*	[ɑɾ.ˈkʰɑ.**j**əs]	‘this king’ or ‘kings (ACC.PL)’
արքայից	*arkʿay-icʿ*	[ɑɾ.kʰɑ.ˈ**j**itsʰ]	‘of/to/from kings’
արքայութիւն	*arkʿay-owtʿiwn*	[ɑɾ.kʰɑ.**j**u.ˈtʰjun]	‘kingdom; reign’
արքայազն	*arkʿay-azn*	[ɑɾ.kʰɑ.ˈ**j**ɑ.zən]	‘prince’ (“royal-offspring”)
արքայակերպ	*arkʿay-a-kerp*	[ɑɾ.kʰɑ. **j**ɑ.ˈkɛɾp]	‘royal, kingly, kinglike’

However, there is at least one monosyllabic nominal that falsifies the conventional hypothesis: **քոյ** *kʿo-y* ‘of thy, yours (GEN.SG)’, which is traditionally pronounced [ˈkʰɔ], not the expected ˣ[ˈkʰɔj]. In fact, this form has a later, hypercharacterized variant **քոյոյ** *kʿo-y-oy* [kʰɔ.ˈjɔ],

i.e. /POSS.2SG-GEN.SG-GEN.SG/, which was arguably created to avoid ambiguity with two other homophonous forms: the possessive pronoun ⱔⲟ *kʿo* [ˈkʰɔ] ‘thy, your.NOM.ACC.SG’ and the GEN.SG form of the 2SG personal pronoun ⱔⲟ *kʿo* [ˈkʰɔ] ‘of thee’, which could be functionally differentiated from each other syntactically.

5.2. Phonologically conditioned zero allomorphy

In this chapter, I argue that the pattern of (non-)realization of the word-final palatal glide in the traditional pronunciation of CA may be explained by morphophonological principles that can refer to specific morphological units, rather than to syllable count and/or syntactic categories. The final palatal glide is always pronounced in lexical ROOTS (i.e. /ᵒi-/; e.g. ⲭⲟⲩ *xoy* ‘ram’ [ˈχɔj] ← /xoi-/ ROOT-) or when it signals ABSTRACT.NOUN SUFFIX /-i/ (e.g. ⳅⲟⲩ *goy* ‘existence’ [ˈgɔj] ← /gɔ-i-/ ROOT-ABST.NOUN-). In contrast, when the final palatal glide represents other morphemes (see Table 5.4 below), it is only realized when parsed into syllable-onset positions; cf. Table 5.3 above.

Glides affected by this pattern are always word-final, since glides are always realized when parsed into onsets, i.e. before inflectional morphology. Since all morphology happens to start with a vowel, the affected suffixes are never parsed into codas in word-medial position, only word-finally; i.e. ⲁⲣⲕⲁⲩ *arkʿa-y* ‘king’ OA *[ɑɾ.ˈkʰɑj.] > CA [ɑɾ.ˈkʰɑ] vs. ⲁⲣⲕⲁⲩⲟⲩⲑⲱⲛ *arkʿa-y-owtʿwn* [ɑɾ.kʰɑ.ju.ˈtʰjun] ‘kingdom’; ⲁⲣⲕⲁⲩⲥ *arkʿa-y-s* [ɑɾ.ˈkʰɑ.jəs] ‘kings (ACC.PL)’ or ‘this king (NOM.SG)’, etc. The only exception is NOM.PL ⲁⲣⲕⲁⲩⲕ *arkʿa-y-kʿ* ‘kings’, which is traditionally pronounced as [ɑɾ.ˈkʰɑjkʰ], i.e. with /-i/ NOMINAL.ADJ parsed into a word-final complex coda.

This realization, however, represents a later reduction of the conservative [ɑɾ.ˈkʰɑ.jəkʰ] (← /ɑɾkʰɑ-i-i-kʰ/ ROOT-ADJ-THEMEVOWEL-PL), which is preserved as such in the liturgical usage.

Table 5.4: Nonrealized and realized OA *-յ -y*

NON-REALIZED	E.G.,	MORPHOLOGICAL ANALYSIS	
GEN.DAT.ABL.SG	բերանոյ	/bɛɾɑn-ɔ-i/	ROOT-THV-GEN.DAT.ABL.SG
GEN.SG	քոյ 'of thy'	/kʰɔ-i/	ROOT-GEN.SG
PRES.3SG	գոյ 'exists'	/gɔ-i/	ROOT-PRES.3SG
	կայ 'stands'	/kɑ-i/	ROOT-PRES.3SG
AOR.1SG	կերայ 'I ate'	/kɛɾ-ɑ-i/ 'I ate'	ROOT-MED-AOR.1SG
NOMINAL.ADJ	քահանայ	/kʰɑhɑnɑ-i-/	ROOT-NOMINAL.ADJ-
	արքայ	/ɑɾkʰɑ-i-/	ROOT-NOMINAL.ADJ-
REALIZED			
LEXICAL ROOT	հայ 'Armenian'	/hɑi-/	ROOT-
	վայ 'woe'	/vɑi-/	ROOT-
	խոյ 'ram'	/χɔi-/	ROOT-
ABSTRACT.NOUN	բայ 'utterance'	/bɑ-i-/	ROOT-ABSTRACT.NOUN-
	գոյ 'existence'	/gɔ-i-/	ROOT-ABSTRACT.NOUN-
	կայ 'station'	/kɑ-i-/	ROOT-ABSTRACT.NOUN-

The assumption of a loss of specific suffixes but preservation of others partially explains the illusion of syntactic conditioning based on the split between verbs and nominals, cf. *գոյ go-y* 'exist'-ABSTRACT.NOUN — OA/trad. [ˈgɔj] 'existence' vs. *գոյ go-y* 'exist'-PRES.IND.3SG — OA *[ˈgɔj] 'exists' → trad. /gɔ-Ø/ [ˈgɔ]. The other part of the explanation lies in the fact that the ABSTRACT.NOUN suffix */-i/, which regularly continues PIE */-ti/ ABSTRACT.NOUN, has been—*by sheer historical coincidence*—preserved only in synchronic monosyllables; cf., *բայ bay* [ˈbɑj]

‘utterance; speech; verb’ < PIE *$b^{h}\underset{\circ}{h}_{2}$-ti- (cf. Gk. φάσις ‘utterance’); ***կայ*** *kay* [kɑj] ‘standing; station’ < *$g^{\mu}\underset{\circ}{h}_{2}$-ti- (perhaps cognate with Gk. βάσις ‘step; pedestal’); etc.

The diachronic explanation for such a pattern may be sought in the fact that the PIE abstract noun suffix */-ti-/ was a so-called primary suffix; i.e. */-ti-/ was selected by ROOTs (with restricted shapes), and this structural configuration was prototypically realized in two syllables. After the fixation of the pre-Armenian stress on the penultimate syllable and loss/reduction of the final syllable rimes/nuclei, the forms exhibiting this (synchronically) semi-productive suffix became invariably monosyllabic.[63]

- **/CeH-ti-/ → PIE *$b^{h}\underset{\circ}{h}_{2}$-ti- (√$b^{h}eh_{2}$ ‘speak’) > *[ˈbɑ.θi] > *[ˈbɑ.ði] > *[ˈbɑ.ji] > ***բայ*** *bay* [ˈbɑj] ‘speech, discourse; word; verb’ (cf. Gk. φάσις ‘utterance; expression’)
- **/CeR-ti-/ → PIE *$b^{h}\underset{\circ}{r}$-ti- (√b^{h}er ‘carry’) > *[ˈbɑɾ.ði] > *[ˈbɑɾ.di] > ***բարդ*** *bard* [ˈbɑɾd] ‘pile; sheaf; (grammatical) compound’ (cf. Ved. *bhṛ́-tí-ḥ* ‘support; bearing’)
- **/CeRC-ti-/ → PIE *$\underset{\cup}{u}$id-ti- (√$\underset{\cup}{u}e\underset{\cup}{i}$d ‘find’) > *[ˈγ$^{\mu}$it.ti] > *[ˈγiθ.ti] > *[ˈgiβ.ti] > ***գիւտ*** *giwt* *[ˈgiwt] > traditionally [ˈgjut] ‘invention’ (cf. Skt. *á-vit-ti-ḥ* ‘not-finding’)
- **/CeC-ti-/ → *$\underset{\circ}{h}_{2}$d-ti- (√h_{2}ed ‘cut’) > [ˈħɑt.ti] > *[ˈχɑθ.ti] > *[ˈhɑβ.ti] > ***հաւտ*** *ḥawt* *[ˈhɑwt] > traditionally ***հօտ*** *hōt* [.hɔt.] ‘division; flock’ (cf. Hitt. *ḫattāi-* ‘to cut’)
- **/CHeRC-ti-/ → *$kh_{2}e\underset{\cup}{i}$d-ti- (cf. Martirosyan 2010: 725) > *[ˈkħɑjd.ti] > *[ˈk$^{\chi}$ɑj.ti] (i.e. *COMPLEXCODA) > *[ˈχɑj.t^{h}i] > ***խայթ*** *xayt‘* [ˈχɑjt^{h}] ‘sting; bite’ (cf. Lat. *caedo* ‘I hew, fell’)

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[63]The PIE feminine ABSTRACT.NOUN suffix */-ti/ is in OA also reflected as part of complex suffixes, cf. */-ti-h_{3}on-/ > OA ***-թիւն*** *-t‘iwn* (cf. Lat. *-tiōn-* ‘id.’) or the secondary */-ti/ abstract nouns formed on the bases of *s-stems, e.g. virtual */-ōs-ti-/ > OA ***-ուստ*** *-ust* (e.g. ***կորուստ*** *kor-owst* ‘loss; destruction’, cf. ***կորնչիմ*** *kor-nč‘-i-m* ‘I am lost’). These suffixes became (highly) productive in OA, and so there is naturally no syllabic limit on their nominal formations.

The different treatment of specific */-i/ morphemes may be justified on functional grounds. The dropped OA inflectional suffixes (PRES.IND.3SG, AOR.IND.1SG and GEN.SG) either stood in opposition to the other endings within the relevant paradigms or were semantically expendable; cf. OA քահանայ *k'ahana-y* *[k^{h}ɑ.hɑ.ˈnɑj] 'priest-NOMINAL.ADJ', i.e. '[a] priest-ly [person]' → CA [k^{h}ɑ.hɑ.ˈnɑ-Ø] 'id.'. The suffix that encoded nominal abstracts, however, did not stand in any paradigmatic or semantic opposition, and consequently its absence would have had serious semantic consequences; in other words, the very concept that the suffix indicates would have been irretrievably unexpressed. Similarly, if the final glide formed part of the root (cf. հայ *hay* [ˈhɑj] ← /hɑi̯-/), its surface realization dominated the ban on codas, presumably in order to functionally preserve lexical contrast.

In optimality-theoretic terms, a grammar that is sensitive to functional load and semantic recoverability of morphemes may be modelled by the promotion or demotion of constraints that enforce the realization of certain morphological elements (REALIZE MORPH) above or below constraints that enforce phonological markedness (e.g. ONSET and NOCODA).
When the morpheme consists of only one segment, the ranking PHONOLOGICAL MARKEDNESS » REALIZE MORPHEME virtually creates a specific type of allomorphy in which one of the allomorphs may be described as phonologically null. Thus, at some level of abstraction, we may morphologically describe the behavior of the suffixes that exibit surface alternations as a phonologically conditioned zero allomorphy, i.e. */-i/ (≠ ABSTRACT.NOUN) → {-i} ~ {-Ø}.

The ABSTRACT.NOUN suffix was in the traditional pronunciation evidently not subject to deletion. I assume, therefore, that its realization dominated prosodic wellformedness principles

(i.e., the constraint enforcing its realization was given priority over NoCoda, see section 4.5.). The illusion of the existence of a reference to monosyllabicity and nominal/verbal status may be therefore explained as a morphophonological process that may refer to or target specific morphological entities.

These assumptions may be tested by the traditional realization of ⱔⲟⲩ *kʿo-y* 'of thy', which is the Gen.Sg form of the possessive pronoun ⱔⲟ *kʿo* [ˈkʰɔ] 'thy; thine (Nom.Acc.Sg)'. The traditional analysis predicts that as a monosyllabic nominal, ⱔⲟⲩ *kʿo-y* should be traditionally pronounced *[ˈkʰɔj] as indicated by the traditional orthography;[64] however, ⱔⲟⲩ *kʿoy* is homophonous with ⱔⲟ *kʿo* [ˈkʰɔ] in the traditional pronunciation, and the two spellings are traditionally orthographically perfectly interchangeable; cf. ⲗⲛⲧ ⱔⲟ *ənd kʿo* 'with thee' (Bible+) ~ ⲗⲛⲧ ⱔⲟⲩ *ənd kʿoy* 'id.' (e.g. Aragoncʿi 1721).[65]

I assume that OA ⱔⲟ *kʿo* diachronically reflects two inherited forms. As the suppletive Gen.Sg of the personal pronoun ⲇⲟⲩ *dow* 'thou' (i.e. in the meaning 'of thee'), it continues an inherited *tu̯eso (cf. Hom. τέο, OCS *česo* 'of what?' < *kʷeso). As the Nom.Acc.Sg form of the second person possessive pronoun, it may perhaps continue *tu̯o-s (cf. Gk. σός, OCS *tvo-jь* 'id.'). OA ⱔⲟⲩ *kʿoy*, the Gen.Sg. of the latter ⱔⲟ *kʿo* (< *tu̯os), continues an inner-Armenian *tu̯o-si̯o and must have been synchronically segmentable into the lexical root morpheme ⱔⲟ- *kʿo-* 'thy' (<

[64] Additionally, we may assume that the final palatal glide was originally pronounced based on the shape of the hypercharacterized variant ⱔⲟⲩⲟⲩ *kʿoy-oy* 'id.', which preserves the segment in word-medial position (i.e., ⱔⲟⲩ /kʰo-i̯/ 'thy-Gen.Sg' → ⱔⲟⲩⲟⲩ /kʰoi̯-o-i̯/ 'id.-ThemeVowel-Gen.Sg').

[65] The canonical distribution of these forms in OA is nicely illustrated in Judith 11:4; Ⲉⲛⲕⲁ՛ⲗ ⲍⲃⲁⲛⲁ ⲁⲗⲁⲭⲛⲟⲩ ⱔⲟⲩ, ⲓⲉ ⲩⲟⲩⲉⲥⲍⲏ ⲁⲗⲁⲭⲏⲛ ⱔⲟ ⲁⲣⲁⲍⲏ ⱔⲟ. *Ənkál zbans ałaxnoy* ***kʿoy*** (Gen.Sg of ⱔⲟ *kʿo* 'thy'), *ew xōsescʿí ałaxin* ***kʿo*** (Possessive.2Sg.Nom) *ařaǰi* ***kʿo*** (Gen.Sg of ⲇⲟⲩ *dow* 'thou') "Receive the words *of thy* servant and suffer *thine* handmaid to speak in front *of thee*."

*tu̯o-) characterized by the nominal GEN.SG case suffix -յ *-y* (< *-si̯o). The two forms, քո *kʻo* 'of thee; thy' and քոյ *kʻo-y* 'of thy', merged phonetically in the later language because the process in question specifically targeted the morphological ending, not monosyllabic nominals.

- NOM.SG.POSS.2SG քո *kʻo* [ˈkʰɔ] 'thy, your (SG)' < PIE *tu̯o-s (cf., Gk. σός, OCS *tvo-jь* 'id.')
- GEN.SG.PRO.2SG քո *kʻo* [ˈkʰɔ] 'of thee, of you (SG)' < *tu̯-eso (cf., Hom. τέο, OCS *česo* 'of what?' < PIE *kᵘ-eso); cf. NOM.SG.PRO.2SG դու *dow* 'thou' < PIE *tŭ (cf. E *thou* 'id.')
- GEN.SG.POSS.2SG քոյ *kʻoy* [ˈkʰɔ] 'of thy' < OA քոյ *kʻoy* *[ˈkʰɔj] < QIE *tu̯o-si̯o (cf. Skt. *tásya* 'of that/him' < PIE *to-si̯o)

Furthermore, this original morphophonological pattern is in the medieval period overapplied and leads to the spelling convention of 'covering' any word-final vowel with the silent grapheme for the palatal glide. Thus, written final sequences such as °այ *°ay* may in the post-CA text or even in the extant (redacted) copies of OA texts stand for an original OA °ա *°a*; i.e., final orthoghraphic °ա *°a and* °այ *°ay* are practically interchangeable—even in monosyllabic nominals! For instance, many versions of the anonymous Armenian translations of the *Art of Grammar* by Dionysios Thrax write the names of letters such as Դ *D* (= OA դա *da*) as դայ *day* (pronounced [dɑ]), Զ *Z* (= OA զա za) as զայ *zay* [ˈzɑ], Ռ *R̄* (= OA ռա *r̄a*) as ռայ *r̄ay* [ˈrɑ], etc.

A grammar responsible for the morphophonological pattern just described will be formalized using Optimality Theory (Prince and Smolensky 2004) in (**5.5**). In it, I assume that morphophonological constraints that enforce realization of specific morphemes (REALIZE MORPH) interact (by ranking) with constraints enforcing prosodic wellformedness, in this case, at the level of syllabic structure (ONSET and NOCODA).

5.3. Functional dispensability and syllabic markedness

It we take the traditional analysis at its face value, it actually assumes that a specific phonetic segment is phonologically different when it builds word-forms functioning as one class of lexemes than when it is used to build word-forms functioning as another lexical category: the final glide is thus presumably preserved in **Հայ** *Hay* [ˈhɑj] 'Armenian' because the lexeme is a noun but presumably deleted in **կայ** *kay* *[ˈkɑj] (> trad. [ˈkɑ]) because the lexeme is a verb. As we have seen in the previous section, however, the reference to lexical categories is arguably epiphenomenal. The final segment that is either covert/suppressed or overt/expressed forms part of independent morphological suffixes (with specific semantic value). If we look at the value of the suffixes that are dropped from a functional angle, the suffixes appear to be either morphologically recoverable or semantically dispensable.

Let us look at the final **-յ** *-y*'s in CA *verbs* regardless of their surface syllabic count. These glides are invariably suffixed inflectional morphemes, namely PRESENT.INDICATIVE.3SG and AORIST.INDIC.MEDPASS.1SG. The paradigms in (1) show a simple morphological analysis of the present indicative of the OA verb **լամ** *la-m* 'I weep' and its continuation (with a modified syntactic function) into modern Armenian.

(1)		OA PRES.IND	EA FUT.SUBJ	WA PRES.SUBJ
	√-1SG	**լամ** *la-m*	**լամ** *la-m*	**լամ** *la-m*
	√-2SG	**լաս** *la-s*	**լաս** *la-s*	**լաս** *la-s*
	√-3SG	**լայ** *la-y* *[lɑj]	**լա** *la-Ø* [lɑ]	**լայ** *lay* [lɑ] = /lɑ-Ø/
	√-1PL	**լամք** *la-mkʿ*	**լանք** *la-nkʿ*	**լանք** *la-nkʿ*
	√-2PL	**լայք** *la-ykʿ*	**լաք** *la-kʿ*	**լաք** *la-kʿ*
	√-3PL	**լան** *la-n*	**լան** *la-n*	**լան** *la-n*

The final -յ *-y* in WA լայ *lay* is purely orthographic; the form is pronounced [ˈlɑ], and the simplest morphological analysis arguably contradicts the traditional orthography. Observe that the loss of the 3SG */-i/ suffix has no consequences for the functional contrast of word-forms within the paradigm. This is perhaps one of the reasons losses of inflectional suffixes are typologically quite common. I argue that the simplest analysis of the data in (1) is to assume that the 3SG ending */-i/ (→ *[-j]) was lost (or replaced by /-Ø/) on its way to the modern language, just as 2PL /-yk^{h}/ was obviously replaced by /-k^{h}/.[66]

Similarly, the paradigm of the suppletive aorist indicative stem OA կեր-ա- *ker-a-* (present indicative is supplied by ուտեմ *ut-e-m* 'I eat') is shown in (2). The traditional pronunciation may be assumed to indicate that the ending of the first person singular was, on its way to the modern language, morphologically lost; i.e., OA կերայ *[kɛr-ɑ-j] ROOT.AOR-MEDPASS-1SG → CA */ker-a-Ø/ 'id.' → mod. Arm. /ker-a/ ROOT.AOR-1SG (MEDPASS = MEDIOPASSIVE). The spelling in WA continues the historical orthography and does not reflect the relevant historical changes in morphology and pronunciation.

(2)

	OA AOR.IND.MEDPASS	EA AOR.IND.	WA AOR.IND
√-MEDPASS-1SG	կերայ *ker-a-y*	կերա *ker-a*	կերայ *ker-ay* [-ˈɑ]
√-MEDPASS-2SG	կերար *ker-a-r*	կերար *ker-ar*	կերար *ker-ar*
√-MEDPASS-3SG	կերաւ *ker-a-w*	կերավ *ker-av*	կերաւ *ker-aw*
√-MEDPASS-1PL	կերաք *ker-a-kʿ*	կերանք *ker-ankʿ*	կերանք *ker-ankʿ*
√-MEDPASS-2PL	կերայք *ker-a-ykʿ*	կերաք *ker-akʿ*	կերաք *ker-akʿ*
√-MEDPASS-3PL	կերան *ker-a-n*	կերան *ker-an*	կերան *ker-an*

[66] The change of CA 1PL -մք /-m(-)k^{h}/ (= *[-mək^{h}] > *[-mk^{h}]) to modern Armenian -նք /-nk^{h}/ [-ŋk^{h}] is apparently regular.

The same analysis may be assumed in the case of the genitive (dative, ablative, and locative) singular ending *-յ* /-y/ *[-j] on polysyllabic nominals such as OA *Տիգրանայ Tigran-a-y* *[tigrɑnɑj] or OA *բերանոյ beran-o-y* *[bɛrɑnɔj] 'mouth-THEMV-GEN.SG.', traditionally pronounced [tigrɑnɑ] and [bɛrɑnɔ], respectively. The GEN.SG */-i-/ was on the way to the modern language subject to prosodic well-formedness when its surface reflex was to be parsed into a coda after a vowel. Instances of the GEN.SG */-i/ had been evidently subject to prosodic well-formedness already in pre-OA. In OA, the GEN.SG desinence of the *i*-stem inflection is *-ի -i*, not the expected *-իյ *-i-y*, which synchronically represents */-i-i̯(ɔ)/ (i.e. -THEM.VOWEL-GEN.SG). The palatal glide was lost in this desinence already in Pre-OA due to an unrelated phonological process (the OBLIGATORY CONTOUR PRINCIPLE; cf. also INST.SG. *-ու -ow* [-u] < *[-u(u̯)] < PA */-u-βi̯/ < PIE *-b^{h}i) in which the surface realization of the morpheme merged with the realization of the homorganic thematic vowel into the attested OA *-ի -i* [-i].

5.4. Polysyllabic nominals with the semantically expendable nominalizer */-i/

The argument that the final *-յ -y* on polysyllabic nouns is to be interpreted as a synchronically recognizable suffix is provided by the phonological development of original final syllables in the relatively recent pre-history of OA. The synchronic final stress is historically a result of the original penultimate stress prior to the loss of the original final rimes, e.g., *եբեր e-ber* [jɛ.ˈbɛr] 'carried' < *[ɛ.ˈb̯ɛ.rɛ] < *é-b^{h}er-e-t (Ved. *ábharat*, Gk. ἔφερε).[67]

[67] As far as the relative chronology of the apocope of final rhymes is concerned, there is enough evidence to assume that the inherited final syllables were still present in the language during the time of the earliest Iranian loanwords, as has been convincingly argued by Olsen (2005) and reflected in the earlier opinion of a number of scholars (e.g. Meillet 1911: 149, 1936: 23; Jensen 1959: 19; Olsen 1999: 859; Matzinger 2005: 27ff.).

Early loanwords from Syriac into pre-OA also exhibit loss of final syllables; e.g., Syriac *lēqā* 'rudder' ultimately becomes a monosyllabic OA ղեկ *łek* 'id.', see (3). However, the original final Syriac syllable is preserved if a lexeme was extended with the adjectival suffix */-i-/ before the loss of final syllables; e.g., Syriac *kāhānā* 'priest' ultimately becomes OA քահանայ *kʿahana-y* 'id.' (not **քահան **kʿahan) via */k^{h}ahana+i̯-i-/, see (4). The lists in (3) and (4) are taken from Biblical evidence provided by Olsen (1999: 931ff.).

(3)

Syriac	OA	Gloss
gezzəθā	գզաթ *gzatʿ*	wool
gubbā	գուբ *gowb*	hole; cistern
dārā	դար *dar*	age; generation
zaugā (from Gk. ζεῦγος)	զոյգք *zoyg-kʿ*	pair; couple
targmānā	թարգման *tʿargman*	interpreter
xargəlā	խարագուլ *xaragowl*	type of locust
ṣaumā	ծոմ *com*	fast(ing)
ṣərārā	ծրար *crar*	bundle
qaqqəwā (cf. Gk. κακκαβη)	կաքաւ *kakʿaw*	partridge
qəlāfā	կեղեւ *kełew*	cortex, skin
xawlā	հաղք *hałb-kʿ*	snare; net
lēqā	ղեկ *łek*	oar; rudder
məgalləθā	մագաղաթ *magałatʿ*	parchment
mezzē	մազ *maz*	hair
maggəlā	մանգաղ *mangał*	sickle
meškā	մաշկ *mašk*	skin
maχsā	մաքս *makʿs*	custom; tax
maṭrəqā	մտրակ *mtrak*	whip
nəšīfā	նշիհ *nših*	fine flour
šabbəθā	շաբաթ *šabatʿ*	week; Sabbath

šəwīlā	*չաւիղ šawił*	path
ʿərūwəθā	*ուրբաթ owrbatʿ*	Friday
ṣeṣṣā	*ցից cʿicʿ*	peg, plug
kakkərā	*քանքար kʿankʿar*	talent, mina
kārōzā	*քարոզ kʿaroz*	herald; preacher
kərōwā	*քերոբ kʿerob*	cherub
kumrā	*քուրմ kʿowrm*	priest
kewšā	*քաւչ kʿawš*	he-goat

(4)

Syriac	OA	Gloss
zōpā	*զոպայ zopa-y*	hyssop
lūmā	*լումայ lowma-y*	mite
ṣiṣṣəlā	*ծնծղայ cncła-y*	cymbal
kaskərā	*կասկարայք kaskara-y-kʿ*	grill (for cooking)
mannā	*մանանայ manana-y*	manna
sātānā	*Սատանայ Satana-y*	Satan
srīqā	*սրիկայ srika-y*	murderer; assassin
ṭalyā	*տղայ tła-y*	child; boy
fīlōsōfā (< Gk. φιλόσοφος)	*փիլիսոփայ pʿilisopʿa-y*	philosopher; scientist
kāhānā	*քահանայ kʿahana-y*	priest
quwyā (< Gk. κυβεία)	*քուայ kʿowa-y*	cube; divination die

The appended nominalized adjective suffix *-ʏ -y* apparently refers to either *the characteristic property of a person* (profession, ethnicity, social status) or *the inherent characteristics of things or materials*; cf. *սրիկայ srika-y* (< Syr. *srīqā* 'murderer' + */-i-/) which also means 'ruffian, rascal, hooligan' literally '[a] murderous, criminal [person]'; *տղայ tła-y* (< Syr. *ṭalyā* 'boy'+ */-i-/) literally '[a] boyish, young [person]' (cf. Lat. *adolēscēns* '(adj.) growing

up, maturing; (subst.) a mature person'; **Սատանայ** *Satana-y* (< Syr. *sātānā* + */-i-/) "[the/a] devilish, adversative [being]; Satan".[68]

5.5. Surface alternations resulting from positional faithfulness

When the morpheme consists of only one segment, as is the case with various homophonous */-i/'s, its overt non-realization may be functionally reanalyzed as a zero morpheme /-Ø/; e.g. /kɑ-i/ 'remains' ROOT-PRES.IND.3SG → *[ˈkɑj] > [ˈkɑ] → /kɑ-Ø/. If, however, a morpheme's overt (non-)realization is a function of phonological context, cf. /ɑrkʰɑ-i/ → (OA *[ɑr.ˈkʰɑj] >) CA [ɑr.ˈkʰɑ] ~ /ɑrkʰɑ-i-e/ ROOT-NOMINAL.ADJ-ABL.SG → [ɑr.kʰɑ.ˈje], the process may be conceptualized as a phonologically-driven allomorphy involving a conditioned zero allomorph, i.e. NOMINAL.ADJ */-i/ → {-Ø} ~ {-j}. The zero allomorph is selected should the morpheme end up in a syllable coda; the 'overt' allomorph surfaces in onset positions; cf. CA [ɑr.ˈkʰɑ-Ø] 'king' vs. CA [ɑr.kʰɑ-.ˈj-e] 'from [a/the] king'.[69]

5.6. OT analysis

In optimality-theoretic terms, a grammar which is sensitive to functional load and semantic recoverability of morphemes may be modelled by the promotion or demotion of constraints which enforce the realization of certain morphological elements (REALIZE MORPH)

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[68] Typological parallels may be found in Slavic languages, cf. Czech *služebná*, which is formally an adjective, e.g. *služebná zbraň* 'service gun', but which is also lexically a nominalized adjective, i.e. '[a woman] serving; service maid'. Abundant examples may be found in Romance or Germanic languages; cf. NE *Jewish* (referring to a person) and OA **Հրեայ** *Hr(-)ea-y* 'Jew', from Syriac *ʾīhūḏāyā'* 'Jew, Hebrew' + */-i-i-/ NOMINAL.ADJ (later actually reanalyzed as /hur-eay/), i.e. properly "[a] Jewish [person]". 'φ'-NOMINAL.ADJ "Characteristic Property of φ".

[69] The original realizations of the traditional [ɑr.kʰɑ̇jkʰ.] and [ɑr.kʰɑ̇js], i.e. NOM.PL and ACC.PL, respectively, was [ɑr.kʰɑ̇.jəkʰ] and [ɑr.kʰɑ̇.jəs], as is still observed in the liturgical usage. The forms reflected earlier */ɑrkʰɑ-i̯-i-kʰ/ ROOT-ADJ-THV-NOM.PL with penultimate accent and reduction of the final syllable nucleus, i.e. *[ɑr(kʰɑ̇.jəkʰ)] (cf. **այժմ** *ayžm* *[ɑ̇j.ʒəm] 'now' from *[(ɑ̇js.ʒɑm)] (lit.) "thís-hour", cf. Sp. *ahora* 'id.').

above or below constraints which enforce phonological markedness (e.g. ONSET and NOCODA). The realization of phonological material which is part of a lexical root or of the ABSTRACTNOUN */-i/ (in incidental monosyllables) is modeled in Tableau 5.1 and Tableau 5.2, respectively. The constraint MAX-ROOT defined in (5) below enforces realization of all material on lexical roots.

(5) MAX-ROOT
"Do not delete any root segment" (de Lacy 2002; Yu 2007: 79)

Tableau 5.1: Preservation of stem-final /i/ in ՀայՀ *Hay* 'Armenian'

/hɑi-Ø$_{\text{NOM.ACC.SG}}$/ [70]	MAX-ROOT	ONSET & NOCODA
☞ a. .hɑj.		*
b. .hɑ.	*!	

Tableau 5.2: Realization of ABSTRACTNOUN */-i/ in գոյ *go-y* 'existence'

/gɔ-i$_{\text{ABSTRACT}}$/	MAX-ROOT	REALIZE /-i/$_{\text{ABSTRACT}}$	ONSET & NOCODA
☞ a. .gɔ-j.			*
b. .gɔ.-Ø$_{\text{ABSTRACT}}$		*!	
c. .g-i.	*!		

When the morpheme consists of only one segment, the ranking PHONOLOGICAL MARKEDNESS » REALIZE MORPHEME virtually creates a specific type of allomorphy in which one of the allomorphs may be described as phonologically null. Thus, at some level of abstraction, we may morphologically describe the behavior of the NOMINAL.ADJ suffix */i/ as a

[70] The underlying forms of all nominal elements (roots and suffixes) also contain specific thematic vowels which are apparently not realized on the surface unless stressed; e.g. /hɑi-ɔ-Ø$_{\text{NOM.ACC.SG}}$/ → [ˈhɑj] : /hɑi-ɔ-ts$^{\text{h}}$$_{\text{GEN.DAT.ABL.PL}}$/ → [hɑ.ˈjɔts$^{\text{h}}$]. The derivation of all the forms analyzed here is in this respect simplified, but this approximation does not affect the spirit of the proposed argument.

phonologically conditioned zero allomorphy, i.e. NOMINAL.ADJ */-i/ → {-i} ~ {-Ø}. Since the suffix */-i/ is phonologically surpressed only when potentially parsed into the coda, the constraint which penalizes the realization of the suffix in this case may be identified as NOCODA; see Tableau 5.3.

(6) ONSET

"All syllables have to have onsets."

NOCODA

"All syllables must not have a coda."

REALIZE MORPH

"For every morpheme in the input, some phonological element should be present in the output." (van Oostendorp 2005)

Tableau 5.3: Non-realizaton of NOMINAL.ADJ */-i/ in codas

/ɑrk^{h}ɑ-i-Ø$_{NOM.ACC.SG}$/	MAX-ROOT	ONSET	NOCODA	REALIZE /-i/$_{ADJ}$
☞ a. ɑr.k^{h}ɑ.-Ø$_{ADJ}$-Ø$_{NA.SG}$				*
b. ɑr.k^{h}ɑ-j.-Ø$_{NA.SG}$			*!	
c. ɑr.k^{h}ɑ.-i.-Ø$_{NA.SG}$		*!		

The semantically expendable suffix in /ɑrk^{h}ɑ-i-Ø$_{NOM.ACC.SG}$/ potentially parsed into a syllable coda—as arguably in OA ***ɯɾkʻa-y*** *[ɑr.ˈk^{h}ɑj]—is optimally nonrealized (or morphologically realized by its covert /-Ø/ allomorph), if its overt realization would render this (see candidate b) and any potential output (see candidate c) sub-optimal. The suffix is, however, still recognizably present underlyingly. Since there are no phonological principles which would

supress the realizations of onsets, the suffix surfaces overtly realized if optimally parsed into the onset position, see Tableau 5.3 below.

Tableau 5.4: Realization of NOMINAL.ADJ */-i/ in onsets (TETU)

/ɑrk^{h}ɑ-i-ut^{h}iun/ "royalty"	MAX-ROOT	ONSET	NOCODA	REALIZE /-i/$_{ADJ}$
a. ɑr.k^{h}ɑ.-Ø-.u.t^{h}jun		*!		*
b. ɑr.k^{h}ɑ-Ø-w.t^{h}jun				*!
☞ c. ɑr.k^{h}ɑ-.j-u.t^{h}jun				

Just as in onsets, the proposed grammar does not penalize the realization of the suffix in syllabic nuclei either; e.g. ծարաւ *caraw* 'thirst; draught' → ծարաւի *caraw-i* 'thirsty; dry'; աղ *ał* 'salt' → աղի *ał-i* 'salty'; թշնամի t'šnami 'enemy' < etc., see Tableau 5.5.

Tableau 5.5: Realization of NOMINAL.ADJ */-i-/ in nuclei

/ɑł-i- Ø$_{NOM.ACC.SG}$/	MAX-ROOT	ONSET	NOCODA	REALIZE /-i/$_{ADJ}$
☞ a. ɑ.ł-i.				
b. ɑł.-Ø$_{ADJ}$			*!	*

Along the same lines, we may conceptualize the historical loss of certain suffixes (such as the inflectional suffixes mentioned earlier, namely PRES.IND.3SG, AOR.IND.MED-PASS.1SG or GEN.SG) as a complete demotion of the morphophonological constraints that enforce their realization. Since in such cases, all sub-optimal output is harmonically bound, i.e. the endings are not part of any synchronic alternations—cf. [ɑrk^{h}ɑ-Ø] 'king' ROOT.NOMINALADJ.NACC.SG' ~ [ɑrk^{h}ɑ-j-ut^{h}jun] 'kingdom' ROOT-NOMINALADJ-ABSTRACTNOUN.NOM.ACC.SG—we may

consider these suffixes simply historically lost (or replaced by a synchronic invariant zero /-Ø/). The loss of overt phonological material appears to be a direct result of the functional recoverability of the morphemes represented by this material.

5.7. Palatal glide realized in complex codas

The realization of the NOMINAL.ADJ /-i/ in forms such as ***արքայք*** *arkʿa-y-kʿ* [ɑr.ˈkʰɑjkʰ.] 'kings (NOM.PL)', with the palatal glide in a complex word-final coda, continues an earlier pattern with the canonical [ɑr.ˈkʰɑ.jəkʰ] (← /ɑrkʰɑ-i-i-kʰ/ ROOT-ADJ.-THV-PL), with the glide in the onset, penultimate accent and reduced post-tonic thematic vowels (cf. ***այն*** *ay-n* 'this [one] NOM.ACC.SG' : ***այնոր*** *ay-no-r* 'id. GEN.SG', i.e. //ai-no-Ø// : //ai-no-rV// → /ˈɑi̯.nə/ : /ɑi̯.ˈnɔ.ɾə/ → [ˈɑjn] : [ɑj.ˈnɔɾ]). The form [ɑr.ˈkʰɑjkʰ.], the yet more innovative realization of the suffix in the complex coda, may be understood as the output of the grammar of later medieval and/or modern Armenian without underlying thematic vowels. This provision easily explains both variants; cf. Tableau 5.6 below.

Tableau 5.6: NOMINAL.ADJ /-i/ surfaces as part of a complex word-final coda (cf. TETU).

/ɑrkʰɑ-i-kʰ/ "royal [ones]"	REALIZE /-kʰ/$_{PL}$	NOCODA	REALIZE /-i/$_{ADJ}$	*COMPLEXCODA
a. ɑrkʰɑ-j$-Ø	*!	*		
b. ɑrkʰɑ$-Ø-Ø	*!		*	
c. ɑrkʰɑ-Ø-kʰ$		*	*!	
☞ d. ɑrkʰɑ-j-kʰ$		*		*

5.8. Conclusion

I have argued that the observed phenomenon is a morphophonological process in which realization of specific morphological categories is conditioned by well-formedness of syllabic

structure, namely the preference for open final syllables. When a morpheme that violated this preference was functionally expendable—i.e., it was recoverable based on paradigmatic opposition (cf. կայ /kɑ-i/ = /kɑ-Ø/ 'stands') or it was semantically redundant (cf. քահանայ /kʰɑhɑnɑ-i/ '[a] cleric-*al* [person] ≈ [kʰɑhɑnɑ-Ø] 'cleric-Ø')—the phonological material of the morphological element was not overtly realized.

When, however, lexical contrast or semantic recoverability were to be compromised (cf. հայ *hay* 'Armenian', i.e. ROOT ≠ ˣ[hɑ]; կայ *ka-y* 'standing, station', i.e. ROOT-ABSTRACT.NOUN ≠ ˣ[kɑ], etc.), the overt realization of the morpheme dominated syllabic markedness. Incidentally, the suffixes that were recoverable did not appear on monosyllabic nouns—hence the illusion of a reference to lexical categories. The relevant nominal morphemes were either roots with the unproductive ABSTRACT.NOUN suffix inherited in monosyllabic forms or lexical roots inherited as monosyllables—hence the illusion of a reference to syllable-count.

CHAPTER 6

(NON-)REALIZATION OF THE AORIST AUGMENT

6.1. Introduction

The Classical Armenian AORIST INDICATIVE inflection is characterized by the addition of the so-called AORIST AUGMENT **ե-** *e-*. The data in (1) below examplifies the application of the aorist augment in the context of the entire aorist indicative paradigm by the inflection of the aorist stems **բեր-** *ber-* 'carried', **կաց-** *ka-cʿ-* 'stood' and **տու-** *tow-* 'gave'.

(1)	1SG	**բերի**	*ber-i*	**կացի**	*kacʿ-i*	**ետու**	***e-tow***
	2SG	**բերեր**	*ber-er*	**կացեր**	*kacʿ-er*	**ետուր**	***e-tow-r***
	3SG	**եբեր**	***e-ber***	**եկաց**	***e-kacʿ***	**ետ**	***e-t***[71]
	1PL	**բերաք**	*ber-akʿ*	**կացաք**	*kacʿ-akʿ*	**տուաք**	*tow-akʿ*
	2PL	**բերիք**	*ber-ikʿ*	**կացիք**	*kacʿ-ikʿ*	**ետուք**	***e-tow-kʿ***
		or **բերեք**	*ber-ēkʿ*	or **կացէք**	*kacʿ-ēkʿ*		
	3PL	**բերին**	*ber-in*	**կացին**	*kacʿ-in*	**ետուն**	***e-tow-n***

[71] OA **ետ** *e(-)t* (= Ved. *á-dā-t*, Gk. ἐ-δω-κ-ε, OCS *da*) < PIE *é-dō-t (= *é-deh$_3$-t). Synchronically, this form was either suppletive, i.e. listed as such, or it regularly reflects the reduction of a post-tonic vowel, i.e. //e-tu-Ø// AOR.3SG → /(ɛ́.tu)$_{FT}$/ → **ետ** [ˈɛt]. In any case, the remaining forms are built on AOR. STEM //tu-//. A regular outcome of 1SG, PIE *é-dō-m, would have been ˣ**ետն** ˣ*etn* *[ˈɛ.tən] ← */e-tu-n/ or the form reflects an innovation parallel to the Slavic situation, i.e. PIE *é-dō-s-ŏm (> OCS *da-s-ъ*) > PA *[(ˈɛ.tu)$_{FT}$] + */-iV/ 1SG → *[ɛ.tu.(ˈi.V)$_{FT}$] > *[ɛ.ˈtuj] > **ետու** *e-tow* [ɛ.ˈtu].

The realization of the augment before the aorist stem is reported to be sensitive to syllable count throughout the phonological literature on Armenian; cf. Meillet (1913a: 94); Jensen (1959: 95f.); Godel (1975: 12, 16, 43); Schmitt (1981: 149); Thomson (1989: 49); Vaux (1998: 33, 123); Mondon (2012: 27); etc. The addition is traditionally analyzed in terms of a phonologically conditioned selection triggered by the monosyllabicity of the aorist base to which the augment attaches; cf. ***եբեր*** *e-ber* [ʲɛ.ˈbɛɾ] '(s)he carried' (ˣ[ˈbɛɾ] 'id.'), ***ետու*** *e-tow* [ʲɛ.ˈtu] 'I gave' (ˣ[tú]), etc.; by contrast, ***բերի*** *ber-i* [bɛ.ˈɾi] 'I carried' (ˣ[ʲɛ.bɛ.ˈɾi]), ***տուաք*** *tow-akʻ* [tə.ˈvɑkʰ] 'we gave' (ˣ[ʲɛ.tə.ˈvɑkʰ]), etc.[72]

Vaux (1998: 33, 123) convincingly argues that the augment is not a mere phonological element appended to enhance a potentially monosyllabic form but a prefix that is present underlyingly in the aorist indicative paradigm, where it is exclusively attested. He analyzes the pattern by reference to the number of syllables in the aorist base and a structural description that specifies the context for deletion of the prefix in forms of more than one syllable.

This chapter presents an Optimality-theoretic (Prince and Smolensky 2004) analysis of the relevant data in which the realization of the augment refers to prosodic categories and edges of morphological elements introduced into the derivation. The realization of the CA aorist indicative prefix ***ե-*** *e-* descriptively involves a phonologically conditioned zero allomorphy, i.e. AUG → [ɛ- ~ $\emptyset_{\text{AUG}}$-]. The distribution of the allomorphs falls out from the interaction of a morphophonological constraint REALIZE MORPH (that enforces realization of a specific morphological input) with constraints on prosodic well-formedness (specifically, FOOT

[72] OA ***ե-*** *e-* < PIE *e-; cf. ***եբեր*** *e-ber* 'carried' (= Ved. *á-bhar-a-t*, Gk. ἔ-φερ-ε); ***ետ*** *e-t* 'gave'(= Ved. *á-dā-t* ≈ Gk. ἔ-δω-κ-ε).

BINARITY) and metrical principles that ultimately guide the position of word stress (specifically, ALL-HEADS-RIGHT in the sense of Hyde 2014), i.e. FTBIN, ALL-HDS-R » REALIZE AUG.[73]

The distribution of the allomorphs is analyzed in two diachronic stages; see Table 6.1: (I) the pre-apocope stage at which the attested distribution/(non-)realization of the inherited aorist prefix was initiated; and (II) the historically attested stage of OA after the apocope of final syllables and the loss of certain inherited inflectional endings.[74]

Table 6.1: Pre- and post-apocope (non-)realization of AUGMENT

PIE	STAGE (I) = PA		STAGE (I) = OA	
*é-d^{h}eh$_1$-t	*/ɛ-di-Ø/ →	*[(ˈɛ.di)$_{FT}$]	/ɛ-d-ᵒ/ →	եդ *ed*
*é-b^{h}er-e-t	*/ɛ-bɛɾ-ɛ-Ø/ →	*[ɛ(bˈɛ.ɾɛ)$_{FT}$]	/ɛ-bɛɾ-Ø/ →	եբեր *e-ber*
*é-b^{h}er-e-tes	*/ɛ-bɛɾ-ɛ-jɛk^{h}/ →	*[bɛ(ɾˈɛ.jɛk^{h})$_{FT}$]	/ɛ-bɛɾ-ei̯k^{h}/ →	բերէք *ber-ēkʿ*

6.2. Augmentation and word minimality

According to the traditional conceptualization of the distribution of the prefix (e.g. Meillet 1913: 94f.), this element is actually inserted or selected by the relevant aorist bases presumably in order to prevent the word-forms from surfacing as monosyllables. However, the language clearly tolerates surface monosyllabic words, since monosyllabic forms of every

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[73] The surface non-realization of the augment is also subject to phonological coalescence; cf., OA ել *el* '(s)he went out' = */ɛ-ɛl-/; OA ած *ac* '(s)he conducted' = */ɛ-ɑts-Ø/ < */(ɛ-)ɑʤ-ɛ-Ø/ = *[ˈɑ.ʤɛ] < *é-h$_2$eĝ-e-t; cf. Ved. *ā́jat*, Gk. ἦγε < *ἄγετ, etc.

[74] The third stage of the phenomenon, which occurred in post-CA, should also be briefly mentioned: monosyllables in initial ա- /ɑ-/ and one sporadic initial ST- cluster form are hypercharacterized with an augment, cf. OA ած *ac* '(s)he conducted' > post-CA էած *ē-ac* 'id.'; OA սպան *span* '(s)he killed', i.e. [əs.ˈpɑn] > post-CA եսպան *e-span* 'id.' Forms such as these clearly show that the augment remained present underlyingly even after the classical period. The analysis of this phenomenon would take us too far away from the present subject, but since the post-CA augment surfaces only in forms parsed as a single binary foot, the analyses proposed here (one aspect of which involves minimalization of the number of foot heads) would be compatible with the analysis of this post-CA augment hypercharacterization.

morphological category are abundant in the language; cf., e.g. **եբարձ** *e-barj* '(s)he raised' (3SG.AOR.IND) vs. **բարձ** *barj* 'lift!' (2SG.AOR.IMPV). With notable exceptions, such as **եկեալ** *ek-eal* 'having come' and **եդեալ** *ed-eal* 'having put', which are plausibly explained as simple reanalyses of the relevant stems,[75] the augment surfaces only in a specific subset of a particular inflectional category—the aorist indicative—and nowhere else in the system. The augment is thus best characterized as an aorist indicative prefix which is not realized under certain conditions, as already recognized in Vaux (1998:123f.).

Moreover, in the classical period, i.e. the period of the oldest attested language, the augment never occurs before a vowel—not even in monosyllables, e.g. **ել** *e-l* [ˈʲjɛl] '(s)he went out', **արբ** *arb* [ɑɾb] '(s)he drank', etc. It seems highly plausible that this pattern can be understood as a relic of a phonological process which is in the context of relative chronology referred to as VOWEL CONTRACTION over a hiatus. Thus, **ել** *el* [ʲɛl] is to be interpreted as a phonological realization of */ɛ-ɛl-/ and **արբ** *arb* of */ɛ-ɑrb-/, cf. PIE *tréi̯-es > *[rɛ.ʲʲɛx] > *[rɛkʰ] > **երեք** *erekʿ* 'three' or PIE *u̯es-r̥ > *[ˈγʷɛ.ʰɑr-] > *[gɑr-] > **գարուն** *gar-un* 'spring', etc. This historical process is still mirrored by an analogical rule within the synchronic system of OA. For illustration, the NOM.ACC.SG of the deictic pronoun **նա** *na* '(s)he; that [one] over there' (NOM.ACC.SG) is still transparently analyzable as /nɔ-Ø-ɑi/, cf. **նորա** *no-r-a* ← /nɔ-GEN.SG-ɑi/ 'id.', etc.; cf. Connolly (1972: 18), Hammalian (1984).

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[75] Cf., the entire paradigm of the aorist indicative of **գամ** *ga-m* 'I come' and **դնեմ** *d-n-e-m* 'I put': **եկի** *ed-i*, **եկիր** *ek-ir*, **եկ** *ek*, **եկաք** *ek-akʿ*, **եկիք** *ek-ikʿ*, **եկին** *ek-in* and **եդի** *ed-i*, **եդիր** ~ **եդեր** *ed-i/er*, **եդ** *ed*, **եդաք** *ed-akʿ*, **եդիք** *ed-ikʿ*, **եդին** *ed-in*, in which all forms are preceded by the historical augment, i.e. */e-C-/ → /eC-/. In contrast, compare the aorist indicative paradigm of **տամ** *ta-m* 'I give' in (1c), above, in which the 1PL lacks the augment; its participle is **տուեալ** *tow-eal* 'having given'.

The absence of the augment may also be conditioned by the fact that certain morphological material is prosodically parsed into the PROSODIC WORD category together with the verb. This is implicitly suggested by de Lamberterie (2005-2007); cf. e.g. ***Բարձ ի վեր զաչս իւր Յիսուս եւ եսես զի...*** *Barj i ver zač‘s iwr Yisows, ew e-tes zi ...* ‘ἐπάρας οὖν τοὺς ὀφθαλμοὺς ὁ Ἰησοῦς, καὶ θεασάμενος ὅτι ... (John 6:5) “Jesus lifted up his eyes and saw that...”, in which ***բարձ*** *barj* ‘he lifted’ surfaces as a monosyllabic base without the augment and contrasts with ***եսես*** *e-tes* ‘saw’. According to de Lamberterie, ***բարձ ի վեր*** *barj i ver* ‘raised up, lifted on top’ represents a locution (ibid. 45) within which the monosyllabic past form ***բարձ*** *barj*, which in isolation regularly surfaces as ***եբարձ*** *e-barj*, is not considered as a target for the purposes of augment assignment. This state of affairs may be formalized as ***եբարձ*** $[(\varepsilon.^{\text{l}}\text{bar}\text{dz})_{\text{FT}}]_{\text{PW}}$ vs. ***բարձ ի վեր*** $[_{(}\text{bar}\ ^{(}\text{dzi}_{)}{}^{\text{l}}\text{v}\varepsilon\text{r}^{)}]_{\text{PW}}$, as we shall see below.

6.3. Functional redundancy of augmentation

All OA verb forms are built on one of the two types of stem which are fundamentally aspectual in value: the PRESENT (= IMPERFECTIVE) or the AORIST (= PERFECTIVE). The shape of the stem can be further referred to as *uncharacterized* if it is only composed of the root (called ROOT-PRESENT or ROOT-AORIST, respectively) or *characterized* if it consists of a root extended by a characteristic stem formant such as the aorist suffix ***-ց*** ***-c‘*** /-ts$^{\text{h}}$/. The Armenian AORIST AUGMENT ***ե-*** *e-* /e-/ represents a further characterization of the aorist base.

This morpheme is an inheritance from a pre-Indo-European stage of the language in which augmentation apparently fulfilled a disambiguation function. It most likely originally served as a temporal particle which denoted ‘then; at that time’ and specified past tense in

association with an accompanying INJUNCTIVE ('time-less') verb forms (cf. Fortson 2010: 101; Beekes 2011: 252, etc.). In the PIE languages that preserve the augment, it is universally reinterpreted as a past tense prefix.[76]

However, in the prehistory of Armenian, the prefix gradually loses its functional necessity. By the time of the earliest attested language, the relevant distinction is fully signaled by the formal constrast of PRESENT/IMPERFECTIVE and AORIST/PERFECTIVE STEM forms as well as by the contrasting sets of endings. In the forms in which it surfaces, the augment marks a tertiary contrast, which makes it a redundant relic of the original formal system, funtionally speaking. For example, the contrast between **դնեմ** *d(i)-ne-m* IMPERFECT-1SG 'I (am) put(ing)' and **եդի** *e-d-i* AUG-PERFECT-1SG 'I (did) put' reflects an earlier distinction between the innovative *n-present */$d^hē$-n-e-mi/ and the inherited *$d^hē$- (< PIE *d^heh_1-) supplied with a different set of endings; cf. Klingenschmitt (1982: 163).[77]

We may model this functional redundancy of the prefix as a demotion in the ranking of the morphological constraint which penalizes the absence of the prefix in the output form, in this analysis conceptualized as a morphological faithfulness constraint REALIZE AUG with respect to the other morphophonological and prosodic principles operative in the grammar, specifically

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[76] Certain dialects of Indo-European (Indo-Iranian, Greek, Phrygian, and Armenian) utilized this, originally adverbial, particle *(h_1)e *'then' to disambiguate the following polysemous INJUNCTIVE as PAST TENSE. An earlier opposition such as **d^heh_1-t-i *'put-3SG-here&now' (NON-PAST) *vs.* **d^heh_1-t *'put-3SG' had been disambiguated by the grammaticalization of this adverb. The addition created the attested opposition **$d^héh_1$-t-i *'put-3SG-NON-PAST' (> PIE *$d^hé$-d^heh_1-t-i > Ved. *dá-dhā-t-i*, Gk. τί-θη-σι) *vs.* **é **$d^hèh_1$-t *'then+put-3SG' (> PIE ***é-d^heh_1-t** *'PAST-put-3SG' > Ved. *á-dhāt*, Gk. ἔ-θη-κ-ε, OA **եդ** *ed*).

[77] Godel (1975: 112) characterizes the PIE augmentation as "optional" (cf. Gk. ἔ-φερ-ο-ν ~ φέρ-ο-ν, Ved. *ábharam* ~ *bháram* 'I bore'), which "may account for the fact that the augment is, in ClArm., not prefixed to the polysyllabic aorist forms". However, the augment is clearly not *optional* in the Armenian forms in which it surfaces.

FTBIN, the constraint that enforces binary footing. In the prehistory of Armenian, the aorist prefix ceased to be realized in forms larger than a binary foot due to prosodic well-formedness conditions such as the requirement on the minimal distance of heads of feet aligned with the final, or right, edge of prosodic words, instantiated by ALL-HEADS-RIGHT, defined in (3) further below. I assume that the phenomenon responsible for the surface distribution of the aorist augment goes back to a process productive at a stage with a penultimate stress system before the loss of the final rhymes in the history of the language. This provision gives the observed pattern the historical depth which is obscured in the traditional analysis by the assumption that the pattern necessarily postdates apocope of final rhymes. [78]

The deletion of the augment was not optional but a result of functional *redundancy*, i.e., in the relevant forms, the aorist category is in the language signaled by both the conservative aorist prefix and the innovative set of past tense endings on a functionally distinct aorist stem. The augment was apparently preserved only in forms which would either otherwise end up as *degenerate* FEET, cf. PIE *[(é.d^{h}ēd)$_{FT}$] > *[(ˈɛ.di)$_{FT}$] (not *[(ˈdi)$_{FT}$]) > OA **եդ** *ed* '(s)he gave' (= Ved. *á-dhā-t*) or in forms in which the prefix did not create another head syllable; cf. pre-Arm. *[ˈ ɛ$_{(}$bɛ́$_{)}$rɛ$_{)}$]$_{PW}$ > OA **եբեր** *e-ber* (= Ved. *á-bhar-a-t*), on the one hand, but *[ˈ ɛ$_{(}$bɛ$_{)(}$rɛ́$_{)}$ jɛk$^{h)}$]$_{PW}$ (= Ved. *á-bhar-a-ta*) > *[$_{(}$ bɛ ˈrɛ́$_{)}$ jɛk$^{h)}$]$_{PW}$ > OA **բերէք** *ber-ēk'*, on the other.

[78] As far as the relative chronology of final rhymes is concerned, there is enough evidence to assume that inherited final syllables were still present in the language during the time of the earliest Iranian loanwords, as has been convincingly argued by Olsen (2005) and reflected in the earlier opinion of a number of scholars (e.g. Meillet 1911: 149, 1936: 23; Jensen 1959: 19; Olsen 1999: 859; Matzinger 2005: 27ff.).

This last provision indicates that the historical penultimate accent of Armenian was a result of the requirement that final syllables be stress-less, which was enforced by a phonological markedness constraint NONFINALITY defined in (6) further below. The attested word-final stress system (without the historical final rhymes) is a result of the demotion of NONFINALITY below the active constraints in the grammar. The earliest attested distribution of the aorist prefix then falls out of the accordingly modified grammar.

6.4. OT analysis

6.4.1. Stage I: before apocope

I argue that the morphophonological constraint which enforces the realization of the augment (REALIZE AUG) has been gradually demoted in the prehistory and history of Armenian and is dominated by constraints enforcing overall prosodic well-formedness and metrification, namely FTBIN and ALL-HEADS-RIGHT, defined in (2) below.

Generally speaking, degenerate feet on the surface are in Armenian the result of the ranking of the faithfulness constraint DEP (penalizing epenthetic material) over FTBIN (penalizing degenerate, i.e non-binary feet). Forms of the aorist indicative, however, contain the phonological material of the prefix underlyingly, and so the presence of the prefix is not penalized by the higher ranking DEP. The prefix thus arguably surfaces in forms that would in its absence result in degenerate feet; e.g. (PIE */e-d^{h}ē-t/ >) PA */ɛ-di/ → *[($^{\text{l}}$ɛ.di)$_{\text{FT}}$]$_{\text{PW}}$ (not *[(di)$_{\text{FT}}$]$_{\text{PW}}$) > OA *եդ ed*‘(s)he put’; see Tableau 6.1.

(2) REALIZE MORPH

“Specified morphological material present in the input must be realized in the output.”

MAX-BASE

"Do not delete any segment in the morphological base."

FTBIN

"Feet must be binary (here, under syllabic analysis)."

DEP

"No epenthetic vowels".

Tableau 6.1: PIE */e-d^{h}eh$_1$-t/ > PA */ɛ-d̤i/ > OA 𐌄𐌕 *ed* 'she put'

PA */ɛ-d̤i-Ø$_{3SG}$/	MAX-BASE	DEP	FTBIN	REALIZE AUG
☞ a. (ɛ.d̤i)				
b. (d̤i)			*!	*
c. (ə.d̤i)		*!		*

Candidate (b) in Tableau 6.1 violates a higher ranking constraint militating against degenerate feet. The optimal output is candidate (a), which forms a binary foot from the input material, i.e. PA *[(ɛ́.d̤i)$_{FT}$]. This candidate reflects the attested monosyllabic 𐌄𐌕 *e-d* (= Ved. *á-dhā-t*, Gk. ἐ-θη-κ-ε), after the loss of final syllable rhymes in PA. The constraint enforcing the realization of the augment was, however, active if the higher ranking constraints were satisfied, as shown in Tableau 6.2 below; cf. PIE */e-b^{h}er-e-t/ > PA */ɛ-b̤ɛr-ɛ/ → *[(ɛ (b̤ɛ́) rɛ)] > 𐌁𐌄𐌁𐌓 *e-ber* '(s)he carried'. For the representation of so-called 'overlapping feet', see CHAPTER 4.

Tableau 6.2

PIE */e-b^{h}er-e-t/ > PA */ɛ-b̤ɛr-ɛ/ > OA 𐌁𐌄𐌁𐌓 *e-ber* 'she carried' (cf. TETU)

PA */ɛ-b̤ɛr-ɛ-Ø$_{3SG}$/	MAX-BASE	FTBIN	REALIZE AUG
a. (b̤ɛ.rɛ)			*!
☞ b. (ɛ (b̤ɛ) rɛ)			

The non-realization of the augment on polysyllables such as բերէք *ber-ēk* 'ye carried' (← */ɛ-bɛɾ-ɛ-jɛk^h/) or թագաւորեաց *t'agawor-eac'* 'became king; reigned' (← */ɛ-t^{h}ɑgɑuɔɾ-ɛ-ɑts^h/) may be understood as the result of ranking ALL-HEADS-RIGHT over REALIZE AUG, the former being a distance-sensitive alignment constraint which forces the SYLLABLE HEADS within a PROSODIC WORD toward its RIGHT EDGE, see Tableaux 6.3 and 6.4, below.

(3) ALL-HEADS-RIGHT = ALL-HDS-R = *<Pw, σ_{Hd}, σ>/[…σ_{Hd}…σ…]$_{Pw}$ [79]
"Assess a violation mark for every <Pw, σ_{Hd}, σ> such that σ_{Hd} preceds σ within Pw" (Hyde 2014: 305).

Tableau 6.3: PIE */e-b^{h}er-e-tes/ > PA */ɛ-b̤ɛɾ-ɛ-jɛk^h/ > բերէք *ber-ēk* 'ye carried'

	PA /ɛ-b̤ɛɾɛ-jɛk^h/	MAX-BASE	FTBIN	ALL-HDS-R	REALIZE AUG
	a. (ɛ (bɛ̲) (ɾɛ̲) jɛ̲k^h)			**!*	
☞	b. (bɛ (ɾɛ̲) jɛ̲k^h)			*	*
	c. (ɛ. bɛ̲)(ɾɛ. jɛ̲k^h)			**!	
	d. (ɛ .bɛ̲)(ɾɛ̲. jɛk^h)			**!*	

FOOT HEADs are indicated by both an underline and by a vertical line |. The tails, or the dependent syllables of the heads, are indicated by a slanted line ╱. If all the FOOT HEADs are aligned toward the right edge of a PROSODIC WORD, the aorist prefix must be parsed into the tail

[79] In the *Relation Specific Alignment*, see **4.5**., alignment constraints have two components: a set of categories and their prohited misalignment configuration: RIGHT-EDGE alignment is thus defined as *<ACat1, ACat2, SCat>/[…ACat2… SCat…]$_{ACat1}$, i.e. "Assess a violation mark for every <ACat1, ACat2, SCat> such that ACat2 preceedes SCat within ACat1)".

of the left-most FOOT, cf. candidate (a). Under binary footing, the configuration that includes the material of the aorist prefix increases the number of syllables, which consequently creates HEAD SYLLABLES further away from the left edge of a PW. The inclusion of AUG is thus indirectly penalized by ALL-HEADS-RIGHT. The non-realization of the augment is a result of the fact that without this prefix, the distance each FOOT HEAD is removed from the end of words is kept to a minimum; cf. the winning candidates (b) in Tableau 6.3 or (a) in Tabeau 6.4 below.

Tableau 6.4: PA /ɛ-tʰɑgɑ(-)uɔr-ɛɑtsʰ-ɛ/ > ***ծագաւորեաց*** *tʿagawor-eacʿ*

PA /ɛ-tʰɑgɑu̯ɔr-ɛɑtsʰ-ɛ-Ø$_{3SG}$/		ALL-HDS-R	REALIZE AUG
☞	a. (tʰɑ.gɑ) (wɔ (ɾɛɑ) tsʰɛ)	* ***	*
	b. (ɛ.tʰɑ)(gɑ.wɔ)(ɾɛɑ.tsʰɛ)	** ***!*	
	c. (ɛ (tʰɑ) gɑ) (wɔ (ɾɛɑ) tsʰɛ)	* *** *!***	
	d. (ɛ (tʰɑ)(gɑ)wɔ)(ɾɛɑ.tsʰ ɛ)	* ** **!* ****	

The attested CA final stress system continues an earlier penultimate stress system after the loss of final (post-tonic) rhymes (cf. Meillet 1936: 20); e.g. PA *[ɛ.bɛ́.ɾɛ] > ***եբեր*** *e-ber* [ʲɛ.bɛ́ɾ]. The penultimate stress system at this stage may be explained by the domination of NONFINALITY (the metrical principle that enforces exclusion of final syllables from the position of stress) over the relevant alignment constraints that require stress to be aligned with the right-most HEAD SYLLABLE in a PW; cf. RIGHTMOST defined in (6). In other words, the stressed syllable is the right-most *stressable* one, i.e. penultimate; see Tableau 6.5 below.

(6) NONFINALITY

"The final σ in every PW must not have a GRIDMARK." (Hyde 2014:301)

RIGHTMOST[80]

"Assign a GRIDMARK to the rightmost HEAD SYLLABLE in a PROSODIC WORD."

Tableau 6.5: PIE */e-b^{h}er-e-t/ > PA */ɛ-b̤ɛɾ-ɛ/ > **եբեր** *e-ber* '(s)he carried' (cf. TETU)

PA */ɛ-b̤ɛɾ-ɛ/	NONFIN	RIGHTMOST	FTBIN	ALL-HD-R	REALIZE AUG
a. (ˈbɛ̲́.ɾɛ)		*		*	*!
☞ b. (ɛ (ˈbɛ̲́) ɾɛ̲)		*		*	
c. (bɛ.ˈɾɛ̲́)	*!				*
d. (ˈbɛ̲́)(ɾɛ̲)		*	*!*	*	*
e. (ɛ̲ (ˈbɛ̲́) ɾɛ)		*		*, *!*	

6.4.2. Stage II: post-apocope or the attested OA

With the loss of the final (unstressable) rhymes, the original penultimate stress becomes synchronically final, i.e. *[ɛ.ˈbɛ.ɾɛ] > **եբեր** *e-ber* [ʲɛ.ˈbɛɾ]. This specific metrical development may be diachronically conceptualized as the demotion of NONFINALITY below RIGHTMOST, while the

[80] Cf., e.g. Kager (2012), which concerns the typology of so-called *metrical window* languages, i.e. languages in which the most prominent syllable is restricted to maximally three syllables from the edge of a domain, typically a PW. The typological systems not sensitive to syllable weight or which do not interact with lexical stress are derivable by the interaction of three constraints, the ranking of which is here compressed into RIGHTMOST, for simplicity of exposition.

ranking of other relevant constraints remains the same, i.e. NONFIN » RIGHTMOST (in PA) > RIGHTMOST » NONFIN (in OA). The loss of final rhymes entails not only the demotion of the constraint NONFINALITY (since the new final syllables are evidently stressed), it also entails the reanalysis of the inflectional endings, most of which are simply lost, cf. PIE */-e-t/ > PA */-ɛ/ > OA /-Ø/. The distribution of the augment is, however, controlled by the same grammar as earlier and requires no further comment; see Tableaux 6.6 - 6.8 below.

Tableau 6.6: OA *ⱨⱡ e-d* '(s)he put' (cf. TETU)

OA /ɛ-d-Ø/	MAX-BASE	RIGHTMOST	DEP	FTBIN	ALL-HDS-R	REALIZE AUG
☞ a. (ɛ̲́d)				*		
b. (d̲́)				*		*!
c. (ə̲́d)			*!	*		*
d. (ɛ̲́)	*!			*		

Tableau 6.7: OA *ⱡⱥⱡ e-ber* '(s)he carried'

OA /ɛ-bɛr-Ø/	MAX-BASE	RIGHTMOST	FTBIN	REALIZE AUG
☞ a. (ɛ .bɛ̲́r)				*
b. (bɛ̲́r)			*!	

Tableau 6.8: OA *ⱡⱥⱡⱪ ber-ēk* 'ye carried'

OA /ɛ-bɛr-ek^h/	MAX-BASE	RIGHTMOST	ALL-HDS-R	REALIZE AUG
a. (ɛ (bɛ̲) rɛ̲́k^h)			*!	
☞ b. (bɛ.rɛ̲́k^h)				*

6.5. Conclusion

The distribution of the aorist indicative prefix ⲃ- (*)/ε-/ has been argued to fall out from the interaction of prosodic domination principles (cf. Selkirk 2004) and metrical patterns (Hyde 2014), replacing the principles of *General Alignment* (Prince and Smolensky 2004). The distribution of the augment has been analyzed by reference to phonological principles which can only refer to prosodic categories and morphophonological edges.

The non-realization of the augment has been analyzed in two historical stages, one with, the other without final prehistoric syllables. It has been shown that the distribution of the augment falls out from the same morphophonological principles operative at these two successive diachronic stages: DEP, FTBIN, ALL-HEADS-RIGHT » REALIZE AUG and the relevant ranking of NONFINALITY in the diachrony of the language: in PA, NONFINALITY » RIGHTMOST; in CA, RIGHTMOST » NONFINALITY.

CHAPTER 7

AORIST SUBJUNCTIVE DISSIMILATION OF AFFRICATES

7.1. Introduction

The Armenian subjunctive is a prospective mood, often simply functioning as a future tense. It is formally characterized by the suffix -**ից** *-icʻ*/-its^{h}/ added to the present or the aorist stem. This is exemplified by subjunctive forms in (1) built on aorist stems characterized by the suffix -**ց** *-cʻ*/-ts^{h}/; cf. Jensen (1959: 98f.); Godel (1975: 15f.); Schmitt (1981: 150f.).

(1) a. **լացից** *lacʻicʻ* [lɑ.ˈts^{h}its^{h}] ← /lɑ-ts^{h}-its^{h}-Ø/ 'I shall/may weep.'
*/lɑ-ɑts^{h}-Ø$_{ACT}$-its^{h}-Ø$_{1SG}$/ ROOT$_{weep}$-AOR-MOD$_{ACT}$-SUBJ-Ø$_{1SG}$

b. **լուացայց** *lowacʻaycʻ* [lə.vɑ.ˈts^{h}ɑjts^{h}] 'I shall/may wash myself.'
*/lu-ɑts^{h}-ɑ-its^{h}-Ø/ ROOT$_{wash}$-AOR-MOD$_{MED.PASS}$-SUBJ-Ø$_{1SG}$

The underlying high vowel in the subjunctive suffix invariably surfaces in only two cases: i) in a word-final syllable under stress, as in **լացից** [lɑ.ˈts^{h}its^{h}] 'I shall weep', cf. (1a); and ii) after a vowel as part of a diphthong, as in **լուացայց** *lowacʻaycʻ* [lə.vɑ.ˈts^{h}ɑjts^{h}] 'I shall wash myself', cf. (1b). In all other contexts, i.e. when parsed into a nucleus of an unstressed syllable, the high vowel was in the history of Armenian reduced in atonic position due to shifts of stress, e.g. /seir-

ɛ-ɑtsʰ-itsʰ-ɛ-si/ ROOT$_{love}$-THEMV-AOR-SUBJ-MOD$_{ACT}$-2SG → *[(si.ɾe̯ɑ)$^{(}$tsʰi(tsʰɛ́$^{)}$si)$_{HDFT}$] > *[(si.ɾɛtsʰ)(tsʰɛ́.sə)$_{HDFT}$] > CA ***սիրեսցիս*** *sir-es-cʿ-e-s* [$^{(}$si (ɾɛs $^{)}$tsʰɛ́s)$_{HDFT}$] ‘thou shalt love’.

This reduction of high vowels resulted in the synchronic pattern which is shown in (2). Monosyllabic aorist stems are represented by ***լաց-*** /lɑ-ɑtsʰ-/ ROOT$_{weep}$-AOR- and polysyllabic stems by ***սիրեց-*** /seiɾ-ɛ-ɑtsʰ-/ ROOT$_{love}$-THEMV-AOR-. The forms of the paradigm with non-zero desinences, such as 2SG forms ***լացցես*** *lacʿ-cʿ-es* in (2a) and ***սիրեսցես*** *sires-cʿ-es* in (2b), surface with the high vowel of the subjunctive suffix reduced due to a phonologically predictable shift of stress to the desinence. The post-tonic reduction of the underlying high vowel in the subjunctive suffix triggers another process traditionally refered to as the *aorist subjunctive dissimilation of affricates*, which is, however, only seen when the aorist base is polysyllabic, cf. (2a) vs. (2b).

(2) a. ***լացից*** *lacʿ-icʿ* ‘I shall weep’ → ***լացցես*** *lacʿ-cʿ-e-s* ‘thou shalt weep’ [lɑtsʰ.ˈtsʰɛ́s]
    b. ***սիրեցից*** *sirecʿ-icʿ* ‘I shall love’ → ***սիրեսցես*** *sires-cʿ-e-s* ‘thou shalt love’ [si.ɾɛs.ˈtsʰɛ́s]

The distinction between the subjunctive forms such as ***լացցես*** *lacʿ-cʿ-e-s*, traditionally pronounced [lɑtsʰ.ˈtsʰɛ́s] in (2a) and ***սիրեսցես*** *sires-cʿ-e-s*, traditionally pronounced [si.ɾɛs.ˈtsʰɛ́s] in (2b) is currently analyzed by reference to syllable-count, in the spirit of (3).

(3) After the phonological reduction of the high vowel in the subjunctive suffix, the resulting surface sequence *[-tsʰ.tsʰ-] (← /ºtsʰ-itsʰ-/) undergoes dissimilation of affricates if the aorist stem is polysyllabic; the dissimilation does not occur if the stem is monosyllabic (cf., e.g. Meillet 1903: 21, 95).[81]

[81] “[W]enn der Aoriststamm auf ***-ց-*** auslautet, ***ս*** anstatt ***ց***, außer in einsilbigen Stämmen” (Meillet 1903: 95); “Anstatt ***ց*** vor einem zweiten ***ց*** findet man immer ***ս*** in mehrsilbigen Stämmen: [...] ***-ցց-*** bleibt in einsilbigen Stämmen” (1903: 21).

Furthermore, since in the synchronic system of OA, the [s] ~ [tsʰ] alternation presumably only occurs in the aorist subjunctive paradigm, the dissimilation has been traditionally characterized as morphologically conditioned (e.g., Meillet 1903: 21, 95; Godel 1975: 15; Vaux 1998: 123, etc.). The pattern in (2) has thus been described as a *morphologically conditioned dissimilation of affricates* in the aorist subjunctive.

In this chapter, I argue that the dissimilation of affricates observed in the OA aorist subjunctive formation was in the synchronic system of the language conditioned phonologically: the surface affricates predictably dissimilated if in contact. The original traditional orthography does not record a product of dissimilation because the forms were built to monosyllabic stems but rather because the surface affricates were separated by a typically unwritten reduced vocalic segment representing the underlying high vowel of the subjunctive suffix. In other words, forms such as **լացցես** *lacʿcʿes* are argued to have originally represented *[lɑ.tsʰə.ˈtsʰɛ́s] (← /lɑ-ɑtsʰ-itsʰ-/), not [lɑtsʰ.ˈtsʰɛ́s], which is the traditional, i.e. innovative, pronunciation of the written forms.

The goal of this chapter is, therefore, the analysis of the different behavior of monosyllabic stems *vis-à-vis* polysyllabic ones in the formation of the output representations of the full aorist subjunctive word-forms. I argue that principles of prosodic well-formedness, mainly the avoidance of degenerate feet (FTBIN), were responsible for different degrees of high vowel reduction between the affricates (i.e. total/deleted vs. partial/reduced), which led to the presence or absence of the contact between the affricates and the subsequent presence or absence of phonologically predictable dissimilation. Underlying */ᵒtsʰ-itsʰ-/ in forms built on polysyllabic stems resulted in surface *[-tsʰ.tsʰ-] (and subsequently [-s.tsʰ-], cf. **-սց-** *-scʿ-*), but the

same input in forms with monosyllabic bases ultimately resulted in surface *[-ts^{h}ə.ts^h-] (spelled *-ցց- -c‘c‘-*).

This analysis is corroborated by the absence of dissimilation in forms built on polysyllabic stems which ended in complex codas, e.g. *ստեղծցէ stełc-c‘-ē* 'he shall give shape; create' (e.g. Jakhjakian and Somalian 1837: 1270) or *ընթերցցիս ənt‘erc‘-c‘-is* 'thou shalt read, proclaim' (e.g. Jer. 19:2). It is argued that this state of affairs is due to avoidance of complex codas in the prehistory of the language. The optimal way of avoiding the offending structure was preservation of reduced reflexes of the underlying high vowels; i.e., OA *[(ən.t^{h}ɛɾ)(ts^{h}ə.ˈts^{h}is)] (spelled *ընթերցցիս ənt‘er-c‘-c‘-i-s*) was preferred over the suboptimal ×[(ən(t^{h}ɛ<u>ɾts^h</u>)ˈts^{h}is)] (which would have resulted in ×*ընթերսցիս* ×*ənt‘ers-c‘-is* ×[°ɛɾs.ts^{h}is]) with a complex coda in the stem.

7.2. Dissimilation of affricates and the Traditional Pronunciation

It is common knowledge that the language of CA texts is, at the very least, half a millennium removed from the way it is traditionally pronounced. What is handed down to us is the traditional pronunciation of a fully-blown "artificial literary language" (Weitenberg 1993: 5). Godel (1975: 24), for instance, dates the scribal tradition, the pronunciation of which forms the basis of the traditional one, to the 11th or 12th c. CE. Yet, the living language of the CA texts stems from the 5th c. CE.

The traditional generalization in (3) is based on the input [lɑts^h.ˈts^{h}ɛs]; however, this pronunciation arguably represents an artificial reproduction of the written forms several centuries removed from it. In other words, the traditional (syllable-counting) generalization is not directly based on the way the recorded forms were realized by the speakers of OA. It is not

far-fetched to argue that the traditional pronunciation cannot be taken for granted; many details of the original pronunciation are lost and simply need to be reconstructed.

In principle, written forms such as ***լացցես*** *lacʿcʿes* 'thou shalt weep' may equally well represent (a tri-syllabic) OA *[lɑ.ts^{h}ə.ˈts^{h}ɛs], since the reduced vowels are systematically not represented between orthographic geminates. It is only the dissimilation observable in the polysyllabic aorist stems such as in the form ***սիրեսցես*** *sirescʿes* [si.ɾɛs.ˈts^{h}ɛs] 'thou shalt love' which is directly attested in the extant texts. The traditional realization of OA ***լացցես*** *lacʿcʿes* as medieval Armenian [lɑts^{h}.ˈts^{h}ɛs] reflects a historically later phonetic realization datable to a period in which the dissimilation observable in forms such as ***սիրեսցես*** *sirescʿes* was arguably no longer productive, just as it is not productive in the modern language. The traditional generalization which describes the presence or absence of deaffrication is essentially based on a phonetic interpretation of the written forms mediated by the traditional pronunciation, which is however arguably based on a different, innovative phonological system. Therefore, the traditional generalization in (3) essentially stands or falls on the questionable assumption that the traditional pronunciation of CA is a faithfull reflection of the written OA forms in the relevant respect.

7.3. Across-the-board dissimilation of non-continuants in OA

In addition, the claim that the aorist subjunctive dissimilation of affricates is morphologically conditioned, since it only occurs in this morphological category (e.g. Meillet 1903: 21), needs to be revised in view of the fact that dissimilation targets all non-continuants in

reduplication;[82] e.g. *կսկիծ ks-kic* [kəs.ˈkits] ‘twitching pain’ from an earlier */kic-kic-/ *[kits.ˈkits]; *կոշկոճեմ koš-koč-e-m* [kɔʃ.kɔ.ˈtʃɛm] ‘I strike’ from */koč-koč-e-mi/ *[kɔtʃ.kɔ.ˈtʃɛ.mi]; *բարբառ barbaṙ* ‘speech; dialect’ from */bɑī-bɑī-/, etc. The dissimilation seen in the aorist subjunctive formation is apparently a part of a general phonologically conditioned process of dissimilation of non-continuants operative in the grammar of OA.

7.4. Dissimilation of affricates and prosody

The ‘artificiality’ of the traditional pronunciation allows for a hypothesis that in the living language of the original OA texts of the Golden Age the actual alternation of subjunctive aorist forms was as proposed in (4) below.

(4) a. *լացցես lacʿcʿes* *[lɑ.tsʰə.ˈtsʰɛs]
b. *սիրեսցես siresc‘es* (*)[si.ɾɛs.ˈtsʰɛs]

This state of affairs is a relic of the way high vowels were treated in the two forms (i.e. phonological/prosodic environments) and the fact that dissimilation of non-continuants in general was historically a productive phonological process, which was arguably ‘blind’ to any morphological information but simply occurred if the relevant structural description was met, namely if the two obstruent segments were in contact, as in (5b).

(5) a. *լացցես lacʿcʿes* trad. [lɑtsʰ.ˈtsʰɛs] < OA *[lɑ.tsʰə.ˈtsʰɛs] < pre-OA *[lɑ.tsʰi.ˈtsʰɛ.si]
b. *սիրեսցես siresc‘es* [si.ɾɛs.ˈtsʰɛs] < *[sej.ɾe̯ɑtsʰ.ˈtsʰɛ.si] < *[ᵒtsʰə.tsʰᵒ] <*[ᵒtsʰi.tsʰᵒ]

[82] “Die Alternation ծ/ս und ճ/ջ findet sich nur in Reduplikationsformen” (Meillet 1903: 21).

The traditional pronunciation [lɑtsʰ.ˈtsʰɛs] of the written form ***լացցես*** *lacʻcʻes* represents further reduction of the originally tri-syllabic OA *[lɑ.tsʰə.ˈtsʰɛs], but since this reduction was a property of a relatively distinct phonological system, it would be quite misleading to argue that the artificial form [lɑtsʰ.ˈtsʰɛs] needs a ‘synchronic’ explanation in terms of a phonological reanalysis with respect to the dissimilation in the morphologically parallel OA/CA [si.ɾɛs.ˈtsʰɛs]. The aorist subjunctive was at this point no longer a phonologically relevant category. The scribes and scholars of the period from which the traditional pronunciation has been passed down did not acquire the language by cognitive construction of phonological systems. In terms of grammatical patterns, OA was for them essentially a foreign language, and they had to learn these patterns by rote memorization. In other words, the artificial pattern [lɑtsʰ.ˈtsʰɛs] : [si.ɾɛs.ˈtsʰɛs] is an anachronism created by the scribal tradition which read the passed down OA text through a prism of innovative phonology.

In the original OA phonological system, the dissimilation applied to the two (underlying) affricates because the system did not tolerate surface non-continuants in contact as in *[si.ɾɛtsʰ.ˈtsʰɛs], the precursor of CA ***սիրեսցես*** *sirescʻes* and obviously realized as [si.ɾɛs.ˈtsʰɛs]. Forms such as ***լացցես*** *lacʻcʻes* are not exceptional in the sense that they are the result of phonological or morphophonological ‘blocking’ triggered by positional faithfulness or number of syllables in the stem, but simply the result of the fact that—when the pattern was a living category of a speaker’s native language—the surface affricates in this specific configuration were not in contact, i.e. (pre-)OA *[lɑ.tsʰə.ˈtsʰɛs(i)].

We know that unstressed high vowels were still faithfully realized as genuine high vowels in the Parthian period (ca. 250 BCE – ca. 230 CE), since high vowels in Iranian loanwords from this period are in OA reflected with reduced vowels; cf. Manichean Parthian *nyš'n* (= *[niːʃaːn]) → pre-OA *[ni.ˈʃɑn] > OA **նշան** *nšan* [nə.ˈʃɑn] 'sign, symbol'. In contrast, loanwords from the later Sassanian period (ca. 230 CE – ca. 650 CE) represent high vowels 'faithfully', i.e. unreduced by the native phonology, cf. Pahlavī *puštīkpān* → OA **փուշտիպան** *pʻuštipan* 'body-guard', etc. (cf. Ravnæs 1991: 61).

Similarly, final rhymes are plausibly still present well after the end of the Parthian period (Olsen 2005). This means that the prosodic system had a penultimate accent in which the synchronically stressed word-final syllables of OA correspond to the prehistoric penultimate syllables, e.g. **լացցես** *lacʻcʻes* (arguably) *[lɑ.tsʰə.ˈtsʰɛs] continues *[(lɑ.tsʰə)$_{\text{FT}}$ (ˈtsʰɛ.sə)$_{\text{HDFT}}$].

7.5. OT analysis

7.5.1. Stage I: before apocope

The analysis proposed here to obtain the distinction in the reduction of the high vowel in the subjunctive suffix, i.e. OA **լացցես** *la-cʻ-cʻ-e-s* *[lɑ.ʦʰə.ˈʦʰɛs] 'thou shalt weep' vs. OA **սիրեսցես** *sir-es-cʻ-e-s* [si.ɾɛs.ˈtsʰɛs] 'thou shalt love' reconstructed in (5) above, utilizes contraints defined in (6) below.

(6) FTBIN

"Feet are binary."

ALIGN (AOR, R, FT, R) = ALIGN AOR

"Align RIGHT EDGE of every AORIST stem with the RIGHT EDGE of some FOOT."

MAX

"Segments present in the input must have correspondents in the output."

DEP

"Segments present in the output must have correspondents in the input."

*COMPLEX CODA

"Codas must be simple (non-branching)."

The analysis in this section represents the proposed grammar at a historical stage at which the underlying high vowel in the subjunctive suffix is regularly reduced pre-tonically, either fully, as in polysyllabic forms, or partially, as in monosyllables, i.e. /-its^{h}/ → [-(ə)ts^{h}-´].

I assume that the prosodic mechanism that assigns word stress on the penultimate syllable and the phonological process that restricts the distribution of unstressed high vowels (and diphthongs) are subsidiary to the analysis of affricate dissimilation itself. Thus, all the candidates in Tableau 7.1 have penultimate accent and reduced atonic vowels, i.e., they are restricted to possible candidate structures that satisfy the relevant requirements.

The dissimilation itself is directly predictable based whether the reduced unstressed vowels between the aorist stem and the affricate in the subjuctive suffix are retained as such or fully deleted. As can be seen from Tableau 7.1 below, the overall prosodic structure at this historical stage determined whether high vowels were fully deleted, as in polysyllabic forms such as *[(si.ɾɛts^{h})(ˈts^{h}ɛ.si)], which becomes OA (***սիրեսցես** *siresc‘es*) [si.ɾɛs.ˈts^{h}ɛs] with dissimilation; cf. the winning candidate (e) and *[(ˈɑ(zɑˌ)zɑts^{h})(ˈts^{h}i.si)], which becomes OA ***ազազասցիս** *azazas-c‘-is* 'thou shalt dry up; cf. the winning candidate (h); or reduced, as in the 'monosyllablic'

forms such as *[(lɑ.tsʰə)(ˈtsʰɛ.sə)], which becomes OA *լացցես* *lacʿcʿes* *[lɑ.ʦʰə.ˈʦʰɛs] and even later [lɑʦʰ.ˈʦʰɛs]; cf. the winning candidate (a). At the relevant pre-stage of OA, the constraint ALIGN (AOR-R, FT-R), as defined in (6), required that the right edge of the aorist stem must be properly footed.

Tableau 7.1: Retention vs. deletion of reduced high vowels in aorist subjunctive in pre-OA

	pre-OA */lɑ-tsʰ-itsʰ-ɛ-si/	FTBIN	ALIGN (AOR, R, FT, R)	MAX VOWEL
	a. (lɑtsʰ)(tsʰɛ̱́.sə)	*!		*
☞	b. (lɑ.tsʰə)(tsʰɛ̱́.sə)		*	
	c. (lɑtsʰ (tsʰɛ̱́) sə)		*	*!
	pre-OA */seiɾ-ɛ-ɑtsʰ-itsʰ-ɛ-si/			
☞	e. (si.ɾɛtsʰ)(tsʰɛ̱́.sə)			*
	f. (si.ɾɛ)(tsʰə (tsʰɛ̱́) sə)		*!	
	g. (si (ɾɛ) tsʰə) (tsʰɛ̱́.sə)		*!	
	pre-OA */ɑz-ɑz-ɑtsʰ-itsʰ-i-si/			
☞	h. (ɑ (zɑ) zɑtsʰ)(tsʰɪ̱́.sə)			*
	i. (ɑ (zɑ) zɑ)(tsʰə (tsʰɪ̱́) sə)		*!	
	j. (ɑ.zɑ)(zɑ.tsʰə)(tsʰɪ̱́.sə)		*!	

Only stems with segmental material of a binary foot size or over, i.e. ‘polysyllabic’ stems, could achieve this alignment specification in the posited phonology. However, if the stem was monosyllabic, this alignment specification required the stem to be parsed into a dispreferred degenerate foot, as in the losing candidate (a). Since other structural configurations violated faithfulness constraints, see candidate (c), the optimal candidate was one with the high vowel simply reduced, see the winning candidate (b).

The dissimilation itself applied as a phonological consequence of the vowel deletion. It was not morphologically conditioned since it predictably applied only in the contexts where the affricates were in contact. Whether the dissimilation was productive as a phonological process at the stage of the earliest texts cannot be determined, since it cannot be excluded that it only operated in native lexical strata (i.e., loanwords might have been already unaffected by it). In any case, the two surface affricates in the aorist subjunctive paradigm were dissimilated because they were in contact, not because they were in aorist subjunctive formations.

7.5.2. Stage II: after apocope, or the attested OA

The loss of pre-OA final rhymes entails the reanalysis of the inflectional endings, most of which are simply lost, cf. PIE */-e-si/ >→ PA */-ɛ-si/ > OA /-ɛ-s/. The distribution of reduced high vowels between the aorist stem and the affricate in the subjunctive suffix is, however, controlled by the same grammar and requires no further comment, see Tableau 7.2, below.

Tableau 7.2: Retention vs. deletion of reduced high vowels in aorist subjunctive in OA

OA /lɑ-ts$^{h}_{\text{AOR}}$-its$^{h}_{\text{SUBJ}}$-ɛ-s/	FTBIN	ALIGN (AOR, R, FT, R)	MAX VOWEL
a. (lɑts^{h})(ts^{h}e̱s)	*!		*
b. (lɑ.ts^{h}ə)(ts^{h}e̱s)	*!	*	
☞ c. ⁽lɑ (ts^{h}ə) ts^{h}e̱s)		*	
d. (lɑts^{h}.ts^{h}e̱s)		*	*!

OA /seiɾ-ɛ-ɑts$^{h}_{\text{AOR}}$-its$^{h}_{\text{SUBJ}}$-ɛ-s/

e. (si.ɾɛ)(ts^{h}ə.ts^{h}e̱s)		*!	
f. ⁽si (ɾɛ) ts^{h}ə) (ts^{h}e̱s)	*!	*	
g. (si.ɾɛts^{h})(ts^{h}e̱s)	*!		*
☞ h. ⁽si (ɾɛts^{h}) ts^{h}e̱s)			*

7.6. Reduced vowel preserved before consonant clusters

The dissimilation of affricates is also not recorded on a handful of forms which are arguably polysyllabic, such as **ստեղծել** *stełc-cʿ-ē* 'he shall give shape; create' (Jakhjakian and Somalian 1837:1270) and **ընթերցցիս** *əntʿercʿ-cʿ-is* 'thou shalt read (out loud), proclaim' (Jeremiah 19:2). I argue that the absence of dissimilation in these forms is due to the fact that an intervening schwa from the reduced underlying high vowel of the subjunctive suffix was present in order to avoid a parse with a complex coda,[83] see Tableau 7.2.

Tableau 7.2: Affricates are not in contact in stems with complex codas: **ստեղծել**, **ընթերցցիս**.

	Pre-OA */stɛłts-its^{h}-ɛ-i̯i/	FTBIN	DEP	*COMPXCODA	ALIGN AOR	MAX V
	a. (ˌəs.tɛłts)(ts^{h}ɛ́.ji)		*	*!		*
☞	b. (ˌəs (tɛł) tsə)(ts^{h}ɛ́.ji)		*		*	

Pre-OA */ən(d)t^{h}ɛɾts^{h}-its^{h}-i-si/

	c. (ən.t^{h}ɛɾts^{h})(ts^{h}ɨ́.si)			*!		*
☞	d. (ən.t^{h}ɛɾ.ts^{h}ə)(ts^{h}ɨ́.si)				*	
	e. (ən.dˌə)(t^{h}ɛɾ.ts^{h}ə)(ts^{h}ɨ́.si)		*!		*	

[83] The following analysis requires a brief comment. The synchronically attested surface -VCC.C- structures are in the earliest attested language invariably the result of two phonological processes: i) the reduction of final syllables, i.e., all final -CC clusters may be traced to *-CCV, e.g. **անդ** *and* 'there' < *ande, cf. **անդէն** *andēn* = *ande + *in; **հայրց** *har-cʿ* 'father-DAT.ABL.PL' < *har-cʿu, cf. **նոցուն** *no-cʿow-n* 'the same-DAT.ABL.PL' < *no-cʿu-in; etc. ii) the reduction of high vowels, i.e., all medial and some final -CCC- clusters may be traced to *-CiCC- or *-CuCC- sequences, e.g., **կորնչիմ** *kornčʿ-im* 'lose; disappear' < *kori-nčʿ-, cf. an actually attested **կորընչիմք** *korənčʿimkʿ* (cf. Künzle 1984: 65 vol.I). Various prefixes are also simplified, e.g. the stem **ընթեր-** 'read' < *ənd-tʿer-, **ընկեր** *ənker* 'friend' < *ənd-ker- 'with-eat', etc. The candidate (e) in Tableau 2 illustrates the point that the grammar preferred to violate MAX-C than to tolerate a complex coda or an epenthetic segment; i.e., [ən.C] is preferred over *[ənd.C] or *[ən.dəC]. No consonant deletion occurs in the aorist stems because the vowel which resumes the complex coda is not epenthetic, i.e. [ən.tʿer.cʿə.cʿis] vs. ˣ[ən.tʿes.cʿis].

The losing candidate (a), in Tableau 7.2, satisfies the alignment constraint on the aorist stem, but this provision comes at a cost of surfacing with a complex coda. Since the constraint that militates against this structure is ranked above the alignment constraint, the underlying high vowel is partially reduced and prevents the contact of the two affricates in the output form, i.e., */stełc-icʿ-e-i̯i/ does not surface as ˣ*ստեղսցէ* ˣ[əs.tɛɬs.ˈts^{h}e]. Similarily, */ən(d)tʿɛrcʿ-icʿ-i-si/ does not surface as ˣ*ընթերսցիս* ˣ[ən.t^{h}ɛɾs.ˈts^{h}is].

The absence of dissimilation in stems with complex codas is not only phonologically predictable—the surface affricates were not in contact—it also explicitly falsifies the traditional generalization that only monosyllabic aorist stems were exempt from dissimilation.

7.7. Conclusion

OA aorist subjunctive word-forms built on monosyllabic aorist stems preserve the two affricates in the written records because the forms were originally realized with an intervening reduced vowel that was underlyingly present on the subjunctive suffix; e.g., *լացցես lacʿcʿes* records *[ˌlɑ(ts^{h}əˌˈts^{h}ɛs)] from an earlier *[(lɑ.ts^{h}ə)(ˈts^{h}ɛ.si)]. On the other hand, the underlying high vowel was completely reduced if such reduction would not result in degenerate footing or marked complex codas; e.g. *սիրեսցես sir-es-cʿ-e-s* [ˌsi(ɾɛsˌˈts^{h}ɛs)] from *[(si.ɾɛs)(ˈts^{h}ɛ.si)]; *ընթերցցիս entʿer-cʿ-cʿ-i-s* *[(ən.t^{h}ɛɾ)(ts^{h}ə.ˈts^{h}is)] from an earlier *[(ən.t^{h}ɛɾ)ˈˌts^{h}əˌ(ˈts^{h}i)si)]. The proposed pattern has been argued to fall out from the interaction of high-ranking principles on prosodic domination and the morphophonological alignment constraint which required that the aorist stem assume a specific position within the prosodic hierarchy; i.e. FtBin, *ComplexCoda » Align (Aor, R, Ft, R).

CHAPTER 8

MODERN ARMENIAN PLURAL ALLOMORPHY

8.1. Introduction

The selection of modern Armenian plural allomorphs has been previously interpreted as a case of syllable-counting allomorphy (Vaux 1998, 2003; Vaux et al. 2013; cf. Inkelas 2014: 286) and explicitly used to falsify Kager's (1996) argument that putative cases of syllable-counting allomorphy are to be properly interpreted as output-oriented phenomena. According to Kager, the similarity between allomorphy and reduplication—they may both refer to generalizations such as TETU (the emergence of the unmarked)—provides evidence for the sensitivity of morphological operations to prosodic properties of the complete base-plus-affix structures and subsequently to constraint-based, rather than rule-based, models of the phonology-morphology interface. Kager further argues that according to a maximally restrictive view, cf. particularly McCarthy and Prince (1986, 1996), grammars do not count syllables, nor segments, nor features, etc. Any reference to syllable parity should be reducible to grouping of syllables into BINARY FEET (cf. Halle and Vergnaud 1987, Hayes 1995).

This chapter proposes an analysis of the selection and distribution of modern Armenian plural allomorphs in terms of the interaction between the surface prosodic structure of the plural form at the level of the PROSODIC WORD (PW) and the phonological structure of the lexically

listed allomorphs themselves (i.e. PL = /-nɛɾ/ ~ /-ɛɾ/) in the framework of Optimality Theory (Prince and Smolensky 1993/2004) within the sub-theory of Correspondence (McCarthy and Prince 1994, 1995b).

8.2. Plural allomorphy: FTBIN, ONSET » ALIGN (PL, L, PW, R) » NOCODA

The allomorph selection is analyzed as being synchronically regulated by the interaction of the prosodic structure markedness constraint that disfavors degenerate footing (FTBIN) and a specific morphophonological constraint of the GENERALIZED ALIGNMENT constraint family (McCarthy and Prince 1995a) in terms of a categorical, distant-insensitive alignment. The latter requires that the affixal, i.e. left edge, of the plural morpheme (-PL) be aligned to the right edge of a PROSODIC WORD (PW) category in the structure of the PROSODIC HIERARCHY (Selkirk 1978; 1986: 384; 2004: 466), cf. (1-2) below.

(1) FTBIN = FOOTBINARITY-SYLLABLE
"Feet are binary under syllabic analysis."

(2) ALIGN (PL, L, PW, R) = ALIGN PW-PL (for convenience)
"The left edge of every nominal plural suffix (-PL) aligns with the right edge of some Pw."

When the plural morpheme satisfies the alignment specification in (2), it is contained in an extended MAXIMAL PROSODIC WORD (PW') structure (Itô and Mester 2007, 2009) and parsed as a self-contained syllable, i.e. $[[...]_{Pw}$-.PL.$]^{Pw'}$. The selection of the allomorph /-nɛɾ/ in this configuration is motivated by its ability to provide an onset, i.e. $[[(\sigma\sigma)_{Ft}]_{Pw}$-.nɛɾ$]^{Pw'}$; cf. its suboptimal onset-less competitor *$[[(\sigma\sigma)_{Ft}]_{Pw}$-.ɛɾ$]^{Pw'}$. Otherwise, in order to avoid parsing the

stem into a monosyllabic or degenerate FOOT, cf. the suboptimal candidate configuration *[[(σ)$_{Ft}$]$_{Pw}$-.n̲ɛɾ]$^{Pw'}$, the syllable that hosts the plural morpheme is parsed in the same PW as the nominal stem. This configuration favors the allomorph /-ɛɾ/, since the selection of this allomorph reduces the number of segments in the coda of the preceding syllable and subsequently results in a less marked syllabic structure, i.e. [(CV.C̲-ɛɾ)$_{Ft}$]$_{Pw}$; cf. the suboptimal alternative *[(CVC̲.-n̲ɛɾ)$_{Ft}$]$_{Pw}$. Similarly, the optimal allomorph /-ɛɾ/ prevents the formation of a marked complex coda, i.e. [(CVC.C̲-ɛɾ)$_{Ft}$]$_{Pw}$; cf. *[(CVCC̲.-n̲ɛɾ)$_{Ft}$]$_{Pw}$; see (3) for an overview.

(3)
	a.	*[[(σ σ) $_{FT}$]$_{PW}$._-ɛɾ.]$_{PW'}$
☞	b.	[[(σ σ) $_{FT}$]$_{PW}$.-n̲ɛɾ.]$_{PW'}$
	c.	*[(σ)$_{FT}$]$_{PW}$ -nɛɾ]$_{PW'}$
	d.	*[(Cv(C)C.-n̲ɛɾ) $_{FT}$]$_{PW'}$
☞	e.	[(Cv(C).C̲-ɛɾ)$_{FT}$]$_{PW'}$

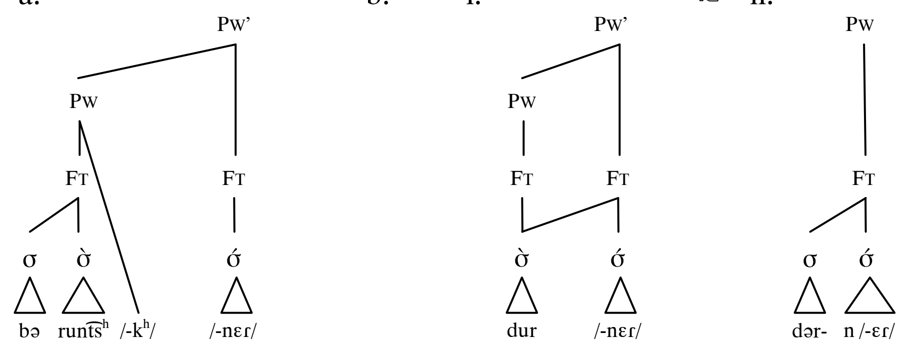
An output-oriented prosodic analysis of the phenomenon not only explains the distribution of the allomorphs—and their very shape—in a relatively simple and elegant way, it also straightforwardly accounts for the systemic relationship of the allomorphy to the previously under-analyzed concurrent phonological phenomena that are outside of the plural formation licensed only word-finally. This analysis unifies the account of the word-final *superheavy* and *obstruent-obstruent* codas (i.e. [-V(R̲/N̲)C-k^{h}]) and their exceptional *medial* counterparts which are systematically retained after the suffixation of /-nɛɾ/ as a consequence of the licensing of the NOMINALSUFFIX /-k^{h}/ as a PW-final APPENDIX, cf. (4a, 5a). Similarly, high vowels systematically do not reduce under the shift of primary stress on stems that select /-nɛɾ/, cf. (4, 5). This analysis assumes the same hierarchic configuration before the plural suffix /-nɛɾ/ as word-finally, i.e., the

high vowels are parsed into peaks of PW HEADs. In comparison, the stem consonant /-n/, which deletes word-finally, surfaces in stem derivation. It also systematically surfaces in plural forms with /-ɛɾ/. Both patterns are uniformly analyzable as PW-medial configurations; cf. (4b, 5b).

(4) a. [[bə.ru<u>nts</u>^{h}.-<u>k</u>^{h}]$_{Pw}$ -.nɛ́ɾ]$_{Pw'}$ 'fists', i.e. STEM-NOMINALSUFFIX-PL

b. /dur-n-/ 'door' → [dúr]$_{Pw}$: [dər<u>-.n</u>-ɛ́ɾ]$_{Pw}$, cf. [dər<u>-.n</u>-ɑ-[pɑ́n]$_{Pw}$]$_{Pw'}$ 'door-keeper'

(5) ☞ a. b. i. ☞ ii.



All monosyllabic nominal (i.e. pluralizable) structures of the /CV-/ shape incidentally contain only high vowels, i.e. /Ci-/ or /Cu-/, which resort to glide formation in the process of plural formation and behave exactly as other [CVC-] (← /CVC-/) stems for the purposes of the plural allomorphy; cf. /dzu-/ → [dz^{ə}.<u>v</u>-ɛ́ɾ] 'eggs' vs. *[dz^{ə}<u>v</u>.-<u>n</u>ɛ́ɾ]; /dzi-/ → [dzi.j-ɛ́ɾ] 'horses' vs. *[dz^{ə}j.-nɛ́ɾ]. The peculiar difference between the surface realizations of /Ci-/ and /Cu-/, namely [Cí-Ø] ~ [Ci.j-´] vs. [Cú-Ø] ~ [C^{ə}.v-´], occurs systematically in derivation as a feature of both literary dialects; cf. e.g. EA ձվջուր *jv-ǰowr* [dzəv.dʒúɾ] 'egg-broth', not $^{\times}$[dzu-dʒúɾ], $^{\times}$[dzə-dʒúɾ]. Since there is only a short list of such pluralizable forms,[84] we will simply assume that their forms

[84] Namely, EA /dzi-/ 'horse', EA /di-/ 'corpse', /li-/ 'full', /mi-/ 'one'; EA /dzu-/ 'egg', and archaic /nu-/ 'daughter-in-law'.

are listed as allomorphs conditioned by the position of word stress, i.e. [dzú] ~ [dz$_{ə}$v-´] ‘egg’; [dzí] ~ [dzi.j-´] ‘horse’, etc.[85]

8.3. Data

8.3.1. Western Armenian

Counting syllables in the nominal stem as a practical formula for the distribution of the plural allomorph suffixes has an old and venerable tradition in both pedagogical and linguistic descriptions of Armenian; e.g. Riggs (1856); Karst (1901); Gulian (1902); Ačaṝyan (1971); Feydit (1969); Minassian (1980); Samuelian (1989); Vaux (1998); Sakayan (2000, 2007); Dum-Tragut (2009), etc. A selection of WA singular nominal forms immediately reveals the motivation behind the syllable-counting formula: monosyllabic nominals (in the singular) show plurals in /-ɛɾ/, cf. (6a), while polysyllabic nominals in the singular show /-nɛɾ/, cf. (6b-c);

(C = Consonant, V =Vowel, O = Obstruent, S = {s, ʃ, z}).

(6)

	Stem.Sg	# of σ's	Stem-Pl	Gloss	Type
a.	k^{h}ɑ́ɾ	1	k^{h}ɑɾ-ɛ́ɾ	‘stone’	/CVC/
	jɛɾk^{h}	1	jɛɾk^{h}-ɛ́ɾ	‘song’	/CVCC/
	bɑ́ɾdk^{h}	1	bɑɾdk^{h}-ɛ́ɾ	‘debt’	/CVCC-k^{h}/
b.	mɔ.ɾúk^{h}	2+	mɔɾuk^{h}-nɛ́ɾ	‘beard’	/CVCVC/
	k^{h}ə.lúχ	2+	k^{h}əluχ-nɛ́ɾ	‘head’	
c.	^{ə}s.bɑ	2+	^{ə}sbɑ-nɛ́ɾ	‘official’	/SOV(C)/
	^{ə}s.gízp^{h}	2+	^{ə}sgizp^{h}-nɛ́ɾ	‘beginning’	

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[85] Since this pattern is an innovation of the medieval language, I suspect that it is indirectly linked to the change of *[w] to [v]; cf. CA ձուոյ *jow-o-y* ‘egg.Gen.Sg’ *[dzu.ˈwɔj] > [dzə.ˈvɔ]. We may model the transition diachronically by promotion and demotion of constraints enforcing syllabification possibilities of the involved output segments with respect to featural faithfulness of the vowels, tolerance for epenthesis, and tolerance for segmental splitting, i.e. for ambisyllabic parsing of glides; specifically, *MARGIN/W » IDENT[HIGH] » *M/J » *M/V » *PEAK/U » DEP » *P/I, INTEGRITY.

However, it has been long recognized that counting syllables at the level of the surface structure cannot directly account for the selection in *at least* one specific type of plural, see (7).

(7)

STEM.SG	# of σ's	STEM-PL	Gloss	Type
WA vá.k^{h}ə$_{ɾ}$	2 or 1½?	vɑk^{h}.ɾ-ɛ́ɾ, not *vɑ.k^{h}ə$_{ɾ}$.-nɛ́ɾ	'tiger'	CVOR[86]

Accordingly, Dum-Tragut (2009: 64) differentiates between two types of nominals: on the one hand, nominals that pattern patently as either monosyllables (6a) or polysyllables (6b-c) above, and on the other hand, "one and a half syllables", or sesquisyllables, such as (7). The sesquisyllabic singular nouns are pluralized one way or the other depending on which of their syllables is supported by [ə], implicitly understood to be epenthetic. If the schwa is in the first syllable, the stems are treated as regular polysyllables; e.g. [k^{h}ə.lúχ];[87] if the epenthetic schwa is in the last syllable, the type is seemingly capriciously pluralized as a monosyllable, see (7).

In this chapter, I argue that the syllable-counting generalization errs in seeking the explanation of the pattern based on a reference to the phonological properties of the singular stem, since both the 'regular' pattern of plural formation in (6), or [CV(C).C-ɛɾ], and the sesquisyllabic pattern of the same in (7), or [CVO.R-ɛɾ], are both on the surface phonologically motivated by the same principles. The surface syllabification of the singular form of the type in [vɑ.k^{h}əɾ] is simply unrelated to the allomorphy. Both, patterns [vɑ.k^{h}əɾ] — [vɑk^{h}.ɾɛɾ] in (7) and

[86] As practiced by Indo-Europeanists, I am using R here to conventionally denote any Resonant, i.e. a member of a phonological class which in Armenian includes /ɾ/, /l/, /n/, /m/ and /ʁ/ (historically a liquid and synchronically a segment that is phonetically realized either as an approximant [ʯ] or a fricative [ʁ], e.g. WA [ás.dəʯ] ~ [ástχ] 'star', [ɑsd.ʁɛ́ɾ] ~ [ɑsd.ʯɛ́ɾ] 'stars'.

[87] I do not analyze the first peak of [k^{h}ə.lúχ] as epenthetic but as a reduced underlying high vowel and simply subsume such forms under CVCVC in (6b). The difference between surface [əs.T-] and [sə.T-] is due to MAX » CONTIGUITY-OUT, i.e. /sut-/ 'false; lie' → /sut-e-l/ 'to lie' → [sə.tél] (*[s$_{ə}$.t-], *[$_{ə}$s.t-] ruled out by MAX) vs. /stɔɾ-/ 'low' → [əs.tɔɾ] (*[s$_{ə}$t-] by CONTIGUITY-O).

the pattern in (6), say, [jɛɾk^{h}] — [jɛɾ.k^{h}ɛɾ], are consistent in avoiding a sonority sequencing violation when organizing segments into syllables. Hypothetical monosyllabic singular forms *[CVOR] *vis-à-vis* [CVRO], candidates (a) and (c) in Tableau 8.1, respectively, are avoided since the coda in this output violates the SONORITY SEQUENCING GENERALIZATION (SONSEQ), defined in (8). A segment extraneous to the input, see (9), is in the winning candidate (b) tolerated since it satisfies this constraint, cf. candidate (d).

(8) SONSEQ (= SONORITY SEQUENCING GENERALIZATION)
"Complex onsets rise in sonority, and complex codas fall in sonority."

(9) DEP (= DEPENDENCE INPUT-OUTPUT)
"Output segments must have input correspondents. (No epenthesis)."

Tableau 8.1: Sesquisyllabic /CVOR-/ vs. monosyllabic /CVRO-/ stems

/vɑk^{h}ɾ/ 'tiger'		SONSEQ	DEP
a.	.vák^{h}ɾ.	*!	
☞ b.	vá.k^{h}ɘɾ		*

/ɛɾk^{h}/ 'song'		SONSEQ	DEP
☞ c.	.^{j}ɛ́ɾk^{h}.		
d.	^{j}ɛ́.ɾɘk^{h}		*!

The sesquisyllabic type /CVOR/ surfaces in the singular as an unequivocal disyllable due to SONSEQ, as shown in Tableau 8.1; however, for the purposes of plural allomorphy, the sequence is just a subtype of /CVCC/, see Table 8.2, below.

Tableau 8.2: /CVOR-PL/ = /CVCC-PL/

/vɑk^{h}ɾ/ 'tiger'		SONSEQ	DEP
a.	vɑk^{h}ɾ.nɛ́ɾ	*!	
b.	vɑ.k^{h}ɘɾ.nɛ́ɾ		*!
☞ c.	vɑk^{h}.ɾɛ́ɾ		

The unattested plural form *[.CVOR.-nɛɾ] also violates SONSEQ, cf. candidate (a) in Tableau 8.2, and the competitor *[CV.O$_{ə}$R.-nɛɾ] uses epenthetic sounds extraneous to the input, cf. candidate (b). The winning candidate (c), i.e. the optimal output [CVO.R-ɛɾ], suffers neither deficiency. Crucially, the output of sesquisyllables neither requires nor affords any reference to the number of syllables involved.

8.3.2. Syllable-count vs. output optimization alternatives

Reorganizing the data based on the surface plural forms in (10), we summarize the system of regular nominal plural formation in WA discussed so far.[88]

(10)		SG FORM	# of σ's	STEM-PL	# of σ's	Gloss	Type
	a.	.k^{h}ɑɾ.	1	(k^{h}ɑ.ɾ-ɛ́ɾ)$_{FT}$	2	'stones'	/CVC/
		.vɑɾt^{h}.	1	(vɑɾ.t^{h}-ɛ́ɾ)$_{FT}$	2	'roses'	/CVCC/
		.bɑɾdk^{h}.	1	(bɑɾd.k^{h}-ɛ́ɾ)$_{FT}$	2	'debts'	/CVCC-k^{h}/
	b.	vɑ.k^{h}əɾ	2	(vɑk^{h}.ɾ-ɛ́ɾ)$_{FT}$	2	'tigers'	/CVOR/
	c.	mɔ.ɾuk^{h}	2+	(mɔ.ɾuk^{h})-nɛ́ɾ	2+	'beards'	/CVCVC/
		k^{h}ə.luχ	2+	(k^{h}ə.luχ)-nɛ́ɾ	2+	'heads'	
	d.	əs.bɑ	2+	(əs.bɑ)-nɛ́ɾ	2+	'officials'	/sO-/
		əs.gizp^{h}	2+	(əs.gìzp^{h})-nɛ́ɾ	2+	'beginnings'	

If we focus on the number of syllables in the *output* plural form, rather than on the number of syllables in the stem (previously conceptualized as input to plural formation), as has been done in previous analyses, a tentative but consistent pattern emerges. The plural

[88] For simplicity of exposition, one regular type is excluded from the table: stems in /-n-/, which does not surface in the singular, e.g. [t^{h}ɔr] 'grandchild', but [(t^{h}ɔr.nɛ́ɾ$_{Ft}$)], i.e. /t^{h}ɔr-n-ɛɾ/; stems of this type surface word-medially and in derivation, cf., e.g. /t^{h}ɔr-n-ik/ 'id.-DIM'. Synchronically, it is the same type as /CVCC/ in (10a) or, diachronically, the same type as /CVOR/ in (10b).

allomorphs appear in exact complementary distribution: the plural allomorph /-ɛɾ/ invariably occurs only in disyllabic plural forms, while the other allomorph /-nɛɾ/ invariably occurs in plural forms which are *not* disyllabic. We can form a tentative hypothesis that /-ɛɾ/ is preferred in word-forms that surface as well-formed binary feet, while /-nɛɾ/ occurs elsewhere.

Most importantly, this pattern cannot be described accurately or accounted for by counting syllables in the singular forms. The pattern in (10) is exclusively surface-oriented, i.e. forms which are *to wind up* as disyllables (or well-formed binary feet) select /-ɛɾ/. In the following pages, I argue that all the patterns that pertain to the modern Armenian plural allomorphy are uniformly motivated by the optimization of the prosodic output.

8.3.3. Eastern Armenian

Eastern Armenian offers additional patterns of the distribution of the plural allomorphs summarized in (11) below.

(11)

	STEM.SG	STEM-PL DERIVABLE BY SYLLABLE-COUNT ☑ Yes		☒ No	GLOSS
a.	kʰáɾ	(kʰɑ.ɾ-éɾ)$_{FT}$			‘stones’
b.	gə.lúχ	(gə.lùχ)$_{FT}$-néɾ			‘heads’
c.	vá.gᵊɾ	*dial.* (vɑ.gᵚ)$_{FT}$-néɾ	~	(vɑg.ɾ-éɾ)$_{FT}$	‘tigers’
d.	ᵊs.pá	(ᵊs.pɑ)$_{FT}$-néɾ			‘officials’
e.	ᵊs.kízb	(ᵊs.kízb)$_{FT}$-néɾ	~	*coll.* (ᵊs.kìz)$_{FT}$b-éɾ	‘beginnings’
f.	rús	*formal* (ə.rùs)$_{FT}$-néɾ ~ *marginal* (ru.s-éɾ)$_{FT}$	~	(rus.-néɾ)$_{FT}$	‘Russians’
g.	risk	(ris.k-éɾ)$_{FT}$			‘risks’
h.	kúɾt͡skʰ	(kəɾt͡s.kʰ-éɾ)$_{FT}$	~	(kùɾt͡skʰ)$_{FT}$-néɾ-ₔs ‘chest’-POSSPL-‘my’ i.e. ‘our chest(s)’	‘chests’

The forms in (11) are taken from standard, colloquial, or dialectal varieties of EA. We shall see that specific stems may select one allomorph in one variety but another allomorph in another variety. Such variation cannot be easily derived by counting syllables. The dataset is organized in a way which shows which variants comply with the traditional assumption of counting syllables and which do not.

8.3.3.1. Exceptional 'Russians'

The syllable-counting formula performs a bit better if we exclude [rus.nɛ́ɾ] 'Russians' from the list, see (11f). Ačaŕyan (1957: 817) considers this plural form a relic of an earlier stage with disyllabic realization. In other words, [rus.nɛ́ɾ] is not a *productive* plural of the form [rus].[89]

In Vaux (1998, 2003), the form [rus.nɛ́ɾ] is a showcase example of a monosyllabic stem in initial /r-/ selecting the polysyllabic plural allomorph. His analysis proposes that lexical syllabification leaves /r-/ unsyllabified, since this segment "is not licensed as a word-initial onset" (2003:113). This way, the lexical representation of the stem contains more than a *minimal* (mono-)syllable, which, according to the author, does not qualify the stem for the selection of a monosyllabic allomorph /-ɛɾ/.

Ačaŕyan's explanation is clearly preferable to Vaux's proposed mechanism, since the initial licensing of /r-/ explains only this (and some other archaic—hence gratuitous—forms such

[89] The form ռուս-ներ *rus-ner*, i.e., either [rus.nɛ́ɾ] or [ə.rus.nɛ́ɾ] 'Russians' occurs 736 times in 249 documents in the EANC (Eastern Armenian National Corpus at http://www.eanc.net/); however, ռուս-եր *rows-er* [ru.sɛ́ɾ] also gets 16 hits in 12 documents. The form ըռուս *ərows*, i.e. explicitly [ə.rús], occurs 5 times in 4 documents. In addition, ռուս-եր *rows-er* [ru.sɛ́ɾ] (which is also pronounced without the prothetic schwa) is the standard form in Western Armenian (e.g. Vaux 1998: 31).

as ***ռումբներ*** [ə.rumb-nɛɾ]; cf. the modern conventionalized ***ռումբեր*** [rum.b-ɛɾ] 'bombs') but leaves the remainder of monosyllabic (and/or sesquisyllabic) forms in /r-/ unexplained.

Malxasyanc' (1945: 164) actually lists the variants ***ռսեր*** *ṙs-er* and ***ըռռուսներ*** *əṙows-ner*, i.e. obviously the 'monosyllabic' [rə.s-éɾ] and [ə.rus-néɾ], with an explicit prothetic vowel, respectively. Dum-Tragut (2009: 64) also lists the plural form as a lexical exception. The variation found in this stem is not found with recent loans, cf. (11g), and other native or domesticated /r̄-/ words.[90]

The retention of the plural allomorph based on an earlier syllabification is vaguely comparable with the conservative EA [mjus-nɛɾ] vs. innovative [mjus-ɛɾ] 'others', the former no doubt a continuation of the disyllabic realization of [mi.jus] (~ [mjus]) 'other', originally from a fusion of */mi-ɛu̯s/ (lit.) "yet one more; still one".[91]

8.3.3.2. Selection variation: /CVOR-PL/

The variation between the standard form [vɑg.ɾ-éɾ], recall WA [vɑk^{h}.ɾéɾ] in (7) and (10), and its dialectal variant [vɑ.gu̯.néɾ] 'id.' in (11c) have been previously analyzed in terms of a difference in sensitivity to the presence of unparsed segments after a so-called *minimal* syllable during lexical syllabification (Vaux 1998: 122; 2003: 110). The analyses assume that morpheme-

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[90] The more or less productive monosyllabic or sesquisyllabic forms in /r̄-/ clearly take the plural in [-ɛɾ]: [rumb] 'bomb' → [rum.bɛɾ]; [rɑk] 'crawfish' (< Russian) → [rɑ.k-ɛɾ], [rɑŋg] 'color' → [rɑŋ.g-ɛɾ], [riŋg] '(boxing) ring' (< English) → [riŋ.g-ɛɾ], [rom] 'rum' → [ro.m-ɛɾ] 'sorts of rum', [ruŋg] 'nostril' → [ruŋ.g-ɛɾ]; cf. also [rɑ.zˀm] 'battle' which is archaic and treated as a nonce [rɑz.m-ɛɾ]. Apparently an expressive [(ə)rɛχ] 'pie-hole' (= "mouth") also exceptionally occurs with both plural allomorphs: [(ə)reχ-(n)ɛɾ]. I am grateful for this specific information to the intuitions of Hrach Martirosyan, Garik Grigoryan, and Sarkis Ampar Sarkissian.

[91] EANC (http://eanc.net/) shows 5,104 matches in 1,980 documents for ***մյուսներ(ը)*** *myows-ner(-ə)* [m(i)jus-nɛɾ(-ə)] but also 4 hits for ***մյուսեր(ը)*** *myows-er(-ə)* [mjus-ɛɾ(-ə)]. The latter gets, however, 14 hits in the Google (TM) search engine (vs. 338,000 results for the former), cf., http://forvo.com/word/***մյուսներր***/.

final consonants are extrasyllabic during their cycle (1998: 61), and segments preceding them may also be left unparsed if the morpheme-final unparsed segments are of equal or greater sonority (1998: 86).

According to Vaux (2003: 110), one variety selects /-ɛɾ/ because the form is lexically parsed as a monosyllable, and the plural selection is not sensitive to the stray /O/. The lexically syllabified representation $[.CV.]_{\sigma}$ O 〈R〉 is thus registered as a *minimal* syllable. The other variety does not select /-ɛɾ/ because it *is* sensitive to the presence of the unparsed /O/, and the lexically syllabified representation $[.CV.]_{\sigma}$ O 〈R〉 is not registered as a *minimal* syllable. The analysis does not offer any typological justification for the connection between cross-linguistic sensitivity to the presence or absence of stray material during syllabification and allomorph selection. In any case, as Vaux explicitly acknowledges (1998: 123), this rule-based algorithm still cannot account for the fact that monosyllabic forms such as [pɑɾtk^{h}] 'debt' invariably pluralize the type as [pɑɾt.k^{h}ɛ́ɾ] in all varieties.[92] Vaux's analysis predicts that this form is lexically syllabified as [.pɑɾ.] t 〈k^{h}〉, and the varieties sensitive to strayed material at the lexical level should therefore select *[pɑɾtk^{h}-nɛɾ]. The dialectal variant [vɑ.gn̥.nɛ́ɾ][93] is in my analysis

[92] Vaux (1998: 32) credits Ačaŕyan (1971: 271) for EA forms *[pɑɾtk^{h}-nɛɾ] 'debts' and *[kuɾʦ^{h}k^{h}-nɛɾ] 'breasts' in standard EA, but this is based on a misunderstanding as to what the cited forms represent. Ačaŕyan (l.c.) discusses the distribution of super-heavy codas, and he lists possessive plural forms for these two monosyllables, not bare plurals, precisely because the complex codas which he is discussing do not occur in the plural forms of the monosyllabic stems: ***հառի մեջ երեք բաղաճայն միասին վանկի վերջում անհնարին է, բացառությամբ առանց-ների, քղանց-ներ, կուրծք-ներդ, պարտք-ներդ և այլն ձևերի***: "In the middle of a word, three-consonant clusters are at the end of a syllable impossible (or insupportable); with the exception of forms such as [ɑ.ɾɑnʦ^{h}k^{h}.nɛɾ, k^{h}ə.ʁɑnʦ^{h}k^{h}.nɛɾ, kuɾʦ^{h}k^{h}.neɾˀd, and pɑɾtk^{h}.neɾˀd]" (translation mine).

[93] Vaux refers to this form as standard EA and cites Ačaŕyan (1957: 818) in support. Ačaŕyan, however, simply lists both of the variants without further qualification. The expressed intuitions of all my informants agree with Dum-Traugut (2009: 65).

possible because these dialects allow syllabification of the class of Resonants,[94] i.e. liquids, nasals, and /ʁ̥/ (cf. fn. 86), see section 8.1. The vocalization of Resonants explains the invariant forms with stem-final obstruents, since these are obviously not parsed as nuclei in any Armenian variety (at least not word-medially), cf. *[pɑɾ.tk̥^{h}-nɛɾ].

8.3.3.3. Syllabication of initial /SO-/

The initial /SO-/ ({s, z, ʃ} plus OBSTRUENT) sequences, cf. (11d-e), are arguably not tautosyllabic in the two standard Armenian varieties. Vaux (1998: 31f., 121f.) takes the /S/ to be an initial appendix (to a PROSODIC PHRASE constituent), and the presence of this structure is argued to trigger the selection of the polysyllabic plural allomorph /-nɛɾ/ (via stipulation). The /S/ is, thus, structurally not part of the same syllable as the following obstruent even in his system. However, the analysis with /S/ as an initial appendix cannot be maintained. It makes a categorical distinction across the varieties between the realization of the sequence with initial epenthesis and the realization without epenthesis, i.e. WA [.əS.O-.] vs. EA [|S|$_{\text{APNDX}}$.O-.]. Nevertheless, the realization is in *both* varieties variable, even if with different frequency. The absence of epenthesis, even if marginal, is also reported for WA (Samuelian 1993: xii), and the epenthesis is optionally audible in EA as well, either in pedantic speech or in phrase-internal sandhi, i.e. in connected speech (Minassian 1980: 20;[95] Dum-Tragut 2009: 35). Yet, in spite of all

[94] Vaux (2003: 111) assumes that "the syllabification algorithm first assigns [the /ɾ/ of the form /vɑgɾ-nɛɾ/] to a syllable nucleus and later optionally expels it in favor of an epenthetic vowel."

[95] Minassian (l.c.) cites the cluster with the epenthetic vowel 'by default', so to speak, (e.g. his *əzbaɬvel* « s'occuper ») but adds that certain linguists argue that the schwa is missing "dans la pronunciation des groupes des mots" (citing Aṙakelyan 1979: 43). This is obviously a reference to phrase-level phonology.

this variation, the forms in initial /SO-/ with *simplex codas* (see below) invariably select /-nɛɾ/ across all varieties and dialects.

In Vaux's analysis, it is crucial that /S/ is parsed as an appendix in EA but not in WA, due to the reliance of the analysis on the uniform reference to the "unparsed, but not extraprosodic material" (Vaux 2003: 109) in forms with unparsed segments. The EA /SO-/ type with an extrasyllabic initial, pre-consonantal appendix /S-/ is argued to be parallel to the type / [.CV.]OR/ with strayed segments, the type with final appendices such as /[pɑɾt]k^h/ 'debt', and the type with the presumably unlicensed word initial /r̄-/ such as /r [.us.]/, since all three of these types are claimed by the author to select /-nɛɾ/ due to the presence of these structures. Nevertheless, as Ačarīyan has already argued, we may simply assume that the exceptional [rus.nɛɾ] 'Russians' is a fossilized form, the alleged EA type *[pɑɾtk^h-nɛɾ] is undoubtedly based on a ghost form (see fn. 92), and the actual distribution of the (dialectal) plurals such as [vɑ.gr̥.nɛɾ] simply does not correspond to the one assumed by Vaux (see fn. 93). For instance, standard EA shows [$^{(ə)}$s.tɔɾ.-nɛ́ɾ], on the one hand, but [pɑɾt.k^h-ɛ́ɾ] and [vɑg.ɾ-ɛ́ɾ], on the other. Even the dialectal varieties which show [$^{(ə)}$s.tɔɾ.-nɛ́ɾ] alongside [vɑ.gr̥.-nɛ́ɾ] still show [pɑɾt.k^h-ɛ́ɾ]. It is thus quite ironic that the type with the most uncontroversial evidence for a final appendix in the singular, i.e. [.pɑɾt.]-k^h, is the one type that does not select /-nɛɾ/ in any variety, see (8.3.2.).

In any case, Vaux's analysis further does not account for the allomorph selection on the innovative colloquial type [$^{(ə)}$s.kiz.b-ɛ́ɾ] 'beginnings' or [$^{(ə)}$s.puŋ.g-ɛ́ɾ] 'sponges' vis-à-vis [$^{(ə)}$s.pɑ.-nɛɾ] 'officers' or [$^{(ə)}$s.pi.-nɛɾ] 'scars', cf. (13d-e). These forms are produced by the same speaker (cf. Vaux 1998: 31), which clearly suggests that the selection of the allomorphs conforms

to the markedness principles of syllable structure, not syllable count.[96] I will show that, in these dialects, the alignment constraint on the plural morpheme is violated in [[$^{(ə)}$s.kiz]$_{PW}$ .b-ɛ́ɾ]$_{PW'}$ in order to avoid a sub-optimal complex coda in the competitor [[$^{(ə)}$s.kizb]$_{PW}$ -.nɛɾ]$_{PW'}$, while forms with simplex codas such as [[$^{(ə)}$s.pɑ]$_{PW}$-.nɛɾ]$_{PW'}$ and/or [[$^{(ə)}$s.tɔɾ]$_{PW}$-.nɛɾ]$_{PW'}$ are obviously immune to any ranking of this syllable structure markedness constraint; see (8.3.)

Therefore, I am assuming that /S/ in /SO-/ syllabifies in its own syllable at the word-level phonology, i.e. at the level at which the plural formation applies. The schwa is (optionally) reduced as a phrase-level phonological process. Such a mechanism is predicted by the hypothesis of *the life cycle of phonological process* under Stratal OT (cf. Bermùdez-Otero 2014). The idea is that there is a direct connection between phonological change and the proposed architecture of grammar. Language-specific gradient processes of phonetic implementation may become phonologized or even morphologized in the process of a figurative ascendence through the levels of grammar. Thus, it seems that EA is at a synchronic stage in which onset clusters are possible at the phrase-level phonology.[97]

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[96] Vaux (1998: 31) reports these forms with a comment that *vowel-final* forms select /-nɛɾ/ but *consonant-final* forms employ the monosyllabic suffix /-ɛɾ/. First, it is not clear why syllable structure should play a role in a *syllable-counting* allomorphy, and secondly, I am not aware of any variety in which the forms with simplex codas such as /stɔɾ/ would form plurals in *[stɔɾ-ɛɾ].

[97] In fact, syllabification of obstruents at word-edges seems unavoidable at the Phrase Level in many varieties and registers of Armenian, in which phonetic 'clusters' are obviously a result of phrasal phonology as evidenced by 'phrasal' doublets, such as [k^{h}əvɛ(j)ɑɾkɛl] ~ [k^{h}vɛjɑɾkɛl] ~ [k^{h}vjɑɾkɛl] 'to vote', [ɸ^{h}əjɛɾk^{h}ɛʁ^{h}i] ~ [ɸ^{h}jɛɾk^{h}ɛʁ^{h}i] 'I did not sing' (coll.); [k^{h}əsɑn] ~ [k^{h}sɑn] '20'; [gəɾɑdɑɾɑn] ~ [gɾɑdɑɾɑn] 'library' [hjɑnɑli] ~ [hi(j)ɑnɑli] 'wonderful', [mjusnɛɾ] ~ [mijusnɛɾ] 'others' (when carefully articulated), [ʤɾjɑkɑn] ~ [ʤɾijɑkɑn] ~ [ʤəɾijɑkɑn] '(cost-)free', etc. (Dum-Tragut 2009: 15, 46, 47, 56). Vaux (1998:66, fn.5) mentions that one of his informants pronounces [p̪.tok] 'peak' (i.e. presumably standard *ptuk*) with the first obstruent in a syllable nucleus; perhaps we may therefore assume the same for /S/ in /ST-/ initial sequences.

8.3.3.4. Possessive plurals

The last form in the EA data which does not conform to the traditional syllable-counting formula is the possessive plural [kuɾt͡sk^{h}-.né.ɾ-ə̯s] ‘our chest(s)’, cf. (11h). However, in order to be able to cover certain aspects of the allomorphy, I first discuss the concurrent phonological phenomena as evidence for the posited alignment constraints and prosodic constituency.

8.4. Evidence for ALIGN PW-PL

We shall start by looking at the phonological phenomena concurrent with the formation of plurals in general: the pattern of high vowel reduction and/or retention, see (8.4.1.), the preservation of super-heavy codas, see (8.4.2.), the surfacing of stem consonants, see (8.4.3.), the deletion of Pw-final /-i/, see (8.4.4.), and the systematic invisibility of the plural morpheme for OCP, see (8.4.5.).

8.4.1. High vowel reduction before /-ɛɾ/ vs. retention before /-nɛɾ/

A characteristic feature of the plural allomorphy is that high vowels are frequently reduced in stems which select /-ɛɾ/, cf. (12a-c). While the reduction of high vowels in these forms cannot be regarded as phonologically productive (12d),[98] high vowels in final syllables on stems which select /-nɛɾ/ systematically do not reduce nor show synchronic variation, (12e-f).[99]

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[98] In EA, the reduction of high-vowels in inflection is arguably lexical (cf. Dum-Tragut 2009: 41f); it typically occurs in the core vocabulary and the most frequent forms. Some stems surface only as reduced, such as (12a-b) above, some constantly do not reduce, and still some vacillate (ibid. 66). In comparison, high vowels in WA generally only reduce in derivation, e.g., ***տուներ*** [du.néɾ] ‘houses’,***գիրքեր*** [k^{h}iɾ.k^{h}éɾ] ‘books’; cf.***դնաստէր*** [dən-ɑ-sɛɾ] ‘(a person) fond of remaining at home’,***դնիկ*** [dən-ik] ‘small house, cabin’; ***գրքաուտուն*** [k^{h}əɾk^{h}-ɑ-dun] ‘bookshop’, etc. (cf. Vaux 1998: 20, fn. 13); however, oblique forms may still show (lexically conditioned) variation even in WA; thus, [k^{h}iɾk^{h}-í] ~ [k^{h}əɾk^{h}-í] ‘book’-GEN/DAT, etc. (cf. Samuelian 1993: 102).

[99] There is only a single polysyllabic plural with a reduction of a high vowel, the noun ***երկիրներ*** *erkirner* [ʲɛɾ.kəɾ.néɾ] ‘lands’ with the singular form ***երկիր*** *erkir* [ʲɛɾ.kíɾ]. Its regular, but significantly less frequent, variant ***երկիրներ*** *erkirner* [ʲɛɾ.kiɾ.néɾ] ‘id.’ also

(12) a. [gíɾk^{h}] ‘book’ → [gəɾ.k^{h}-éɾ]
b. [túnˈ] ‘house’ → [tə.n-éɾ]
c. [ts^{h}úl] ‘bull’ → [ts^{h}ə.l-éɾ] ~ (coll.) [ts^{h}u.l-éɾ]
d. [t^{h}uɾk^{h}] ‘Turkish’ → [t^{h}uɾ.k^{h}-éɾ]
e. [ɑχ.t͡ʃ^{h}ík] ‘girl’ → [ɑχ.t͡ʃ^{h}ik.-néɾ]
f. [t^{h}ər.t͡ʃ^{h}ún] ‘bird’ → [t^{h}ər.t͡ʃ^{h}un.-néɾ]

The systematic preservation of high vowels on stems with /-nɛɾ/ is in this analysis taken as the first piece of evidence for the presence of a PROSODIC WORD (Pw) boundary immediately before the plural suffix, cf. (13a). In other words, high vowels before the plural suffix in these forms behave exactly like high vowels in word-final syllables, because they are in the same prosodic environment, namely the head syllable of the head foot of a PW constituent.

Conversely, the (lexically conditioned)[100] reduction of high vowels before the plural suffix in forms which select /-ɛɾ/ is assumed to be indicative of non-PW-final syllables, cf. (13b-c)

(13) a. [[ɑχ.t͡ʃ^{h}ik]$_{PW}$ -néɾ]$_{PW}$ ‘girls’
b. [ɑχ.t͡ʃ^{h}$_{ə}$.k-á]$_{PW}$ ~ [ɑχt͡ʃ^{h}.k-á]$_{PW}$ ‘id.’-GEN/DAT[101]
c. [gəɾ.k^{h}-éɾ]$_{PW}$ ‘books’

8.4.2. Super-heavy codas before /-nɛɾ/

Stems that select /-nɛɾ/ also exhibit systematic preservation of what can be descriptively referred to as ‘super-heavy codas,’ elsewhere licensed only word-finally, cf. (14a-c).

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occurs. It gets 208 hits in 154 documents in EANC (Eastern Armenian National Corpus at http://eanc.net/), while [^{j}ɛɾ.kəɾ.néɾ] occurs 3,400 times in 1,894 documents.

[100] This is similar to the Slavic *jer* vowels, cf. e.g. Slovak [pɔtɔk] (NOM) ~ [pɔtɔk-a] (GEN) ‘creek’ vs. [pɔtɔmɔk] (NOM) ~ [pɔtɔmk-a] (GEN) ‘descendant’.

[101] Cf. WA [ɑχt͡ʃ^{h}.g-án $_{Pw}$] ‘id.’-GEN/DAT.

(14) a. [bə.rún$_1$t͡sʰ$_2$kʰ$_3$]$_{PW}$ ‘fist’

b. [[bə.rùn$_1$t͡sʰ$_2$kʰ$_3$]$_{PW}$ -nɛ́ɾ]$_{PW'}$ ‘fists’

c. [[bə.rənt͡sʰ.kʰ-à-]$_{PW}$[mɑ́ɾt]$_{PW}$]$_{PW'}$ ‘boxing, pugilism’ (lit. “fist-fight”)

Word-medially, only up to two consonants are allowed in syllable codas. Word-finally, however, up to three consonants are allowed if the final consonant is /-kʰ/[102] (Ačaŕyan 1971: 270f.). This element is word-finally never parsed into a separate syllable, even if the coda ends up being super-heavy, i.e. triconsonantal.

The element /-kʰ/ is to be clearly interpreted as an independent morphological element, which is *deliberately underparsed* (in the sense of Scheer 2004), cf. the monosyllabic examples in (15) below.

(15) a. [.gíɾ.-kʰ] ‘book’; cf. [gíɾ] ‘letter (of alphabet)’; [gəɾ-ɛ́l] ‘to write’; [gə.ɾ-íʧʰ] ‘pen’

b. [.díɾ.-kʰ] ‘position’; cf. [dəɾ-v-ɛ́l] ‘put’-PASS-INF, i.e. ‘to be put’; [díɾ] ‘put!’

c. [.íɲʧʰ.-kʰ] ‘possession’; cf. [əɲʧʰ-ɑ-kʰɑ́χt͡sʰ] ‘greedy’ (lit. “glutton for things”)

d. [.pɑ́ɾt.-kʰ] ‘debt, obligation’; cf. [pɑɾt-ɑ-kɑ́n] ‘debtor; obliged’

e. [.vɑs.-kʰ] ‘running, race’ (cf. dial. [vɑz] ‘id.’); [vɑz-ɛ́l] ‘to run, race’

Vaux (1998:32) also treats /-kʰ/ as a final appendix (to a PW constituent), which unifies the treatment of word-internal and word-final syllable codas into a maximum of up to two consonants. Subsequently, however, he has to devise intricate rule- and level-ordering mechanisms regulated by ad hoc stipulations to account for the fact that this super-heavy sequence surfaces in polysyllabic plurals word-medially. In comparison, these structures require no special qualification in the present analysis: the nominal suffix (NOMSUFF) /-kʰ/ is after an

[102] A single exception to this generalization is monosyllabic [.tɛkʰst.] ‘text’, a relatively recent loan from Russian (Vaux 1998: 83).

obstruent or a complex coda cluster parsed in the final position of a PW constituent and it may therefore surface as such either word-finally or before the (possessive) plural /-nɛɾ/. This is achieved by a morphophonological alignment specification on the NOMSUFF /-k^h/, specified in (16) below. The alignment constraint interacts with a lower-ranked PARSE, defined in (17), and the already mentioned higher-ranked SONSEQ, cf. (8) above, as shown in Tableau 8.3.

(16) ALIGN (NOMSUFF, R, PW, R) = ALIGN PW-k^h
"The right edge of every Nominal Suffix /-k^h/ has to coincide with the right edge of a PW."

(17) PARSE-INTO-SYLLABLE = PARSE-SEGMENT = PARSE
"Unsyllabified segments are prohibited."

Tableau 8.3: NOMSUFF deliberately under-parsed

/kuɾt͡s^h-k^h/ STEM-NOMSUFF	SONSEQ	ALIGN PW-k^h	PARSE
a. [(kúɾt͡s^h-k^h)$_{FT}$]$_{Pw}$	*!		
☞ b. [(kúɾt͡s^h)$_{FT}$ -k^h]$_{Pw}$			k^h

The tableaux 8.4 and 8.5 show the predicted position of the suffix outside of the syllable coda in monosyllabic and polysyllabic plurals, respectively.

Tableau 8.4: NOMSUFF in monosyllabic stems

/kuɾt͡s^h-k^h-PL/ STEM-NOMSUFF-PL	FTBIN	ALIGN PW-k^h	PARSE
a. [[(.kuɾt͡s^h.)$_{FT}$-k^h]$_{Pw}$-(.nɛɾ.)$_{FT}$]$_{Pw'}$	*!*		k^h
☞ b. [(kəɾt͡s^h.k^h-ɛ́ɾ)$_{FT}$]$_{Pw}$		*	

Tableau 8.5: NOMSUFF in polysyllabic stems

/bə.ɾunt͡sʰ-kʰ-PL/ STEM-NOMSUFF-PL		FTBIN	ALIGN PW-kʰ	PARSE
☞	a. [[(bə.ɾunt͡sʰ) FT -kʰ]PW-nɛ́ɾ]PW'			kʰ
	b. [(. bə.ɾunt͡sʰ) FT .kʰ-ɛ́ɾ]PW		*!	
	c. [[(. bə.ɾunt͡sʰ)FT]PW .kʰ-ɛ́ɾ.]PW'		*!	

The suffix is of course parsed into the coda in monosyllabic stems with *simplex* codas, such as [giɾkʰ] 'book' ← /gir-kʰ/, as shown in Tableau 8.6.

(18) *COMPLEX CODA = *CC]σ
"Codas must be simple."

Tableau 8.6: NOMSUFF in monosyllabic stems with simplex codas

/giɾ-kʰ/ STEM-NOMSUFF		MAX	DEP	FTBIN	ALIGN PW-kʰ	PARSE	*CC]σ
	a. [(.giɾ.) -kʰ]PW			*		kʰ !	
☞	b. [(.giɾ-kʰ.)]PW			*			*
	c. [(gi.ɾə-kʰ)]PW		*!				
	d. [(.gi-kʰ.)]PW	ɾ !		*			

Even more telling for the prosodic boundaries are POSSESSIVE PL (POSSPL) formations with an invariant homophonous /-nɛɾ-/, which pluralizes possessive suffixes (POSS) and allows /-kʰ/ to apparently surface word-internally cf. (19a-d).

(19) a. [(kúɾt͡sʰ)-kʰ]PW 'chest'
b. [(kəɾt͡sʰ.-kʰ-ɛ́ɾ)]PW 'chests'
c. [(kúɾt͡sʰ.-kʰ-ə́s)]PW 'chest'-POSS.1, i.e. 'my chest'
d. [(kùɾt͡sʰ FT)-kʰ]PW -nɛ́ɾ-ᵊs]PW' 'chest'-PL-POSS.1, i.e. 'our chest(s)'

8.4.3. Stem-final consonants before /-ɛɾ/

Stems that select /-ɛɾ/ exhibit systematic preservation of stem-final nasal, which elsewhere surfaces only in stem derivation; cf. especially the /-nɛɾ/ plural in (20c) with (21a).

(20) a. [t͡súk]$_{PW}$ 'fish.SG' ← /t͡suk-n-/

b. [[t͡sú]$_{PW}$ k-ᵊs]$_{PHP}$ 'fish'-POSS1, i.e. 'my fish'

c. [[t͡suk]$_{PW}$-né]$_{PW'}$ɾ-ᵊs]$_{PHP}$ 'fish'-POSSPL-POSS1, i.e. 'our fish' [103]

(21) a. [t͡sək.-n-ɛ́ɾ]$_{PW}$ 'fish-PL',

b. [t͡sək.-[n-ɔɾs]$_{PW}$]$_{PW'}$ 'fisherman'

8.4.4. Deletion of wordfinal /-i/

The activity of other processes before /-nɛɾ/, such as 'deletion' of /-i/ (i.e. [-Ø] ~ [-j-]), which otherwise occurs only word-finally also points to the presence of a PW edge; cf. the singular and plural nominative/accusative forms in (22a-b) with inflection and derivation in (22c-d), in which the segment surfaces PW-medially.

(22) a. [(ə)s.pɑ́]$_{PW}$ ← /spɑ-i/ '(military) officer.SG'

b. [(ə)s.pɑ]$_{PW}$-nɛ́ɾ]$_{PW'}$ 'officer-PL'

c. [(ə)s.pɑ́.j-ɔv]$_{PW}$ ← /spɑ-i-ɔv/ 'officer-INS.SG'

d. [(ə)s.pɑ.j-ɑ-[pɛ́t]$_{PW}$]$_{PW'}$ 'general-in-chief' (lit. "officer-master")

8.4.5. /-nɛɾ/ and the OCP

The invisibility of segments for the OCP (OBLIGATORY CONTOUR PRINCIPLE) before /-nɛɾ/ also shows that the plural allomorph, see (23), is treated on a par with PW clitics, PW

[103] Armenian stems modified by possessive plurals exhibit systemic ambiguity of number, i.e. "one or more fish of ours".

compound structures or independent PWs, cf. (24). Sequences of identical segments are otherwise PW-internally simplified, as in (25), in which a high vowel in the stem is regularly reduced.

(23) [ɛʒɑnːéɾ], i.e. /eʒɑn-nɛɾ/ 'cheap'-PL

(24) a. [ʃúnːɛl] 'the dog also', i.e. [[ʃún]$_{PW}$-n-ɛl]$_{PHP}$ [104]

b. [ɑnːˀmán] 'unlike, not similar', i.e. [[ɑn-]$_{PW}$ [nə.mɑn]$_{PW}$]$_{PW'}$ [105]

c. [hétːɑɾ] 'take with (you)!", i.e. [[hɛt]$_{PW}$ [tɑɾ]$_{PW}$]$_{PHP}$

(25) [uʁːél] ~ [uʁél]$_{PW}$ (OCP) 'to straighten; correct'; cf. [u.ʁíʁ]$_{PW}$ 'straight'

8.5. Segmental shape of /-PL/

This section investigates why the allomorphs are selected the way they are, i.e. /-ɛɾ/ presumably within a binary foot, and /-nɛɾ/ essentially outside of it. I argue that -PL aligns with an edge of a PW, in which case, it is necessarily parsed in a new syllable. This syllable would not be well-formed without an onset; hence, the allomorphy selects /-nɛɾ/, the allomorph which provides an onset, cf. (26a) with the sub-optimal (26b).

(26) a. [[(bə.rùn͡tsʰ)$_{FT}$ -kʰ]$_{PW}$ .né̲ɾ.]$_{PW'}$ 'fists'

b. *[[(bə.rùn͡tsʰ)$_{FT}$ -kʰ]$_{PW}$.éɾ.]$_{PW'}$

Similarly, a syllable with the onsetless /-ɛɾ/ uses stem-final segments as onsets thereby reducing the number or complexity of codas in the stem syllables; cf. (27a-b) with the unattested sub-optimal (27c-d).

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[104] /-n/ here is a definite article, which is required to align with the right edge of a PW. This configuration occurs as such only before vowel initial clitics such as EA /el/ (= WA /ɑl/) 'also', or [-u], the allomorph of /ɛu/ 'and', or the copula /e/ 'is'.

[105] Cf. English [ʌnːoʊn] 'unknown', i.e. [[ʌn]$_{PW}$ [noʊn]$_{PW}$]$_{PW'}$; PROSODIC WORD constituency is also used to explain the 'bracketing paradox' in [[un-]$_{PW}$ [grammàt-ic-ál-ity]$_{PW}$]$_{PW'}$ (cf. un-grammát-ic-al).

(27) a. [(gəɾ$_1$.-k^h-ɛ́ɾ.)$_{FT}$]$_{PW}$ ‘books’
b. [(tə.n-ɛɾ.)$_{FT}$]$_{PW}$ ‘houses’
c. *[(giɾ$_1$-k^h$_2$.-nɛ́ɾ.)$_{FT}$]$_{PW}$
d. *[(tun$_1$.n-ɛ́ɾ.)$_{FT}$]$_{PW}$

8.6. Possessive plurals

Armenian possessive plural formation is the most significant piece of evidence against the assumption that plural allomorphy is a syllable-counting phenomenon. We shall first review the morphologically simpler versions occurring in EA, after which we take on a more complex version in (historical) WA.

8.6.1. EA possessive plurals

In colloquial EA, the possessive plural suffix is synchronically homophonous with the nominal plural suffix. There are two sub-varieties. The first exhibits the same kind of allomorphy as the nominal plural suffix (i.e. /-nɛɾ-/ ~ /-ɛɾ-/), cf. (28a); the other is morphologically invariant (i.e. /-nɛɾ-/ regardless of the stem). The data on the latter are somewhat conflicting as far as the reduction of the stem high vowel is concerned, which either reveals more variation even within this sub-variety, cf. (28b-c), or the fact that the reduction is in this context unproductive and simply lexically specified;[106] (cf. Sakayan 2007: 56f.).

(28) a. [tún] ‘house’ → [tən-ɛ́ɾ] ‘houses’ → [tən-ɛ́ɾ-ə̥s] *either* ‘my houses’ *or* ‘our house’
b. [gíɾk^h] ‘book’ → [gəɾ.k^h-ɛ́ɾ] ‘books’ → [gəɾk^h.nɛ́ɾ-ə̥s] ‘our book(s)’
c. [kúɾt͡sk^h] ‘chest’ → [kəɾt͡s.k^h-ɛ́ɾ] ‘chests’ → [kùɾt͡sk^h.nɛ́ɾ-ə̥s] ‘our chest(s)’

[106] For illustration, the unreduced form [kuɾt͡sk^h.nɛ́ɾ-ə̥s/t] was taken from Ačʿaryan (1971: 270) and gets 7 hits in 7 different documents in EANC (http://eanc.net/) while the reduced form [kəɾt͡sk^h.nɛ́ɾ-ə̥s] still gets 5 hits in 5 documents. My informants tell me that the preferred way of expressing plural possession in modern EA is by syntactic means, i.e. *mɛɾ* ‘our’ STEM-DEF.

Notice that the allomorphic POSSPL in (28a) is without syntactic context ambiguous regarding the exact element being pluralized—it may be the stem or the possessive suffix—while the invariant suffix on a monosyllabic stem such as in (28b-c) explicitly shows that it is the suffix that is being pluralized. This is a clear indication that POSSPL /-nɛɾ-/ is synchronically a different morphological entity than the allomorphic nominal plural /-(n)ɛɾ/. Thus, the fact that the details governing their specific distribution within nominal forms may also be different is not unexpected. Yet, they both do seem to have one thing in common: they tolerate the presence of super-heavy codas before the plural suffix, i.e., the prosodic structure of (28c) is plausibly that shown in (29).

(29) [[[(.kùɾt͡s.)$_{FT}$-k^{h}]$_{PW}$-.né]$_{PW'}$ ɾ-ə́s]$_{PHP}$ STEM-NOM.SUFF-POSSPL-POSS.1, i.e. 'our chest(s)'

The structure in (29) suggests that the alignment of POSSPL in these forms is ranked higher than FTBIN, since even monosyllabic stems surface in the nested PW configuration.[107]

8.6.2. WA possessive plurals

Consider a more complex pattern in some (historical) varieties of Western Armenian, referred to as a *spurious plural* morpheme in Vaux et al. (2013). The possessive suffix (e.g. POSS.1 = /-s/ 'my') is (optionally) pluralized by the plural morpheme /-ni-/; i.e., /-ni-s/ or /-POSSPL-POSS.1/ therefore means 'our', as shown in (30) below.

[107] I also assume that the right edge of POSS /-s, -d, -n/ (or DEF /-n/) aligns with the right edge of a PHONOLOGICAL PHRASE (PHP) constituent, i.e. ALIGN (-POSS, R, PHP, R). Such a configuration forces the observed epenthesis between the suffix and the stem.

(30)	STEM(-PL)-POSS.1		STEM(-PL)-POSSPL-POSS.1	
a.	[bɑɾdɛz-ˌəs]	‘my garden’	[bɑɾdɛz-ni-s]	‘our garden’
	[bɑɾdɛz-nɛɾ-ˌəs]	‘my gardens’	[bɑɾdɛz-nɛɾ-ni-s]	‘our gardens’
b.	[gɔv-ˌəs]	‘my cow’	[gɔv-<u>ɛɾ</u>-ni-s] i.e. not *[gɔv-ni-s]	‘our cow’
	[gɔv-ɛɾ-ˌəs]	‘my cows’	[gɔv-ɛɾ-ni-s]	‘our cows’

The suffix /-ɛɾ/, one of the allomorphs of the nominal plural morpheme, mandatorily appears when the possessive plural morpheme /-ni/ is adjoined to a monosyllabic stem; i.e., an expected *[.gɔv.-ni-s] ‘our cow’ (or */gov-Ø-ni-s/ ‘cow’-SG-POSSPL-POSS.1) unexpectedly surfaces as [gov-<u>ɛɾ</u>-ni-s] ‘our cow’ (i.e. homophonous with ‘our cows’). This apparently happens only in order to accommodate the possessive plural morpheme /-ni/, which can presumably only adjoin to stems of more than one syllable. For example, Wolf (2011: 12) sets up the constraint **[σ.ni* which specifies that /-ni/ requires a polysyllabic base.

Vaux et al. (2013) propose an analysis based on standard DISTRIBUTED MORPHOLOGY mechanisms of morpheme copying, displacement, and spell-out, and claim that an analysis that purely relies on the surface phonological output conditioning is inherently incapable of accounting for this asymmetrical distribution of plural allomorphs in this kind of allomorphy. They maintain that the pattern in (30) cannot be accounted for by devices that exclusively rely on surface phonological representations: the *spurious plural* allomorph is simply not part of the phonological input but is a result of inwardly-sensitive phonological and outwardly-sensitive morphosyntactic conditioning. This is the same approach as Vaux (1998, 2003). The interaction between morphological and phonological conditioning—which is what, according to my analysis,

actually drives the inconsistency between the various plural types—has been essentially reduced to only one of its components. The surface level is categorically denied any relevance for the selection of the allomorphs, while the syllable-counting formula has become the fundamental specification upon which to posit structure-changing rules. After taking this route, Vaux (1998, 2003) and Vaux et al. (2013) deem all analytical attempts that seek to link the phenomenon to surface prosody not only futile but, in fact, theoretically misguided.

8.6.2.1. Nested allomorphy

Yet, the WA possessive plural pattern in (30) may be much more effectively accounted for—both synchronically and diachronically—by simply assuming that the WA possessive plural allomorphy is driven by the same morphophonological mechanism as the regular plural /-(n)ɛr/. Recall that the regular plural allomorph /-nɛr/ historically continues a compound suffix */-ni-ɛr/ (> /-n̥iɛr/ > /-nɛr/), which likewise never occurs suffixed to a degenerate foot (i.e. a single syllable). Diachronically, it is uncontroversial that the first element of */-ni-ɛr/ is ontologically the same morpheme as the possessive plural /-ni/ in (30); cf. Karst (1901: 179); also, Vaux et al. (2013: 4).

Based on these historical facts, let us diachronically analyze modern Armenian plural allomorphy (/-nɛr/ ~ /-ɛr/) as a continuation of a pre-modern Armenian allomorphy which (originally) involved the alternation between */-PL-PL/ (*/-n̥i-ɛr/ > /-nɛr/) vs. */-Ø-PL/ (> /-ɛr/). The second plural in these sequences is historically identical to the *spurious plural* of Vaux et al. (2013) and was originally a COLLECTIVE suffix, which was (re-)employed as a nominal plural marker. In order to differentiate the three Armenian (proto-)plural morphemes in the

discussion which follows, I will refer to the regular NOMINAL PL suffix (or modern Armenian allomorphic /-(n)ɛr/) as PL_1, the presumably *spurious* plural suffix (historically COLLECTIVE PL) /-ɛr/ as PL_2, and the (synchronically) POSSESSIVE PL suffix /-ni/ as PL_3.

In this way, we can describe the historical antecedent of the modern nominal plural ($PL_{(1)}$) allomorphy in /-(n)ɛr/ as */-PL_3-PL_2/$_1$ (= $^{(*)}$/-n̲i$_3$-ɛr$_2$/ > /-nɛr/$_1$) vs. */-Ø$_3$-PL_2/$_1$ (= /-ɛr$_2$/$_1$). By the same token, we can hypothesize that the WA possessive plural (POSSPL) facts in (34) also represent a related kind of allomorphy, namely one with the original suffixes reversed; i.e. */-PL_2-PL_3/ (> /-ɛr$_2$-ni$_3$/) vs. */-Ø$_2$-PL_3/ (> /-ni$_3$/). The alternations produced by these complex suffixes can be descriptively characterized as a kind of allomorphy determined by another allomorphy. In other words, if we add to the stem the modern nominal plural allomorphs to which we add the possessive plural allormorphs, we end up with a theoretical three-way schema [[[STEM-SG]-PL_2]-PL_3-] vs. [[STEM-SG]-Ø$_2$-PL_3-]] vs. [[STEM-PL_1]-Ø$_2$-PL_3-] to which the possessive suffixes further adjoin.

The fourth possible super-allomorph, as it were, *[[[STEM- PL_1]-PL_2]-PL_3-], i.e. the hypothetical surface sequence */-(n̲i-)ɛr/$_1$-ɛr$_2$-ni$_3$-/, is excluded from appearing on the surface based on the well-formedness of the phonological output. To summarize, the alternation (or allomorphy) of the complex suffix in the singular forms in (31a) below alternates with the homomorphous, complex suffix (31b) below. This super-allomorphy was asymmetric (only three-way) due to well-formedness considerations.

(31) a. [[[STEM-SG]-PL_2]-PL_3-POSS] ~ [[STEM-SG]-Ø-PL_3-POSS]

b. [[STEM-PL_1]-Ø-PL_3-POSS] (~ harmonically bound *[[[STEM- PL_1]-PL_2]-PL_3])

The homomorph, i.e. the configuration in (31b), which does not alternate, underlies both [gɔv-ɛɾ$_1$-Ø$_2$-ni-s] ‘our cows’ and [bɑɾdɛz-nɛɾ$_1$-Ø$_2$-ni-s], ‘our gardens’ (Ø$_2$ in both represents a kind of placeholder for the unrealized PL$_2$). The allomorphy in (31a) underlies [gɔv-Ø$_1$-ɛɾ$_2$-ni-s] ‘our cow’ and [bɑɾdɛz-Ø$_1$-Ø$_2$-ni-s] ‘our garden’, respectively (Ø$_1$ = SG; Ø$_2$, again, the unrealized PL$_2$).

The homophony of the monosyllabic stem singular with a *spurious* plural suffix [gɔv-ɛɾ-ni-s] ‘our cow’ and its corresponding plural with a genuine plural suffix [gɔv-ɛɾ-ni-s] ‘our cows’ is underlyingly a functional difference between [gɔv-Ø$_1$-ɛɾ$_2$-ni-s] vs. [gɔv-ɛɾ$_1$-Ø$_2$-ni-s], and it can be analyzed by reference to the surface phonological output in the same way as the more basic [gɔv-Ø-ɛɾ$_1$] (from */gɔv-Ø$_3$-ɛɾ$_2$/) ‘cows’ vs. [bɑɾdɛz-n-ɛɾ$_1$] (from */bɑɾdɛz-ni$_3$-ɛɾ$_2$/) ‘gardens’. Ignoring the difference in morphological complexity, these two allomorphy patterns are obviously the same morphophonological mechanism, only with the sequence of the historical proto-morphemes reversed; cf. the two next to each other in (32) and (33) below.

(32) STEM-SG-PL$_2$-PL$_3$-POSS ~ STEM-SG-Ø$_2$-PL$_3$-POSS ~ STEM-PL$_1$-Ø$_2$-PL$_3$-POSS

a.	[bɑɾdɛz-Ø-Ø$_2$-ni$_3$-s]	‘our garden’		[bɑɾdɛz-nɛɾ$_1$-Ø$_2$-ni$_3$-s]	‘our gardens’
b.	[gɔv-Ø-ɛɾ$_2$-ni$_3$-s]	‘our cow’	≠	[gɔv-ɛɾ$_1$-Ø$_2$-ni$_3$-s]	‘our cows’

(33) STEM-SG-POSS ~ STEM-/PL$_3$-PL$_2$/$_1$-POSS ~ STEM-Ø$_3$-PL$_2$/$_1$-POSS

a.	[bɑɾdɛz-Ø-s]	‘my garden’	[bɑɾdɛz-n$_3$-ɛɾ$_2$-ə̥s]	‘my gardens’
b.	[gɔv-Ø-ə̥s]	‘my cow’	[gɔv-Ø$_3$-ɛɾ$_2$-ə̥s]	‘my cows’

The difference in the morphological analysis in the superficially homophonous forms in (32b) straightforwardly accounts for the syntactic and morphological differences these two forms participate in, such as (34-35); cf. Ačarʏan (1954:372) and Vaux et al. (2013: 9f.). [108]

(34) a. mɛr ɑ-n dun-ɛr$_1$-Ø$_2$-ni$_3$-s ‘those houses of ours’
b. mɛr ɑ-n dun-Ø-ɛr$_2$-ni$_3$-s ‘this house of ours’

(35) a. hɑjr-Ø-ɛr$_2$-ni-s ‘our father’
b. hɑjr-ɛr$_1$-Ø$_2$-ni-s ‘our fathers’
c. hɑjr-Ø-ɔv-Ø$_2$-ni-s ‘by our father’
d. hɑjr-ɛr$_1$-ɔv-Ø$_2$-ni-s ‘by our fathers’

Before concluding this section, let us address the likely diachronic sources that were synchronically reanalyzed in terms of the posited mechanism.

Historically, derivations such as /gɔv-ɛr/, i.e. ‘cow-PL$_2$’, originally did not refer to a specific number of ‘cows’ but denoted ‘cows’ as a collective entity, i.e. literally something along the lines of “cow-dom”. Similarly, the complex of the collective and the nominal plural suffixes such as /gɔv-ɛr-ni-s/ literally denoted “our cow-dom”, irrespective of the actual number of bovines in mind (or technically rather “this cow-dom, right here”).

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[108] I disagree with the interpretation of Vaux et al. (2013: 9f) of the exposition in Ačarʏan (l.c.). They maintain that /-ɛr/ in /dun-ɛr-ni-s/ necessarily pluralizes the stem since structures like */mɛr k^{h}ini-ni-s/ ‘our wine’ are not grammatical, while /mɛr k^{h}ini-nɛr-ni-s/ ‘our wines’ are; however, I do not read this interpretation in the source. Ačarʏan merely states that in order to express these relations in the first instance, a demonstrative adjective has to intervene; cf. ***եթե հարկը պահանջե, գոյականը կարող է ստանալ միաժամակ թե ստացական և թե ցուցական ածական, ստացական հոդով միասին, օրինակ՝*** [...] ***մեր ան դունէրիս « մեր այն տունը ». ձեր աղ դունէրնիս « ձեր այդ տները »***: (If it is necessary [to express these relations], a nominal may be simultaneously modified by both a possessive [suffix] and by a demonstrative adjective; e.g. [see the examples in (40a-b)]” (translation mine). In other words, the ungrammaticality of */mɛr k^{h}ini-ni-s/ is morphosyntactically independent of the morphological status of /-ɛr/ in /mɛr ɑn dun-ɛr-ni-s/ “our this house(s)”, as is also shown by the explicit translations of Ačarʏan.

The usage of collective nouns as nominal plurals is overall typologically unremarkable.[109] Actually, this situation is in Armenian even less uncommon, since the grammatical expression of number is obligatorily expressed in fewer contexts than we are used to in Germanic, Slavic, or Romance languages. The motivation for it is also different.[110]

The presence of the *spurious* plural morpheme in the singular form [gɔv-ɛɾ-ni-s] 'our cow' is simply explained as a historical relic of this form as it was passed on from generation to generation in contexts which were originally ambiguous as to the actual number of the entities which the stem referred to. Later, it was simply reanalyzed as the initial component of the possessive plural complex but based on the surface distribution understood to be 'optional' (hence the descriptive Ø-like allomorphy).

This descriptive optionality is, of course, to be interpreted as the most optimal choice in pursuit of the morphophonological well-formedness of the output. The absence of the unattested form *[gɔv-ni-s] 'our cow', therefore, may be explained exactly as the absence of forms such as NE **intelligent-er* vis-à-vis the attested *more intelligent* or **I see-d* vis-à-vis the attested *I saw*, namely that none of these was ever part of the initial morphophonological signal

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[109] Cf., the use of collective nouns such as NE *member-ship* in contexts such as "the membership [of *Messianic disciples*] are expected to be faithful followers of Yeshua."; similarly: *Christen-dom* 'Christian believers collectively', *official-dom* 'a total of all whose profession is that of an official', *gangster-dom* (chiefly BrE) '(the world of) gangsters', *puppy-dom* (BrE) 'a group of puppies', *trustee-ship* 'a body of trustees', *town-ship* 'inhabitants of a community', *member-ship* 'the totality of all members', *peasant-ry* 'members of the lower class', *bagg-age* 'a group of bags; contents of a bag' etc.; NHG *Bürger-tum* 'members of the middle class', *Gesell-schaft* 'society members/employers collectively', *Ge-äst* '(a collection of) branches', *Ge-bälk* 'frames', *Ge-brüder* 'brothers', *Ge-sinde* 'servants', etc. (Trips 2009).

[110] For illustration, pluralizing the direct object denotes individualization and specificity, see (i-ii); cf. Dum-Tragut (2009:107).

i) *Erek (mi/erekʿ) girkʿ gnecʿi.*
Yesterday (one/three) book.SG bought.I
'Yesterday, I bought some books (one/a book, three books)'.

ii) *Erek ayn erekʿ grkʿ-er gnecʿi.*
Yesterday DEM three book-PL bought.I
'Yesterday, I bought those three books.'

during language acquisition and is arguably at odds with the properties of the acquired grammatical system such as the one that will be proposed in this analysis.

8.7. Selection of /-ɛɾ/

All nominal forms that in the singular surface as monosyllables *invariably* select the vowel-initial /-ɛɾ/ allomorph in the process of plural formation in Armenian. The two most prominent of the phonological properties that induce this selection are a marked dispreference for degenerate feet (enforced by FTBIN, see (1) above) and the impossibility of the 'repair' of the input forms which are parsed as single syllables (enforced by DEP, see (8) above). This is illustrated by the ranking DEP over FTBIN in Tableau 8.7, below.

Tableau 8.7: Surface monosyllables

/k^hɑɾ/ 'stone'	DEP	FTBIN
a. $[(k^h ɑ.ɾ_ə)_{FT}]_{PW}$	*!	
b. $[(ᵊ.k^h ɑɾ)_{FT}]_{PW}$	*!	
☞ c. $[(.k^h ɑɾ.)_{FT}]_{PW}$		*

The ranking in Tableau 8.7 reflects the fact that even though modern Armenian may use epenthesis for a variety of reasons, it is obviously not to repair degenerate feet, since a monosyllabic word is a possible output on the surface. The ranking is reversed in languages in which epenthesis augments a monosyllabic form to satisfy a requirement on a so-called *minimal word* (cf. Kenstowicz 1994: 640f.), such as Iraqi Arabic in (36) and Tableau 8.8; see, Kager (1999: 106, 144).

(36) Iraqi Arabic /drus/ 'study' → [id.rus]

Tableau 8.8: Binary word minimum

/drus/	FTBIN	DEP
a. [(.drus.)]	*!	
☞ b. [(^{i}d.rus)]		*

8.7.1. /-VC/ monosyllables

Armenian monosyllabic forms (and syllables in general) may have up to two coda consonants, i.e. [-V(C)(C)] (to which a nominal suffix (NOMSUFF) /-k^{h}/ may be appended, see (8.3.2.). Monosyllables with simplex codas are treated in Tableau 8.9, on the next page. All segments without special morphological status (cf. NOMSUFF /-k^{h}/) have to be parsed into syllables and all syllables have to be parsed into feet (enforced by PARSE ranked below FTBIN). Furthermore, prosodic structure may not introduce unheaded elements (penalized by the implied high-ranking HEADEDNESS). Moreover, while Armenian tolerates degenerate feet, cf. Tableau 8.7 above, they are clearly not favored (cf., a high-ranking FTBIN). The selection of the plural allomorph on monosyllabic stems essentially reflects the avoidance of marked syllabic structures; see (37-40).

(37) ONSET = ALIGN (σ, L, C, L) (McCarthy and Prince 1995a: 120)
"The left edge of every syllable has to be aligned with the left edge of a Consonant"
"Every syllable has an onset." (Prince and Smolensky 1993/2004: 25)

(38) NOCODA = *CODA
"A syllable must not end in a consonant." (McCarthy and Prince 1993)
*C]$_{\sigma}$ = "Syllables are open" (Kager 1999: 94)

(39) ALIGN PW-PL = ALIGN(PL, L, PW, R)

"The left edge of every plural suffix aligns to the right edge of some PW."

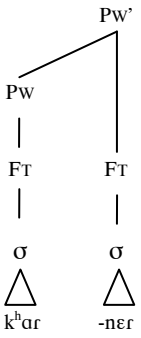
(40) HEADEDNESS, MAX, DEP, (ONSET, *CODA) » FTBIN » ALIGN PW-PL, ALIGN /-k^h/ » PARSE

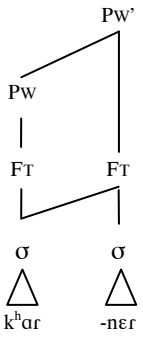
Tableau 8.9: Monosyllabic stems in /-VC/

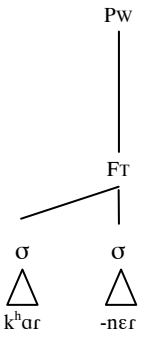
/k^hɑr-PL/ 'stones'	FTBIN	ALIGN PW-PL	ONSET	*CODA
a. [[(k^hɑr)]$_{PW}$ (nɛr)]$_{PW'}$	*!*			**(!)
b. [((k^hɑr)]$_{PW}$.nɛr)]$_{PW'}$	*!			**(!)
c. [(k^hɑr.nɛr)]$_{PW}$		*		**!
☞ d. [(k^hɑ.rɛr)]$_{PW}$		*		*

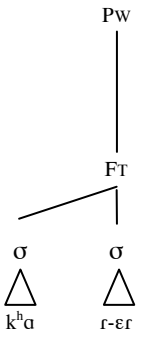
The candidates are, for ease of visualization, also represented as tree structures in (41).

(41)

a.


b.


c.


☞ d.


A stem is parsed into a PW in candidates (41a-b) in order to satisfy the morphophonological alignment specification on the plural suffix (required by ALIGN PW-PL). However, the PW edge created in the process would isolate the monosyllabic stem, which is subsequently parsed into a suboptimal degenerate foot and ruled out by the higher-ranking FTBIN.

If the stem provides only a single syllable, the stem-plus-suffix form is parsed into a single PW, since even a weak bracketing configuration is not able to provide an optimal candidate, see candidate (41b). In order for the suffix to align with a PW, this category would either not be properly headed (violating HEADEDNESS, which is assumed to be undominated) or the head of that category would necessarily be a degenerate foot, see candidate (41b). The candidate (41c) is parsed into a well-formed foot, but the consonant-initial allomorph /-nɛɾ/ 'pushes' the final stem consonant into the coda of the previous syllable. In the presence of a less marked alternative—the winner (41d)—this configuration creates a marked syllabic structure and the suboptimal form is ruled out by an extra violation of *CODA. This marked structure is in the winner harmonically tolerated due to a high-ranking MAX, cf. (40).

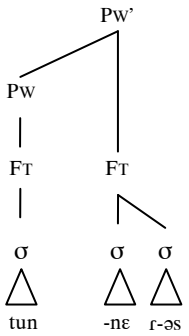
We will see in (8.10.) that the alignment on the non-ablauting, invariable POSSPL suffix /-nɛɾ-/ in some EA varieties (cf. Ačaɾyan 1971: 270) outranks even that of FTBIN since a degenerate foot is apparently tolerated in this formation, see (42-43) and Tableau 8.10, below.

(42) ALIGN (/-POSSPL-/, L, PW, R) = ALIGN POSSPL
"The left edge of every possessive plural suffix aligns to the right edge of some PW."

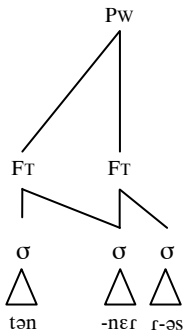
Tableau 8.10: Non-ablauting POSSPL on /-VC/ monosyllables

/tun-POSSPL-POSS.1/ 'our house(s)'	ALIGN POSSPL	FTBIN
☞ a. [[(.tùn. FT)]PW (-né.ɾ-ᵊs)]PW'		*
b. [(tən (-né).ɾ-ᵊs)]PW	*!	

(43) ☞ a.



b.



What is interesting is that there are varieties that actually form possessives plurals of the type [$^{(}$tən $_{(}$-nɛ́$^{)}$.ɾ-^{ə}s$_{)\,Pw}$], i.e. a form which is in the former variety the losing candidate (b) in Tableau 8.10 = (43b); cf. Sakayan (2007: 56). The ALIGN POSSPL constraint of the latter varieties has the same specification as (42) but it is simply ranked below FTBIN, just as the ablauting nominal /-PL/ morpheme /-(n)er/. Thus, this variation is a result of dialect-specific ranking of FTBIN over ALIGN POSSPL.

8.7.2. /-VCC/ monosyllables

The optimal output in monosyllabic stems with complex codas is parallel to the type with simplex codas, namely, the reason for the evaluation of (sub-)optimality of the candidates is still markedness of the syllabic structure, see Tableau 8.11. The presence of a complex coda rules out the more marked candidate by *CC]$_{\sigma}$ or *COMPLEX CODA, already defined in (18) above.

Tableau 8.11: /-VCC/ monosyllables

EA /giɾ-k^{h}-PL/ 'books'	*CODA	*COMPLEX CODA
a. [(giɾk^{h}.-nɛ́ɾ)]	**	*!
☞ b. [(gəɾ.k^{h}-ɛ́ɾ)]	**	

8.7.3. /CV-/ monosyllables

Nominals in /CV/ with the final vowel other than /i/ or /u/ are in both Armenian standard languages invariably inflexible exclamations or pronominal morphemes with irregular plurals.[111] Therefore, our discussion is limited to stems of the shape /Ci-/ or /Cu-/, cf. (44) below. Since glide formation is preferred in this type, these forms behave on the surface exactly as the stems with simplex codas in (28), i.e. $[(\text{CV.C-}\varepsilon\text{ɾ})_{\text{FT}}]_{\text{PW}}$.

(44) a. /ʤi/ 'horse' → [ʤi.j-ɛ́ɾ] 'horses'
b. /ʤu/ 'egg' → [ʤ$_{ə}$.v-ɛ́ɾ] 'eggs'

8.7.4. /CVOR-/ sesquisyllables

The allomorph /-ɛɾ/ is also selected by sesquisyllables, i.e. words consisting of one-and-a-half syllables (Dum-Tragut 2009), with the systematically unstressed reduced vowel in the final *half-syllable* such as [ˈvɑ.g$_{ə}$ɾ] 'tiger' or [ˈɑs.t$_{ə}$ʁ] 'star', i.e. [ˈCV(C).O$_{ə}$R]; see (8.2.1.), above. The treatment of sesquisyllables in /VCOR/ reveals the ranking of *COMPLEX CODA relative to DEP and by the transitivity principle SONSEQ, already defined in (8) above.

---

[111] This seems to be a purely historical accident; non-high vowels occur only in inflexible exclamations, e.g. [hɑ] 'oh!' or pronominal morphemes with irregular plurals, e.g. [nɑ] '(s)he, it' ⇔ [nə.ɾɑŋk^{h}] 'they'. The two rare exceptions to this historical generalization are the nursery word [mɑ] 'mamma' (also 'food' in baby talk, cf. Martirosyan 2010: 443) and the designations of some letters of the alphabet, such as [k^{h}ɛ] (= ք *k'*). The somewhat forced plural of the former may presumably be [mɑ.ˈjɛɾ] and of the latter [k^{h}ɛ.ˈjɛɾ]. However, it is not clear what the underlying representations for these two rare plural forms should be: the former, in the sense of mother (the one which is countable and logically may have a plural), may underlyingly contain a NOMINAL.ADJ suffix /-i/ which deletes when parsed into a coda, i.e. /mɑ-i-Ø/ (lith. "motherly [person]") → *[mɑj.] → [mɑ], but /mɑ-i-PL/ → [mɑ.ˈjɛɾ]. The plural of [k^{h}ɛ] may be interpreted as continuing the historical names of the letters, which all ended in a diphthong, i.e., /k^{h}ei̯-/, cf. Classical Armenian *k'ē* [k^{h}ɛ] from Old Armenian քե *[k^{h}e(j)] from */k^{h}ei̯/.

Tableau 8.12: Sesqui-syllabic stems or /CV(C)OR/

EA /ɑstɻ̩-PL/ 'stars'	SONSEQ	DEP	*CC]$_\sigma$
a. ɑstʁ.nɛɾ	*!		*
☞ b. ɑst.ʁɛɾ			*
c. ɑs.t$_ə$ɻ̩.nɛɾ		*!	

It also confirms the ranking of ALIGN PW-PL relative to DEP (from transitivity to FTBIN).

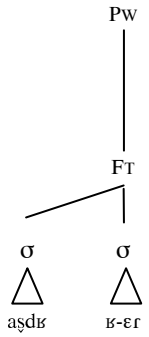
Tableau 8.13: Sesquisyllabic stems or /CV(C)OR/

WA /ɑsdɻ̩/ 'star'	SONSEQ	DEP	ALIGN PW-PL	*CC]$_\sigma$
a. [ɑs̬dɻ̩.nɛɾ]	*!		*	*
☞ b. [ɑs̬d.ʁɛɾ]			*	*
c. [[ɑs.d$_ə$ɻ̩]nɛɾ]		*!		

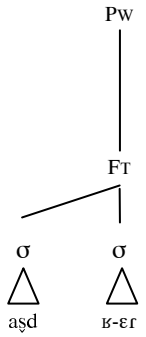
Recall that we assume that *weakly bracketed* feet are part of the phonological representation. Under this assumption, all candidates in Tableau 8.13 above contain well-formed binary feet, as is represented by their arboreal representations in (45) below.

(45)

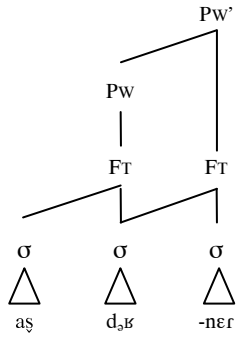
a.



☞ b.



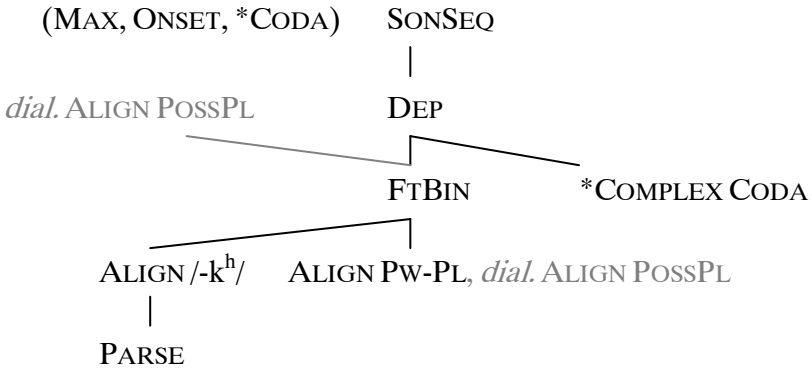
c.



The ranking determined by the investigation of stems which select /-ɛɾ/ is summarized in (46) below. So far, we have not determined which constraint(s) dominate(s) MAX, ONSET or *CODA, so we may for the time being assume them to be undominated. We know that DEP

dominates FTBIN, cf. Tableau 8.7, FTBIN dominates ALIGN PW-PL, cf. Tableau 8.9, and DEP dominates *COMPLEX CODA, cf. Tableau 8.13, but we have no evidence yet concerning the relative ranking of ALIGN PW-PL or FTBIN with respect to *CC]$_{\sigma}$. The relative ranking of ALIGN POSSPL over FTBIN characterizes dialectal variation.

(46)



8.8. Selection of /-nɛɾ/

Standard varieties of both EA and WA select /-nɛɾ/ only on plurals of polysyllabic stems. However, there are certain varieties of EA that also pluralize in this way the sesquisyllabic type treated in the previous section.

8.8.1. Vocalization of approximants

I will assume that, in these varieties, the class of Resonants, i.e. /ɾ/, /n/ and /ɻ/—but not other non-vocalic segments—are, in fact, allowed to be syllabified as nuclei.

Drawing upon work by Prince and Smolensky (1993/2004), Colina (2006) and others, we may formalize the cross-linguistic generalization according to which less sonorous segments are preferred as syllable margins, while more sonorous segments are preferred as syllable peaks, as seen in the fixed rankings of markedness constraints shown in (47) below.

(47) a. * P(EAK)/OBS(TRUENT) » *P/NAS(AL) » *P/LIQ(UID) » *P/GL(IDE) » *P/V(OWEL)

b. * M(ARGIN) /V » *M/GL » *M/LIQ » *M/NAS » *M/OBS

The dialectal varieties of EA which produce the plural type /vɑgɾ-nɛɾ/ or /ɑɾkɻ̊-nɛɾ/ are reflected by the ranking of the relevant constraints in (48) below.

Tableau 8.14: Varieties with vocalized resonants in the plural type

/ɑɾkɻ̊-PL/ 'boxes'	*P/OBS	DEP	ALIGN PW-PL	*P/LIQ
a. [ɑɾk.ʁɛɾ]			*!	
b. [[ɑɾ.kəʁ]nɛɾ]		*!		
c. [[ɑ.ɾkɻ̊ʁ]nɛɾ]	*!			
☞ d. [[ɑɾ.kɻ̊]nɛɾ]				*

Interestingly enough, the pronunciation of vocalized liquids is also common elsewhere, especially in allegro speech in colloquial language (cf. Vaux 1998: 84).[112] A constraint-based analysis does not oblige us to claim that the same varieties/grammars have to be involved. In fact, ranking of the relevant constraints allows for two additional varieties (or registers):

i) those that do not vocalize Resonants at all; cf. (48), Tableau 8.15; and

ii) those that vocalize Resonants word-finally, but not word-internally during plural formation; cf. (49), Tableau 8.16.

[112] Vaux analyzes such forms produced by his WA informants as "word-final continuant and sonorant appendices, e.g. [vɑkʰr] 'tiger', [ɑsdʁ] 'star', [himn] 'hymn'..." (fn. 27); Cf. the two possible EA pronunciations at http://forvo.com/word/ֆագր/#hy.

(48) [ˈvɑ.gəɾ] → [vɑg.ˈɾɛɾ], i.e. *P/LIQ » DEP » ALIGN PW-PL

Tableau 8.15: Varieties/registers without vocalized resonants, type /-ɛɾ/

/vɑgɾ-(PL)/ 'tiger(s)'	*σ[CC	*P/LIQ	DEP	ALIGN PW-PL
☞ a. vɑ.gəɾ			*	
b. vɑ.gɾə	*!		*	
c. vɑ.gɻ̩		*!		
☞ d. [vɑgɾ-ɛɾ]				*
e. [[vɑ.gɻ̩]-nɛɾ]		*!		

(49) [ˈvɑ.gɻ̩] → [vɑg.ˈɾɛɾ], i.e. DEP » *P/LIQ » ALIGN PW-PL

Tableau 8.16: Varieties/registers with vocalized resonants PW-finally, type /-ɛɾ/

/vɑgɾ-(PL)/ 'tiger(s)'	*σ[CC	DEP	*P/LIQ	ALIGN PW-PL
a. vɑ.gəɾ		*!		
b. vɑ.gɾə		*!		
☞ c. vɑ.gɻ̩			*	
☞ d. [vɑgɾ-ɛɾ]				*
e. [[vɑ.gɻ̩]-nɛɾ]			*!	

(50) [ˈvɑ.gɻ̩] → [vɑ.gɻ̩.ˈnɛɾ], i.e. DEP » ALIGN PW-PL » *P/LIQ

Tableau 8.17: Varieties/Registers with vocalized resonants PW-finally, type /-nɛɾ/

/vɑgɾ(-PL)/ 'tiger(s)'	*σ[CC	DEP	ALIGN PW-PL	*P/LIQ
a. vɑ.gəɾ		*!		
b. vɑ.gɾə	*!			
☞ c. vɑ.gɻ̩				*
d. [vɑgɾ-ɛɾ]			*!	
☞ e. [[vɑ.gɻ̩]-nɛɾ]				*

All of the rankings above account for the fact that in all varieties forms without final Resonants, such as /pɑɾt-k^{h}/ 'debt' or /ɑtʃ^{h}-k^{h}/ 'eye', invariably select /-ɛɾ/. This is because *P/LIQ is in these configurations inactive, while the alternative candidates disfavored by *P/OBS and DEP are harmonically bound, i.e. they will lose regardless of the ranking; cf. Tableau 8.18, below.

Tableau 8.18: Forms with final obstruents or /CV(C)OO/

/pɑɾt-k^{h}-PL/ 'debts'	*P/OBS	DEP	ALIGN PW-PL
☞ a. [pɑɾt.k^{h}ɛɾ]			*
b. [pɑɾ.tk̚^{h}]nɛɾ]	*!		
c. [pɑɾ.tək^{h}]nɛɾ]		*!	

8.9. Polysyllables

The treatment of disyllabic and trisyllabic stems can be applied to any polysyllabic stem with even or odd numbers of syllables, respectively.

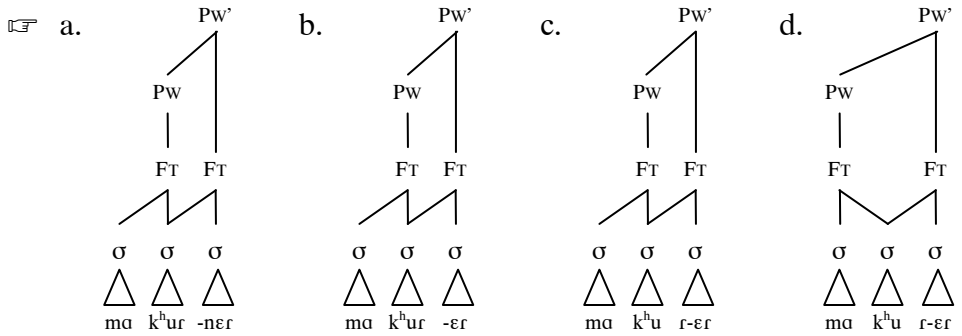
8.9.1. Even-parity stems

The selection of /-nɛɾ/ on disyllabic (or even parity) stems allows us to rank ONSET and *CODA with respect to the ALIGN PW-PL constraint, see Tableau 8.19 = (51), below.

Tableau 8.19:Even-parity polysyllabic stems

/mɑk^{h}uɾ-PL/ 'clean'	ONSET	ALIGN PW-PL	*CODA
☞ a. [[ˈmɑ (k^{h}uɾ)] nɛɾ)]			**
b. [[ˈmɑ (k^{h}uɾ)] ɛɾ)]	*!		**
c. [[ˈmɑ (k^{h}u)] ɾ-ɛɾ)]		*!	*
d. [[ˈmɑ] (k^{h}u) ɾ-ɛɾ)]		*!	*

(51) Arboreal representations of the candidates in Tableau 8.19, above:



8.9.2. Odd-parity stems

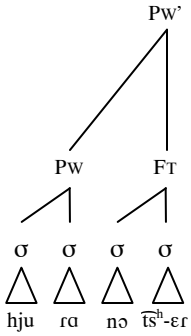
Polysyllabic stems of three and more syllables are analyzed just as easily. Consider the form [hju.ɾɑ.nɔ͡tsʰ] 'hotel', which is itself a recursive PW, composed of a noun /hjuɾ/ 'guest' and the derivational suffix /(-ɑ)-nɔ͡tsʰ/, which is added to nouns and roughly denotes "container; (concrete or abstract) space reserved for" or the like.[113]

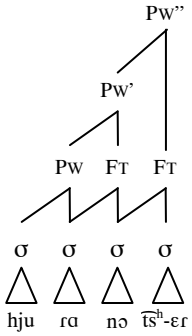
Tableau 8.20: Odd-parity Polysyllabic Stems

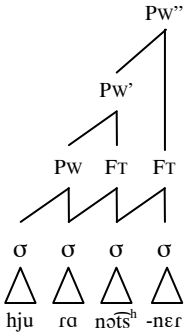
/hjuɾ-ɑ-nɔ͡tsʰ-PL/ 'hotels'	ONSET	ALIGN PW-PL	*CODA
a. [(hju.ɾɑ)(nɔ.͡tsʰɛɾ)]		*!	*
b. [[(hju ˈɾɑ)(nɔˈ)] ͡tsʰɛɾ)]		*!	*
☞ c. [[(hju ˈɾɑ)(nɔ͡tsʰ)] nɛɾ)]			**

[113] The prosodic representation of [hju.ɾɑ.nɔtsʰ] 'hotel' is thus technically [[hjuɾ-ɑ]$_{PW}$-nɔtsʰ]$_{PW'}$. This finer grained representation is here abstracted away from the tableau (but not in the tree representations), since what is important for plural selection is the presence of the right edge of a(ny) PW, and this form clearly has one. However, EA can differentiate between nested structures in compounds, cf. [[mɛ.͡tsɑ]tun] 'rich man', an exocentric compound (lit. "one whose house is big" or "Mr. Big-House"), the plural of which is [[[mɛ.͡tsɑ]tu̲n]nɛ́ɾ],cf. [tₒ.n-ɛ́ɾ] 'houses', or an endocentric compound such as [[hɑŋ.kʰɑ][dʒúɾ]] 'mineral water', treated as a monosyllable, i.e. [[hɑŋ.kʰɑ][dʒₒɾ-ɛ́ɾ]] 'mineral waters' (cf. Vaux 1998: 33, 57; Dum-Tragut 2009: 66f).

(52) Arboreal representations of the candidates in (61) above.

a. 

b. 

☞ c. 

8.9.3. Selection of /-nɛɾ/ in /SO-/

Selection of /-nɛɾ/ in these forms may be accounted for if we assume the constraint *COMPLEX ONSETS, cf. (53), ranked over DEP, as shown in Table 8.21, below.

(53) *COMPLEX ONSETS = $*_{\sigma}$[CC = "Onsets are simple." (Kager 1999: 97)

Table 8.21: /SO-/ stems

/stɔɾ-PL/ 'low'	$*_{\sigma}$[CC	DEP	ALIGN PW-PL	*CC]$_{\sigma}$
a. [(stɔ.ɾɛɾ)]	*!		*	
☞ b. [[$^{(ə}$s (tɔɾ$^{)}$] nɛɾ$_{)}$]		*		

Notice that with stems of only one coda consonant, the ranking of *COMPLEXCODA relative to ALIGN PW-PL cannot be determined. This opens up a possibility for variation of the plural suffix in stems with complex codas; and this is exactly what we find. The ranking of *COMPLEX CODA below ALIGN PW-PL accounts for the standard varieties, as shown in Tableau 8.22 (= 54), while the reversed ranking for colloquial varieties shown in Tableau 8.23 (= 55).

(54) [ˀs.tɔr.ˈnɛr] ~ [ˀs.kizb.ˈnɛr], i.e. ALIGN PW-PL » *COMPLEXCODA

Table 8.22: /SO-/ initial stems with complex codas in standard EA and WA

/skizb-PL/ 'beginnings'	*σ[CC	DEP	ALIGN PW-PL	*CC]σ
a. [(skiz.bɛr)]	*!		*	
b. [[(ˀs (kiz)] bɛr)]		*	*!	
☞ c. [[(ˀs (kizb)] nɛr)]		*		*

(55) *Coll.* EA [s.tɔr.ˈnɛr] ~ [s.kiz.ˈbɛr], i.e. *COMPLEXCODA » ALIGN PW-PL

Table 8.23: /SO-/ initial stems with complex codas in colloquial EA

/skizb-PL/ 'beginnings'	*σ[CC	DEP	*CC]σ	ALIGN PW-PL
a. [(skiz.bɛr)]	*!		*	*
☞ b. [[(ˀs (kiz)] bɛr)]		*	*!	*
c. [[(ˀs (kizb)] nɛr)]		*		
d. [[ˀs.ki.zəb] nɛr]		**!		

Notice that monosyllables without complex onsets are compatible with either ranking, which is why they show no variation across varieties (or registers). This is obviously because sub-optimal configurations such as (b-c) in Tableau 8.24 are harmonically bound by the winning candidate (a) favored by either ranking of these two constraints relative to each other.

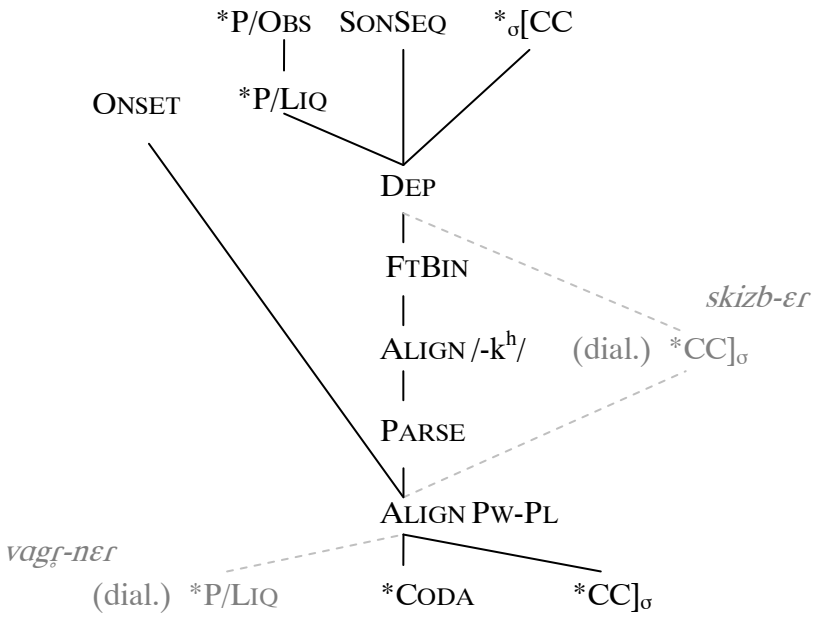
Tableau 8.24: Monosyllabic stems with simplex onsets and complex codas

/dɑʃt-PL/ 'fields'	*σ[CC	DEP	ALIGN PW-PL	*CC]σ
☞ a. [(dɑʃ.t-ɛr)]			*	
b. [[(ˈdɑ (ʃət)] -nɛr)]		*!		
c. [(dɑʃt.-nɛr)]			*	*!

This is yet another variation quite easily modeled in a constraint-based analysis by reference to surface prosodic structure which is in previous accounts explicitly acknowledged to be paradoxical (cf. Vaux 1998: 31).

Before moving on to another section, let us review a preliminary constraint ranking determined for the grammar of Armenian and specifically for the nominal plural allomorphy in (56), below.

(56)



8.10. WA possessive plural allomorphy

A brief review of the pattern of WA possessive plural allomorphy analyzed as a case of *spurious plural* by Vaux et al. (2013) is shown in (57) below.

(57) a. [[bɑɾ.dɛz]$_{PW}$ -ni-s]$_{PW'}$ 'our garden'

b. [[[bɑɾ.dɛz]$_{PW}$ -nɛɾ]$_{PW'}$ -ni-s]$_{PW''}$ 'our gardens'

c. [[gɔv-ɛɾ]$_{PW}$ -ni-s]$_{PW'}$ 'our cow(s)'

In the following analysis, however, I assume that this historical type of plural hypercharacterization (both morphemes, /-ɛɾ/ and /-ni/ are originally collective suffixes)[114] led to a morphophonological situation in which the first morpheme was relatively superfluous, as it were. Technically, the constraint enforcing its realization was ranked lower that the constraint enforcing the realization of the second plural morpheme. This surfaces as a type of allomorphy POSSPL → /-ɛɾ-ni/ ~ /-ni/ (i.e. descriptively /-Ø-ni/). If we assume that all the plural morphemes are in this variety controlled by one and the same alignment constraint, namely ALIGN PW-PL (i.e. ALIGN (PL, L, PW, R) already defined in (2) above, the allomorphy can be again shown to be the result of optimization of prosodic structure; see Tableau 8.25 (= 59).

(58) REALIZE MORPHEME[115]
"The specified morpheme in the input has to be overtly realized in the output."

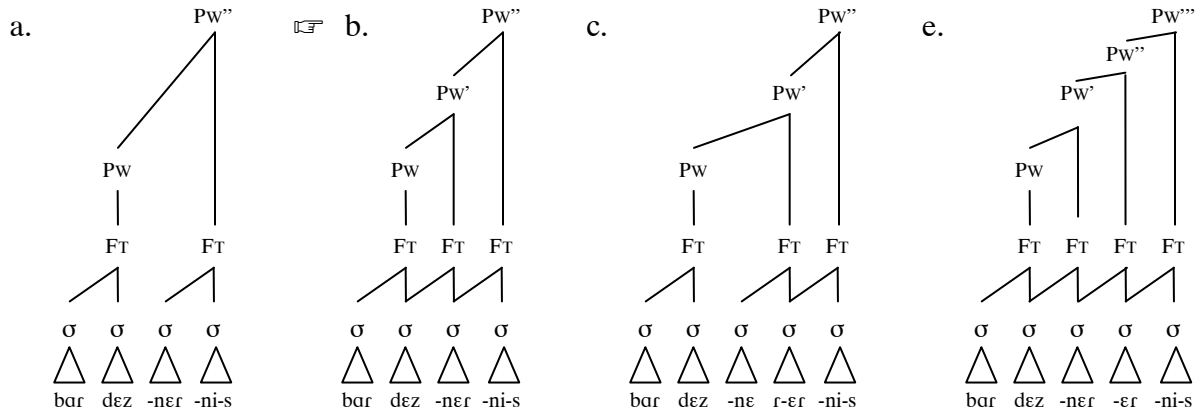
Tableau 8.25: Possessive plural with plurals of polysyllabic stems

/bɑɾdɛz-PL$_1$/-PL$_2$-PL$_3$-POSS.1/ /bɑɾdɛz-(n)ɛɾ/-ɛɾ-ni-s/ 'our gardens'		FTBIN	ONSET	ALIGN PW-PL	*CODA	REALIZE PL$_2$
a.	[[(bɑɾ.dɛz](nɛɾ$_1$.ni$_3$s)]			PL$_3$!	****	*
☞ b.	[[[$_{(}$bɑɾ$^{(}$dɛz$_{)}$]$_{(}$nɛɾ$_1{}^{)}$]ni$_3$s$_{)}$]				****	*
c.	[[[(bɑɾ.dɛz)]$^{(}$nɛ$_{(}$ɾ$_1$ɛɾ$_2{}^{)}$]ni$_3$s$_{)}$]			PL$_2$!	****	
d.	[[[$_{(}$bɑɾ$^{(}$dɛz$_{)}$]$_{(}$nɛ$^{)}$] $^{(}$ɾ$_1$ɛɾ$_{2)}$]ni$_3$s$^{)}$]			PL$_2$!	****	
e.	[[[$_{(}$bɑɾ$^{(}$dɛz$_{)}$]$_{(}$nɛ ɾ$_1{}^{)}$] $^{(}$ɛɾ$_{2)}$]ni$_3$s$^{)}$]		*!		****	

[114] Cf., OA *-հար -ear* and *-անի -an-i*, the latter apparently reanalyzed as *-a-ni* with a linking vowel.

[115] REALIZEMORPHEME is a morphophonological positional faithfulness constraint; cf. Zhang (2001: 250). The constraint is equivalent to the original EXPONENCE constraint: "A morpheme must be overtly realized" (Golston 1995).

(59)



The surface form, i.e. the winning candidate (b) in Tableau 8.25, descriptively represents a structural allomorph /bɑɾdɛz-PL$_1$-Ø-PL$_3$-POSS1/ or [bɑɾdɛz-nɛɾ-Ø-ni-s]. This is because the vowel initial allomorph /-ɛɾ-ni/ is under the ranking either unable to satisfy the posited alignment constraint or lacks an onset, see candidates (c-e). My claim is that the grammar is set up in a way that prefers not to realize the first plural morpheme (cf. the lower-ranked REALIZE PL$_2$) in order to optimize the output.

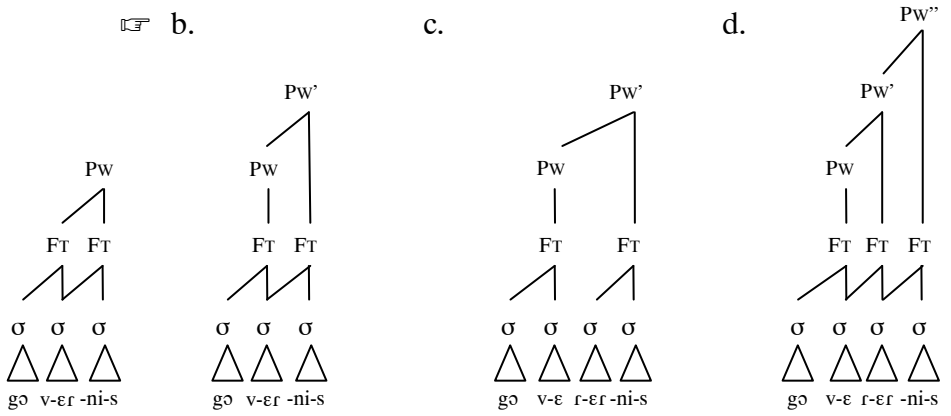
Monosyllabic stems enter the derivation with the same input, i.e. /-PL$_1$-PL$_2$-PL$_3$-Poss/. The nominal plural allomorph /-ɛɾ/$_1$ violates the alignment constraint, but this is a minimal violation in terms of the posited ranking, see the winning candidate (b) in Tableau 8.26. Of course, we assume that the constraint that enforces the realization of PL$_1$ is therefore undominated (it is not represented in the tablaux below for simplicity of exposition).

Again, by the same optimization mechanism, the surface form effectively represents the structural allomorph /gɔv-PL$_1$-Ø$_2$-PL$_3$-POSS1/ or [gɔv-ɛɾ$_1$-Ø$_2$-ni$_3$-s] ‘our cows’.

Tableau 8.26: Possessive plural with plurals of monosyllabic stems

/gɔv-PL$_1$-PL$_2$-PL$_3$-s/ /gov-(n)ɛɾ-ɛɾ-ni-s/ 'our cows'	ONSET	FTBIN	ALIGN PW-PL	*CODA	REALIZE PL$_2$
a. [(gɔ(vɛɾ$_1$)ni$_3$s)]			PL$_{1,3}$!	**	*
☞ b. [[(gɔ(vɛɾ$_1$)]ni$_3$s)]			PL$_1$	**	*
c. [[(gɔ.vɛ)](ɾ$_1$ɛɾ$_2$.ni$_3$s)]			PL$_{1,2,}$! $_3$	***	
d. [[[(gɔ(vɛ)] (ɾ$_1$ɛɾ$_2$)]ni$_3$s)]			PL$_{1,2}$!	***	

(60) a. ☞ b. c. d.



Let us see, however, how the same morphophonological alignment mechanism accounts for the peculiar asymmetry in the singular. In the singular, the possessive plural allomorph surfaces as such only with monosyllabic stems. This is because it is only the monosyllabic stems which optimally tolerate the violation of the posited alignment; see Tableaux 8.27 (= 61) and 8.28 (= 62).

Tableau 8.27: Possessive plural formation with singulars of polysyllabic stems

/bɑɾdɛz-SG-PL$_2$-PL$_3$-POSS1/ /bɑɾdɛz-Ø-ɛɾ-ni-s/ ‘our garden’		ONSET	FTBIN	ALIGN PW-PL	*CODA	REALIZE PL$_2$
☞	a. [[$_{(}$bɑɾ$^{(}$dɛz$_{)}$]ni$_3$s$^{)}$]				***	*
	b. [[(bɑɾ.dɛz)](ɛɾ$_2$.ni$_3$s)]	*!		PL$_3$	****	
	c. [[[$^{(}$bɑɾ$_{(}$dɛ$^{)}$]$^{(}$zɛɾ$_{2)}$]ni$_3$s$^{)}$]			PL$_2$!	***	

(61)

☞ a. b. c.

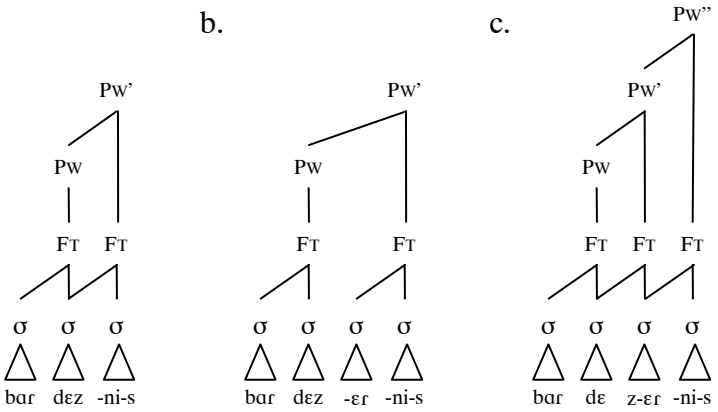
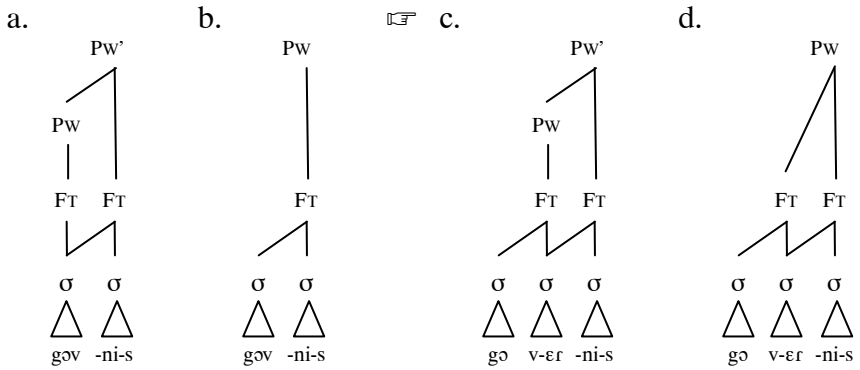


Tableau 8.28: Possessive plural formation with singulars of monosyllabic stems

/gɔv-SG-PL$_2$-PL$_3$--POSS1/ /gɔv-Ø-ɛɾ-ni-s/ ‘our cow’		ONSET	FTBIN	ALIGN PW-PL	*CODA	REALIZE PL$_2$
	a. [[$^{(}$$_{(}$gɔv$_{)}$]ni$_3s^{)}$]		*!		**	*
	b. [(gɔv.ni$_3$s)]			PL$_3$	**	*!
☞	c. [[$^{(}$gɔ$_{(}$vɛɾ$_2$$^{)}$]ni$_3s_{)}$]			PL$_2$	**	
	d. [$^{(}$gɔ$_{(}$vɛɾ$_2$$^{)}ni_3s_{)}$]			PL$_{2,3}$!	**	

(62)



In conclusion, the monosyllabic stems differ from the polysyllabic stems in two ways: not only is the misalignment of some plural morpheme tolerated in order to avoid parsing the structure into a degenerate foot, but here, the full form /-ɛɾ-ni/ of the possessive plurals suffix is required to be realized, see the losing candidate (b) in Tableau 8.28. The appearance of the so-called *spurious* plural thus simply boils down to a TETU-like effect (i.e., a lower-ranked constraint is active in case the dominating constraints are either fully satisfied or tie by incurring the same number of violations). As a side note, the emergence of the unmarked effect is one of the strongest aspects (if not *the* strongest aspect) of OT.

8.11. Plural allomorphy and ambichrony

Before we proceed, I should emphasize one critical point: the designations of the plural morphemes are meant to be understood purely historically. Thus, the label PL_2 below does not refer to the same synchronic entity as the label PL_2 of one of the elements in the possessive complex suffix /-ɛɾ-ni-/ used in the previous exposition. The two elements are here designated PL_2 since they are the same morpheme *diachronically*, and the purpose of the following exposition is to show the unity of the mechanism which historically accounts for the synchronic

allomorphy in both possessive plural and regular plural suffixes, i.e. POSSPL < $^{(*)}$/-PL$_2$-PL$_3$/ (or /-ɛɾ-ni/ ~ /-Ø-ni/) while PL$_{(1)}$ < */-PL$_3$-PL$_2$/ (or */-ni-ɛɾ/ ~ /-Ø-ɛɾ/) allomorph complexes.

The former is decidedly younger or at least still analytically transparent. The morphological make-up of the latter is attested historically, but the functional value of its subcomponents only became available through comparison with the possessive plural suffix during the present analysis. In other words, the phonologically conditioned /-nɛɾ/ ~ /-ɛɾ/ allomorphy of PL$_1$ may be historically understood in the same way, i.e. by the same grammar, as the possessive plural suffix allomorphy above, i.e. as a morphophonologically conditioned process of optimal realization of the first suffix component of the complex morpheme. That is to say, the synchronic allomorphy /-nɛɾ/ ~ /-ɛɾ/ very likely continues */-ni-ɛɾ/ ~ */-Ø-ɛɾ/.

To drive home the absolute identity of the optimization mechanism, I will use the same examples as in the WA possessive plural allomorphy above, cf. (63) below.

(63) a. /bɑɾdɛz-ni-ɛɾ/ 'gardens' → [bɑɾdɛz-nɛɾ]
b. /gɔv-ni-ɛɾ/ 'cows' → [gɔv-ɛɾ] (i.e. virtually [gɔv-Ø-ɛɾ])

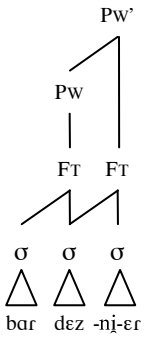
As may be seen in Tableau 8.29 below, the difference between the nominal plural formation and the possessive plural formation is that the plural morphemes are reversed with regard to both their precedence relations in the input and the ranking of their respective REALIZE MORPHEME constraints, i.e., POSSPL = /-ɛɾ$_2$-ni$_3$/ with REALIZE PL$_3$ over REALIZE PL$_2$ as opposed to PL = /-ni$_3$-ɛɾ$_2$/ with REALIZE PL$_2$ over REALIZE PL$_3$. In both allomorphies, it is therefore the 'inner' suffix in the suffix complex which is optimally either supressed or realized.

Tableau 8.29: Plurals of polysyllabic stems

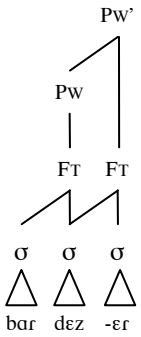
/bɑrdɛz-PL$_3$-PL$_2$/ ‘gardens’	REALIZE PL$_2$	ONSET	FTBIN	ALIGN PW-PL	REALIZE PL$_3$	*CODA
☞ a. [[$_{(}$bɑr$^{(}$dɛz$_{)}$]nɨ$_3$ɛr$_2^{)}$]				PL$_2$		***
b. [[$_{(}$bɑr$^{(}$dɛz$_{)}$] ɛr$_2^{)}$]		*!			*	**
c. [[[$^{(}$bɑr$_{(}$dɛ$^{)}$] $^{(}$zɛr$_{2)}$]				PL$_2$	*!	**

(64) The arborial representations of the candidates in Tableau 8.29 above

☞ a.



b.



c.

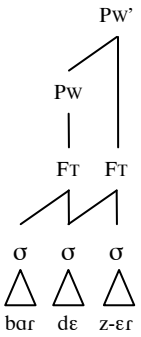
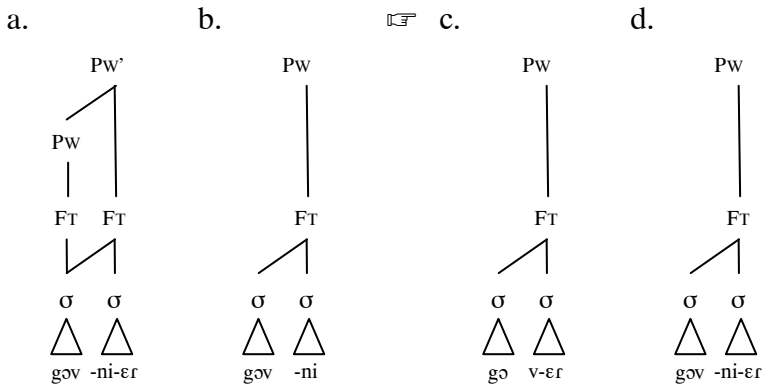


Tableau 8.30: Plurals of monosyllabic stems

/gɔv/-PL$_3$-PL$_2$/ ‘cows’	REALIZE PL$_2$	ONSET	FTBIN	ALIGN PW-PL	REALIZE PL$_3$	*CODA
a. [[$^{(}_{(}$gɔv$_{)}$] nɨ$_3$ɛr$_2^{)}$]			*!	PL$_2$		**
b. [(gɔv.ni$_3$)]	*!			PL$_3$		*
☞ c. [(gɔ.vɛr$_2$)]				PL$_2$	*	*
d. [(gɔv.nɨ$_3$ɛr$_2$)]				PL$_{2,3}$!		**

(65) The arborial representations of the candidates in Tableau 8.30 above



8.12. Conclusion

The selection of the plural allomorphs is in all Armenian varieties determined by the interaction of optimized prosodic structure and the posited morphophonological alignment constraint requiring the morpheme to be aligned to a PROSODIC WORD (PW) constituent. This analysis corroborates the argumentation and conclusions already arrived at in Kager (1996).

CONCLUSION

Apart from the encyclopedic synopsis of the literature on the diachronic phonology of Armenian in Chapter 1, this dissertation has contributed six original analyses, which provide data that implicitly or explicitly falsify current treatments of the relevant phenomena. The analyses of phenomena currently analyzed with reference to syllable-count (Aorist Augment Selection; Aorist Subjunctive Dissimilation of Affricates; Deletion of Final Palatal Glides, and Modern Armenian Plural Allomorphy) lend further support for the relevance of binary feet and higher levels of the Prosodic Hierarchy (cf. Selkirk 2004) in (morpho)phonological analyses. The analyses additionally provide further evidence for the relevance of *Weak Bracketing* (Hyde 2008) beyond its originally intended domain of application (i.e. the typology of metrical systems).

The analyses suggest a decomposition of the MAXIMALITY constraint family—cf. McCarthy and Prince (1994: 9); McCarthy (2004: 516); McCarthy (2008: 196); etc.—into MAXIMALITY BASE, a faithfulness constraint that enforces correspondence faithfulness in the domain of the morphological base, and REALIZE MORPHEME, a morphophonological constraint that enforces realization of the underlying material in specific morphological affixes.

Since the realization of the input strings that signal specific morphological elements may be dominated by phonological markedness (or well-formedness) constraints, the realization of those morphemes may be suppressed on the surface, discriptively resulting in phonologically-

conditioned zero allomorphy, i.e. /AFFIX/ → [AFFIX] ~ [Ø]. The presence of the relevant morphemes underlyingly is attested by surface alternations in which one allomorph (optimally) satisfies the specified markedness (or well-formedness) constraints (cf. TETU, or the emergence of the unmarked); cf. Tableaux 1 and 2 below.

Tableau 1: Phonologically-conditioned zero allomorphy: /AFFIX_1/ → [Ø_1]

	AFFIX_1-BASE-AFFIX_2	MAX-BASE	REALIZE AFFIX_2	MARKEDNESS	REALIZE AFFIX_1
	a. AFFIX_1-BASE-AFFIX_2			*!	
☞	b. BASE-AFFIX_2				*
	c. AFFIX_1-BASE		*!		
	d. AFFIX_1	*!	*		

Tableau 2: Phonologically-conditioned zero allomorphy: /AFFIX_1/ → [AFFIX_1] (cf. TETU)

	AFFIX_1-BASE-AFFIX_2	MAX-BASE	REALIZE AFFIX_2	MARKEDNESS	REALIZE AFFIX_1
☞	a. AFFIX_1-BASE-AFFIX_2			(*)	
	b. BASE-AFFIX_2			(*)	*!
	c. AFFIX_1-BASE		*!		
	d. AFFIX_1	*!	*		

The analyses in this dissertation thus explicitely support constraint-based analyses of phenomena at the interface between phonology and morphology (cf. Kager 1996), in which **faithfulness** constraints prevent every input from being realized as some unmarked form, and in which **markedness** constraints motivate changes of the underlying morphological structures.

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