

Notes on Basque Comparative Phonology¹

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The genetic classification of the mysterious Basque language has been a topic of vigorous discussion throughout the Twentieth Century, and this discussion continues to the present day. Some of the latest exchanges in this discussion are found in the journals *Mother Tongue* (especially issues I and V) and *Dhumbadji!* (see References). Impelled both by justified criticism and encouragement (see, e.g., Blažek 1995, Starostin 1996), I have worked intermittently for several years at establishing regular phonological correspondences between Basque and the languages that are most closely related to it,² namely the (North) Caucasian languages, and Burushaski. In several articles published previously I have used the terms “Macro-Caucasian” or “Vasco-Caucasian” for this hypothetical language family.³ In the present paper comparisons will primarily be made within the Macro-Caucasian family (Basque + Caucasian + Burushaski). Lexical comparisons involving only Caucasian and Burushaski (and not Basque) will be set aside for the time being.

The Sound System of Basque

A common Basque consonant inventory is as follows (modified from Hualde, 1991):

labial	dental/alveolar ⁴		palatal	velar
p	t		c	k
b	d		j	g
f	ṣ	ś	š	x
	ḥ	č	č	
m	n		ñ	
	l		ʎ	
	r			
	ṛ			

In standard Basque orthography the phonemes /**p, t, k, b, d, g, f, m, n, ñ, l, r**/ are written with the corresponding Latin or Spanish letters: *p, t, k, b, d, g, f, m, n, ñ, l, r*. The remaining phonemes are represented as follows:

1 This paper consists of excerpts from a much longer paper written for the Linguistic Databases and Linguistic Taxonomy Workshop at the Santa Fe Institute as part of the Evolution of Human Language Project (January 2003).

2 Based on lexical and morphological evidence, only a small part of which is presented here.

3 I consider Macro-Caucasian to be a sub-group of the larger family (macro-family) “Dene-Caucasian” (Starostin’s “Sino-Caucasian”) that also includes the Sino-Tibetan, Yeniseian, and Na-Dene families. There is substantial evidence that the Salish and Wakashan language families may also be part of Dene-Caucasian. (See Vitaly Shevoroshkin’s article, “Salishan and North Caucasian,” in this issue.)

4 /**t, d**/ are dental; /**l, n, r, ṛ**/ are alveolar; /**ṣ, ḥ**/ are dorso-alveolar (= lamino-alveolar); /**ś, č**/ are apico-alveolar.

c	= <i>tt</i>	as in <i>ttipi</i> ‘very small, tiny’ (dim. of <i>tipi</i>)
j	= <i>dd</i>	as in <i>onddo</i> ‘toadstool, fungus’
ḡ	= <i>z</i>	as in <i>zazpi</i> ‘seven’
č	= <i>tz</i>	as in <i>hotz</i> ‘cold’
ś	= <i>s</i>	as in <i>sei</i> ‘six’
ć	= <i>ts</i>	as in <i>huts</i> ‘fault, empty’
š	= <i>x</i>	as in <i>xexen</i> ‘small bull’ (dim. of <i>zezen</i>)
č	= <i>tx</i>	as in <i>txitxar</i> ‘grasshopper, cicada’
ʎ	= <i>ll</i>	as in <i>bello</i> ‘hot’ (dim. of <i>bero</i>)
ř	= <i>rr</i>	as in <i>harri</i> ‘stone’
x	= <i>j</i>	as in <i>jan</i> ‘to eat’ (but only in western Basque, mainly Gipuzkoa)

Elsewhere the letter *j* is pronounced [dʒ] (Bizkaia), [j] (Alto Navarro), [j] (Lapurdi, Basse Navarre), [ʒ] (Zuberoa), or even other variants.⁵

Northern (“French” Basque) dialects (Lapurdi, Basse Navarre, Zuberoa) also have a phoneme /h/, generally corresponding to orthographic *h*. These same dialects lack the phoneme /x/, and also tend to have aspirated consonants, such as Zuberoan *phiper* ‘pepper’ (but BN, L *bipher*), *thu* ‘spit’, *khedarre* ‘soot’, *anhua* ‘provisions’, *iñhar* ‘a little’, *alhaba* ‘daughter’, *ürhe* ‘gold’, etc.

The voiced obstruents written *b*, *d*, *g* have stop [b, d, g] or fricative [β, ð, γ] allophones, depending on their position in the word or phrase.⁶ Trask (1997) prefers to call the latter “continuants” (approximants with no audible friction).

The Basque vowel system is a simple 5-vowel system: /a, e, i, o, u/. Only the Zuberoan (Souletin) dialect differs in also having the front-round vowel /ü/. Zuberoan and Roncalese also have a contrastive set of nasal vowels /ã, ĕ, ĭ, õ, ũ, (ũ)/.

The Sound System of Proto-Caucasian

In this paper the Proto-Caucasian (PNC) reconstruction by Nikolayev and Starostin is accepted as a baseline, while recognizing that some details are open to correction or modification. Nikolayev and Starostin (1994: 40) postulate the following consonant phonemes:⁷

	Occlusives			Fricatives		Resonants	Glides	
	voiceless	voiced	glottalized	voiceless	voiced			
labial	p	b	ḑ	f		w	m	ɰ
dental	t	d	ṭ			r	n	j
hissing	c	ɟ	ç	s	z			
palatal (hissing-hushing)	ć	ǰ	č	ś	ž			
hushing	č	ǰ	č	š	ž			

5 See the map presented by Trask (1997, p. 86).

6 This pattern is similar to, but not identical with, the pattern in Castilian Spanish. (See Hualde 1991.)

7 “Two more very rare voiced fricatives are reconstructed for PEC (lateral L and velar γ), as well as the supposedly interdental fricatives ʁ and ʁ̥. These phonemes have no correspondences in PWC, and their existence in PNC is dubious.” (NCED, p. 41)

lateral	ʎ	ʟ	ʎ̣	ʎ̥		l		ɫ
velar	k	g	ḳ	x				
uvular	q	G	q̣	χ	ʁ			
laryngeal			ʔ	h	ɦ			
emphatic laryngeal			ʔ̣	ħ	ʕ			

(For explanations of the phonetic symbols see Appendix A.)

Nikolayev and Starostin (NCED, p. 72) reconstruct 9 vowels for Proto-Caucasian, each of which may be short or long:

i	ü	ĩ	u
e		ə	o
ä		a	

1. Vowel Correspondences between Basque and Proto-Caucasian

Although some details remain to be resolved, numerous examples verify the usual correspondences.

Basque /a/ regularly corresponds to Caucasian **a* (**ä*, **ā*):

- 1.1. Basque (*h*)*a*-, *-a* (article, demonstrative) ~ PEC **hā* demonstrative stem (NC 436)
- 1.2. Basque *sare*, *sale* ‘net, grate; stockade’ ~ PEC **čfiatē* ‘enclosure, fence’ (NC 343)
- 1.3. Basque *hatz* ‘finger, paw’, *be-hatz* ‘toe, thumb’ ~ Avar *k^wač* ‘paw’, etc. < PNC **kwānVčč* (NC 704)
- 1.4. Basque (B) *apo* ‘hoof’ ~ Bezhta, Hunzib *ap’a* ‘paw’, etc. < PNC **HapV̄* (NC 545)
- 1.5. Basque (BN, Sal) *udagara* ‘otter’ ~ PEC **darq̣wV* > Andi *darg^wa* ‘weasel, marten’, etc. (NC 399)
- 1.6. Basque *izar* ‘star’, etc. ~ PNC **ẓwāhrī* ‘star’ > Tindi *c:aru*, etc. (NC 1098)
- 1.7. Basque *sabel* ‘belly, stomach’ ~ PNC **žābV* ‘kidney, liver’ (NC 1106)
- 1.8. Basque *lasto* ‘straw’ ~ PEC **łačā* ‘leaf; a kind of plant’ (NC 773)
- 1.9. Basque *lamika*-tu, *lamizka*-tu ‘to lick’ ~ Andi *lam-* ‘to lick’, etc. < PEC **tamV* (NC 754)
- 1.10. Basque *sagu* ‘mouse’ ~ PNC **cārgwī* ‘weasel, marten, mouse’ (NC 322)
- 1.11. Basque (B, G) *apal* ‘shelf’ ~ PEC **ʔapVʔV* ‘pole; board, cover’ (NC 202)
- 1.12. Basque *hari*, *hal-* ‘thread’ ~ PEC **χāʔV* ‘sinew, thread’ > Chechen *χal*, etc. (NC 1067)
- 1.13. Basque *handi* ‘big, great’ ~ Proto-Circassian **k^hwa(n)də* ‘much, many’ (Kuipers 1975)
- 1.14. Basque *tak-oi(n)* ‘heel (of a shoe)’ ~ PNC **dHāqwĀ* ‘back of head’, etc. (NC 399)
- 1.15. Basque (R) *atze* ‘tree’ ~ PNC **Hā(r)žwī* ‘tree’ > Khwarshi *aža*, etc. (NC 549)
- 1.16. Basque *gar(h)i* ‘thin’ ~ PEC **q̣warHV* ‘narrow’ (NC 933)
- 1.17. Basque *har*, (R) *ār* ‘worm’ ~ PEC **fiabarV* ‘worm’ (NC 508)
- 1.18. Basque *gau* ‘night’ ~ Proto-Lezgian **χ:am:* > Agul *χaw-aq* ‘evening’, etc.⁸
- 1.19. Basque *ar(h)e* ‘harrow’ ~ PEC **barhV* = **γarhV* ‘harrow’ (NC 477)

⁸ Lezgian forms from the Starling Caucasian Database (companion disk to NCED). **χ:* represents a tense voiceless pharyngealized uvular fricative (NCED).

- 1.20. Basque *haga* ‘long pole’ ~ PEC **hǎkwV* > Karata *hak’wa* ‘branch’, etc. (NC 485)
 1.21. Basque *har-tu* ‘to take, receive’ ~ Archi *kar-* ‘to take with’, etc. < PNC **=ikAr* (NC 632)

In several cases Basque /a/ corresponds to Caucasian *e, in the environment of a liquid or (original) lateral affricate. Note some convergent forms (*e > a) in Caucasian languages:

- 1.22. Basque *belarri* (*be-larri*) ‘ear’ ~ Proto-Nakh **lari* ‘ear’, etc. < PNC **t̃HHe* ‘ear’ (NC 756)
 1.23. Basque (Z) *k(h)arats* ‘bitter’ ~ Archi *q’ala* ‘bitter’, etc. < PNC **q̃čhIV* (NC 912)
 1.24. Basque *zahar* ‘old’ ~ PNC **swēr̃ho* ‘old, year’ (NC 968)
 1.25. Basque *harri* ‘stone’ ~ PEC **χHēr̃χV* ‘small stone, gravel’ (NC 1073)
 1.26. Basque *larri* ‘sadness, anguish’ ~ PNC **Lwēr̃V* ‘hard, severe, stern’ (NC 792)
 1.27. Basque (Z) *lape* ‘shelter of a shed’ ~ Chechen *laba* ‘shed, peak of cap’, etc. < PEC **λ̃čpV* (NC 777)
 1.28. Basque *laino*, *lanbro* ‘fog, mist’ ~ PEC **r̃čñλwV* ‘cloud, fog’ (NC 947)
 1.29. Basque (L) *hardo*, (c) *arda-* ‘tinder’ ~ PEC **?wēλV* ‘a kind of grass’ (NC 230)

Basque /e/ corresponds to Caucasian *e and *ə:

- 1.30. Basque (BN,L) *bek(h)o* ‘forehead, beak’ ~ PEC **b̃čkw̃o* ‘part of face, mouth’ (NC 289)
 1.31. Basque *leka* ‘bean pod, husk’ ~ PNC **l̃čkV* ‘seed, grain’ (NC 744)
 1.32. Basque *bel(h)ar* ‘grass, hay’ ~ PEC **yēlyV* ‘nettle, burdock’ (NC 1013)
 1.33. Basque *erdi* ‘half, middle’ ~ PNC **=č̃λ̃Ē* ‘half, middle’ (NC 412)
 1.34. Basque *el(h)e* ‘speech, word’ ~ PEC **l̃čHwV* ‘word’ (NC 744)
 1.35. Basque *negar* (~ *nigar*) ‘tear(s), weeping’ ~ PEC **ñw̃q̃ũ* ‘tear, pus’ (NC 848)
 1.36. Basque *gose* ‘hunger, hungry’ ~ PNC **gašē* ‘hunger’ (NC 431)
 1.37. Basque *habe* ‘pillar, beam’ ~ PEC **hw̃čbē* ‘post, pole, tower’ (NC 497)
 1.38. Basque *sare*, *sale* ‘net, grate; stockade’ ~ PEC **č̃fiatē* ‘enclosure, fence’ (= 1.2)
 1.39. Basque *zelai* ‘field, meadow’ ~ PEC **ʒ̃əIV* ‘plain, plateau’ (NC 1092)
 1.40. Basque (B-arc) *ze* ‘not’⁹ ~ PEC **ʒ̃ə* ‘not’ (NC 1101)
 1.41. Basque *lema* ‘rudder’ ~ PEC **λ̃ə̃mʔṼ* ‘roof’ (NC 777)
 1.42. Basque *herri* ‘inhabited place, people’ ~ PNC **?w̃ə̃hri* ‘people, troop’ (NC 249)
 1.43. Basque *behi* ‘cow’ ~ PEC **b̃h̃ə̃r̃c̃wV* ‘cattle’ (NC 296)
 1.44. Basque *hegi* ‘ridge’ ~ PEC **fiw̃ə̃r̃q̃ē* ‘mountain ridge’ (NC 536)

Basque /e/ also corresponds to the infrequent Caucasian phoneme *i:

- 1.45. Basque *beso* ‘arm’ ~ PEC **w̃š̃V* ‘hand, finger’ (NC 315)
 1.46. Basque *abere* / *abel-* ‘cattle’ ~ PNC **b̃š̃V* ‘horned animal’ (NC 314)

Basque /i/ corresponds to Caucasian *i and *i̇:

- 1.47. Basque *hil* ‘dead; die; kill’ ~ PNC **=iw̃λ̃Ē* ‘die; kill’ (NC 661)
 1.48. Basque *bizar* ‘beard’ ~ PEC **bil̃V* ‘beard’ (NC 303)
 1.49. Basque *ipini*, *imiñi* ‘to put’¹⁰ ~ PEC **?ima(n)* ‘to stay, be’ (NC 210)

9 Common Basque *ez* ‘not’ (negative particle).

10 Standard *ipini*, (AN, B, G) *ipiñi*, (B, BN, Sal) *imiñi* ‘to put, place’. Cf. Burushaski *man-* ‘to be, become’, etc.

- 1.50. Basque *izeba* ‘aunt’ ~ PEC $*=\bar{l}c\bar{w}i$ ‘girl, woman’ > Tsakhur *iči* ‘girl’, etc. (NC 952)
- 1.51. Basque *bi-zi* ‘life, alive’ ~ Lak *s:iḥ* ‘breath, vapor’, etc. < PNC $*s\check{i}HwV$ (NC 961)
- 1.52. Basque *zikiro* ‘castrated ram’ ~ Karata *c':ik':er* ‘kid’, etc. < PNC $*z\check{i}k\check{V}$ ‘goat, kid’ (NC 1094)
- 1.53. Basque *hitz* ‘word’ ~ Chechen $=ic-$ ‘to tell’, etc. < PNC $*=[\bar{l}]mc\bar{U}$ (NC 642)
- 1.54. Basque (BN,L) *miko* ‘little (bit)’ ~ PEC $*mikwV$ ‘small, young one’ (NC 821)
- 1.55. Basque *tipi* ‘little, small’ ~ Avar *hit'ina-b* ‘small’, etc. < PNC $*tiHV / *HitV$ (NC 1001)
- 1.56. Basque *lizun* ‘moldy, musty, mustiness’ ~ PEC $*\lambda wilc\bar{w}V$ ‘dirt; bog, marsh’ (NC 770)
- 1.57. Basque *itzuli* ‘to turn, turn over, return’, etc. ~ PEC $*=\bar{i}rcVI$ ‘to twirl, turn round’ (NC 649)
- 1.58. Basque *zimitz*, *zimintza* ‘bedbug’ ~ PNC $*mi\check{z}\check{A} / *zimi\check{z}\check{A}$ ‘stinging insect’ > Dargwa (Chirag) *zimizal* ‘ant’, etc. (NC 823)
- 1.59. Basque *tximitxa* [čimiča] ‘bedbug’ ~ PEC $*\acute{c}imV\acute{c}V$ ‘butterfly’ (NC 379)
- 1.60. Basque *hiri* ‘village, city’ ~ PNC $*ki\check{h}\bar{u}$ ‘farmstead, hut’ (NC 692)
- 1.61. Basque *ilindi*, *ilhinti* ‘firebrand’ ~ PEC $*\lambda windV$ ‘firewood’ (NC 764)
- 1.62. Basque (G) *lirdi* ‘drivel, saliva’ ~ PEC $*\lambda w\check{i}rdi$ ‘manure, pus’ (NC 763)
- 1.63. Basque (BN,L) *k(h)ino* ‘bad odor’ ~ PNC $*k\check{w}\check{i}n\check{h}V$ ‘smoke’ (NC 738)
- 1.64. Basque *ihintz* ‘dew’ ~ Tindi *hic:u* ‘bog, marsh’, etc. < PEC $*xw\check{i}m\check{c}w\check{f}$ (NC 1065)
- 1.65. Basque (B,G,L) *lirain* ‘slender’ ~ PNC $*=\bar{i}\check{h}iV$ ‘thin’ (NC 639)
- 1.66. Basque *ahizpa* ‘sister (of a woman)’ ~ PNC $*=\bar{i}\check{c}\check{i}$ ‘sister, brother’ (NC 669)
- 1.67. Basque *(h)osin* ‘depth of water’ ~ PEC $*?w\check{i}nc\check{V}$ < $*?w\check{i}c\check{i}nV$ ‘well, spring’ (NC 232)

Basque /o/ corresponds to Caucasian $*o$, also to Caucasian $*e$, $*ə$, $*i$, and $*i$ (in labial environments). Note the convergent developments (> *o*) in some Caucasian languages:

- 1.68. Basque *oso* ‘whole, complete’ ~ PNC $*=fi\check{o}\check{c}V$ ‘full, fill’ (NC 525)
- 1.69. Basque *atso* ‘old woman’ ~ PNC $*\check{c}w\check{o}\check{j}V$ ‘woman, female’ (NC 374)
- 1.70. Basque **khola* in (BN) *gar-kola*, *gar-khora* ‘nape’ ~ PEC $*qHw\check{o}t\check{w}V$ ‘neck, collar’ (NC 894)
- 1.71. Basque *ontzi* (~ *untzi*) ‘vessel, container; boat, ship’ ~ PEC $*b\check{o}n\check{z}(w)V$ ‘vessel’ (NC 311)
- 1.72. Basque *zor(h)i*, (B) *zoli* ‘fortune, luck’, etc. ~ PNC $*z\check{o}\check{f}V$ ‘healthy, whole’ (NC 1095)
- 1.73. Basque *hobi* ‘gum(s) (of mouth)’ ~ PNC $*fi\check{o}mG\check{w}\check{i}$ ‘throat, mouth’ (NC 526)
- 1.74. Basque *sor-* ‘body’ (in compounds) ~ PEC $*\check{c}\check{o}r\check{c}V$ ‘body’ (NC 346)
- 1.75. Basque *otso* ‘wolf’ ~ PNC $*bh\check{c}\check{r}\check{c}\check{i}$ ‘wolf’ > Andi *boc'o*, etc. (NC 294)
- 1.76. Basque *or*, (Z) *hor*, *ho* ‘dog’ ~ PEC $*\chi Hw\check{e}\check{j}rV-$ ‘dog’ > Budukh *χor*, etc. (NC 1073)
- 1.77. Basque *erdoil*, *erdoi* ‘rust’ ~ PEC $*\lambda w\check{e}\check{f}\check{?}\check{e}$ ‘mould’ (NC 770)
- 1.78. Basque *gogor* ‘hard’ ~ PEC $*Gw\check{e}rV$ ‘stone’ (NC 467)
- 1.79. Basque (B) *txorru* [čöřu] ‘root of hair’ ~ PEC $*\check{c}\check{h}w\check{o}rV$ ‘hair’ > Avar *č'or*, etc. (NC 378)
- 1.80. Basque (G) *alon-tza* ‘mixture of grain’ ~ PEC $*\lambda w\check{i}n\check{?}\check{f}$ ‘seed’ > Avar *xon* (NC 1021)
- 1.81. Basque *txori* [čöri] ‘bird’ ~ PEC $*\check{c}Hw\check{i}V$ > Chamalal *č'or* ‘bird’, etc. (NC 388)
- 1.82. Basque *aho* ‘mouth’ (< $*a-x^w o$) ~ PNC $*\chi w\check{i}-m(V)\check{p}V$ ‘mouthful’ > Khinalug *χob* (NC 1082)
- 1.83. Basque *ol(h)o* ‘oats’ ~ PNC $*\lambda w\check{i}wV$ ‘millet’ > Chechen *ho?*, etc. (NC 763)

Basque /u/ (Zuberoan /ü/) corresponds to Caucasian $*u$, $*wV$, $*Vw$. Note the convergent developments (> *u*) in some Caucasian languages:

- 1.84. Basque *zumar* ‘elm’ ~ PEC $*z\check{h}\check{u}mV$ ‘bush, quince’, etc. (NC 1107)

- 1.85. Basque *zu* ‘you’ (polite) ~ PNC **zwč* ‘you’ (plural) > Lak *zu*, etc. (NC 1086)
- 1.86. Basque (Z) *mulho* ‘petite colline, eminence, butte’ ~ PEC **muɦalV* ‘mountain’ > Archi *mul*,
etc. (NC 834)
- 1.87. Basque (BN) *punpula* ‘tear’, etc. ~ PNC **pHulq̃* ‘dirt; secretion in the eye’ (NC 871)
- 1.88. Basque (B,R) *un*, (L) *fuiñ* ‘marrow, pith’, (Z) *hün* ‘brain, marrow’ ~ PEC **hwč?nV* ‘blood’ (Avar ‘meat’) > Lak *u*, etc. (NC 496)¹¹
- 1.89. Basque *zur*, (B) *zul* ‘wood, timber, lumber’ ~ PEC **ʒw[č]ɦ* ‘twig, rod, sheaf’ > Avar *žul* ‘broom, besom’, etc. (NC 1103)
- 1.90. Basque (*h*)*ezur* ‘bone’ ~ PEC **r̥msw̄e* (**msw̄re*) ‘rib > side’ > Agul *sur*, etc. (NC 954)
- 1.91. Basque *ahuña* ‘kid’ ~ PEC **kw̄ɦ?nɦ* ‘ram’ > Andi *kun*, etc. (NC 710)
- 1.92. Basque (Z) *hur*, (c) *ur* ‘water’ ~ PEC **ɦw̄ɦIV* ‘river, reservoir’ > Lezgi *hül*, etc. (NC 537)
- 1.93. Basque (B) *zuzun* ‘poplar, aspen’ ~ PNC **sw̄nē* > Lak *sunū*, ‘pomegranate’ (NC 971)
- 1.94. Basque *guri(n)* ‘butter, fat’ ~ PEC **χw̄ɦ?i* ‘fat, meat’ > Tabasaran *:ul*, etc. (NC 1081)
- 1.95. Basque (AN) *zurzulo* ‘nape’ ~ PEC **čw̄ɦsV* ‘gullet’ > Dargwa (Akushi) *surs* (NC 337)
- 1.96. Basque *gune* ‘place, space’ ~ PNC **Gw̄ɦn?V* ‘village, house’ > Tsez *qun*, etc. (NC 471)
- 1.97. Basque *tuntun* ‘Basque drum’ ~ PNC **dw̄n?V* ‘drum’ (NC 406)
- 1.98. Basque *luia* ‘adverse wind’¹² ~ PNC **λw̄ɦ?V* ‘wind, breeze’ > Lezgi *ful*, etc. (NC 762)
- 1.99. Basque *ahur* ‘hollow of hand, palm’ ~ PEC **kHw̄rV* ‘pit’ > Dargwa *kur*, etc. (NC 691)
- 1.100. Basque *zulo* ‘hole, burrow’ ~ PEC **šw̄ɦIV* > Avar *šulu* ‘pipe’, etc. (NC 978)
- 1.101. Basque *tutu* ‘tube, pipe’, etc. ~ PEC **dhw̄dhw̄* ‘tube, pipe’ > Lak *dudu*, etc. (NC 400)
- 1.102. Basque *bul(h)ar* ‘chest, breast’ ~ PEC **Gw̄ɦɦē* ‘udder, breast’ (NC 465)
- 1.103. Basque *idulki* ‘block of wood’ ~ PEC **dw̄ɦɦ* ‘stick’ > Dargwa *t:ult:a* ‘tree’ (NC 405)
- 1.104. Basque *el(h)ur* ‘snow’ ~ PEC **λw̄V* ‘snow’ (NC 684)

2. Lateral Affricates

It is clear that lateral affricates existed in Proto-Dene-Caucasian (PDC), and indeed are some of the most characteristic sounds of Dene-Caucasian. They are definitely reconstructed for Proto-Caucasian (where some languages retain them to the present) and for Proto-Na-Dene (where almost all languages retain them).¹³ The original pattern, which is still found in many or most Na-Dene languages,¹⁴ was a contrast of voiceless or fortis **ʃ* [tʃ] with glottalized **ʃ̚* [tʃ̚] and voiced or lenis **ʒ* [dʒ]. In Basque the reflexes of all three fall together, though patterned in an interesting way:

In initial position all PDC lateral affricates **ʃ*, **ʃ̚*, **ʒ* > Basque /l/

In medial position all PDC lateral affricates **ʃ*, **ʃ̚*, **ʒ* > Basque /rd/ [r̥d̥]

In final position all PDC lateral affricates **ʃ*, **ʃ̚*, **ʒ* > Basque /l/

This pattern is structurally similar to that of Basque reflexes of PDC **ʃ*, *q.v.*, where the contrast

11 Basque words of the type *muin* ‘marrow, brain’ (*q.v.*) are of separate origin (PEC **māhnū* ‘brain, head’), but in Basque have been associated and contaminated with this word. The semantic series ‘blood ~ flesh ~ marrow ~ brain ~ kernel’ is well documented.

12 A rather obscure word used by the Basque writer Oihenart.

13 Peiros & Starostin (1996) also reconstruct a lateral affricate **ʃ* for Proto-Sino-Tibetan.

14 In some Caucasian (mainly Avar-Andi-Tsezian) languages lateral affricates are retained, but not in the original **\ ~ *!\ ~ *[* pattern. Akhwakh, for example, has a fourfold contrast based on the features ± tense [:] and ± glottalized [']: [*\ ~ \:*] ~ [*!\ ~ \!:*].

between /l/ and /lh/ only occurs between vowels. It is also structurally similar to the pattern of reflexes in Burushaski:¹⁵

In initial position all PDC lateral affricates *ʃ, *ʃ', *ʒ > Burushaski /t/, /d/

In medial position all PDC lateral affricates *ʃ, *ʃ', *ʒ > Burushaski /lt/, /ld/

In final position all PDC lateral affricates *ʃ, *ʃ', *ʒ > Burushaski /l/

PDC *ʃ, *ʃ', *ʒ > Basque initial /l/:

2.1. Basque *lizun* (c) ‘moldy, musty, mustiness’, (AN,B,G) ‘dirty, untidy’ ~ PEC *ʃwɪlɔwV ‘dirt; bog, marsh’ > Andi *ʃenc*:u ‘bog, marsh’, etc. (NC 770)

2.2. Basque *limuri* (Z) ‘humid’, (Z, Sal) ‘slippery’, (AN, G) ‘soft, smooth’, etc. ~ PEC *ʃHwemV ‘liquid’ > Avar *ʃ:ami*-ja-b ‘liquid’, Dargwa (Chirag) *ʃam*-ze ‘wet, liquid’, etc. (NC 768)

2.3. Basque (B, Sal, G) *laino*, *laiño*, (Z) *lānhú*, (AN-Baztan, BN-Aldude, G, L) *lanbro* ‘fog, mist’¹⁶ ~ PEC *ʃrɛnɔwV ‘cloud, fog’ > Chechen *doʒk* ‘fog’, Khinalug *unk* ‘cloud’, etc. (NC 947) ~ Burushaski *harált* ‘rain, cloud’

2.4. Basque (B,G) *loki*, (R) *lokun*, *lokune* ‘temple (of head)’ ~ PEC *ʃarqwe > Khwarshi *ʃ'oq* ‘forehead’, Avar *t'aʒir* ‘cap’, etc. (NC 775)

2.5. Basque *lasto* ‘straw (of wheat, etc.)’ ~ PEC *ʃačã ‘leaf; a kind of plant’ > Akhwakh *ʃ'ača* ‘a kind of edible plant’, etc. (NC 773)

2.6. Basque (B, G, L) *lirain* ‘slender, svelte, lithe’ (‘esbelto [de personas y animales]’) ~ PNC *iʃɪV ‘thin’ > Avar *t'eréna*-b, Khinalug *k'ir* ‘thin’, etc. (NC 639) ~ Burushaski (H, N) *tharén*-um ‘narrow, tight (of clothes)’

2.7. Basque (c) *lerro* ‘line, file, row’ ~ PEC *ʃwǎr(h)ǝ ‘boundary’ > Avar *ʃ':er* ‘garden bed, terrace, row, rank’, Dargwa *jara* ‘furrow’, etc. (NC 782)

2.8. Basque (Z) *lape* ‘shelter under the eaves of a shed’ ~ PEC *ʃǝpV ‘stone plate or shed’ > Chechen *laba* ‘shed, peak of cap’, etc. ~ Burushaski (H, N) *tápi* ‘(smaller) stone terrace’ (= 1.27)

2.9. Basque (L) *laz* ‘beam, rafter’ ~ PEC *ʃVčV ‘log, pole’ > Akhwakh *ʃ':eč'a* ‘log’, etc. (NC 781)

2.10. Basque (AN, B, G, L) *lema* ‘rudder’ (< *board, plank’) ~ PEC *ʃəm?V ‘roof’ > Karata *ʃ'ame* ‘roof’, etc. (NC 777)

2.11. Basque (BN, L) *lahar*, (AN, B, G) *laar*, (AN, G) *lar*, (Z) *nahar*, (Sal) *naar*, (R) *nar* ‘bramble, creeping plant’ ~ PNC *ʃwǎr?V ‘leaf’ > Andi *ʃ'oli*, Dargwa *k'a* ‘leaf’, etc. (NC 784)

2.12. Basque (c) *larru*, (B) *narru* ‘skin, hide, leather’ ~ Dargwa (Akushi) *guli* ‘skin, sheepskin’, Avar *ʃ':er* ‘color’ (< *skin’) < PNC *ʃǝli (NC 789) ~ Burushaski *tar*-ín ‘skin bag’

2.13. Basque (B) *larri* ‘sadness, anxiety, anguish; sad, anxious, worried’, etc. ~ Chechen *lūra* ‘severe, dangerous’, Bezhta =iʃaro ‘hard’, etc. < PNC *ʃwǎrV ‘hard, severe, stern’ (NC 792)

2.14. Basque (c) *lehia*, *leia* ‘want, wish, desire, eagerness, zeal, haste’ ~ PEC *inɔwV ‘to love, want’ > Chechen *laʔ*- ‘to want, wish’, Avar =oʃ’:- ‘to love, want, wish’, Archi *ʃ':an* ‘to love, want’, etc. (NC 644)

¹⁵ See Bengtson 1997a.

¹⁶ Assuming metathesis: Basque *lanbro* matches well with a metathesized PEC *ʃɛnwrV. It is not entirely clear that *laino* and *lanbro* are one and the same word. Aulestia & White (1992) have separate entries for *laino* ‘fog, mist’ and *lanbro* ‘dense fog’. If the Burushaski word belongs here, it may be an old compound (? *ha- + *ralt), or influenced by *hará*- ‘to piss’.

PDC * λ , * λ' , * λ > Basque medial /rd/ [rð]:

- 2.15. Basque (B) *erdu* ‘come!, come ye!’ ~ PNC $*=\bar{\epsilon}r\lambda\bar{U}$ ‘to go, walk, enter’ > Archi $a=\lambda i-$ ‘to come’, Lak *ulu* ‘let’s go!’, etc. (NC 422)
- 2.16. Basque *erdoil*, *erdoi* ‘rust’ (of plants: AN, G), ‘rust’ (of iron: AN, BN, L, R, Z) ~ PEC $*\lambda w\epsilon\lambda\bar{P}\bar{\epsilon}$ ‘mould’ > Akhwakh *xali* ‘mould’, Lezgi $x^w\epsilon l$ ‘boil, furuncle’, etc. (NC 770)¹⁷
- 2.17. Basque (c) *adar* (*a-dar* < $*a-\bar{r}\delta a\bar{r}$) ‘horn’¹⁸ ~ Avar $\lambda:ar$, Chechen *kur* ‘horn’, etc. < PEC $*\lambda w\bar{i}rV$ (NC 771) ~ Burushaski (H) *-ltür*, (Y) *tur* ‘horn’
- 2.18. Basque (c) *erdi* ‘half, middle’ ~ PNC $*=\check{c}\lambda\bar{E}$ ‘half, middle’ > Bezhta $=a\lambda o$ ‘middle’, $=a\lambda o-$ kos ‘half’, Lak $=a\check{c}’i$ ‘half’, etc. (NC 412)
- 2.19. Basque (c) *ardai*, *arda-*, (L) *hardo*, (Z) *ardai*, (Alava) *erdai*, etc. ‘tinder (made from a kind of dried fungus)’ ~ PEC $*\lambda w\bar{\epsilon}\lambda V$ ‘a kind of grass’ > Chechen *jol* ‘hay’, Lezgi *weq* ‘grass’, etc. (NC 230)¹⁹
- 2.20. Basque (AN, BN, L) *herde*, *erde*, (B, BN, L, R, Z) *helder*, *elder* ‘drivel, drool’ ~ PNC $*fi\check{a}m\lambda\check{a}$ ‘sweat’ > Tindi *hanla*, Lezgi *heq*’ etc. (NC 509)²⁰
- 2.21. Basque (c) *izerdi*, (B) *izardi* ‘sweat’, (AN, BN, R also) ‘sap’ ~ PEC $*\acute{c}\bar{a}\bar{L}wV$ > Chechen $c’ij$ ‘blood’, Avar $\check{c}’\acute{a}go-b$ ‘alive’, etc. ~ Burushaski (Y) *cel*, (H, N) *chil* ‘water; sap (of trees)’, etc. (NC 376)
- 2.22. Basque *urdail* (AN, B, G, L) ‘stomach’, (B) ‘abomasum’, (B, G) ‘womb, uterus’²¹ ~ PEC $*=\bar{i}ra\bar{L}V$ ‘stomach, abomasum, rennet’ > Tindi $b-e\lambda’:u$, Archi $b-a\backslash$, etc. (NC 670) ~ Burushaski *-ül* ‘abdomen, bowels’
- 2.23. Basque *erdera*, *erdara*²² ‘foreign (of language)’ / (combinatory form) *erdel-*, *erdal-*, as in *erdel-dun*, *erdal-dun* ‘non-Basque-speaker, foreigner’ ~ Khwarshi λar ‘guest’, Chechen $\bar{i}ula-\chi\bar{o}$ ‘neighbor’, etc. < PEC $*\bar{L}\bar{o}IV$ (NC 790)
- 2.24. Basque *mardo* (Sal, R-Uztarroz, Z) ‘soft, smooth’, (B, Sal, R, Z) ‘robust, plump’, *mardul* (B-Izpazter, G) ‘vigorous, strong, exuberant / robusto, rollizo, lozano, sustancioso’, *mardul-tasun* ‘fertility, luxuriance’ ~ PEC $*m\bar{o}r\bar{L}V$ > Chechen *mar* ‘husband’, Kryz *miγil* ‘male’, Archi *meλle* ‘male’, etc. (NC 830)

PDC * λ , * λ' , * λ > Basque final /l/. At present I can cite only two secure examples:

- 2.25. Basque (BN, L, Z) *oihal*, (AN, B, G, R) *oial* ‘cloth, fabric’ (< $*o(i)-xal$) ~ Bezhta $\chi i\lambda o$

17 The Basque word presupposes the development $*erdoLi$ < $*e-\lambda o\bar{i}$, or the like. $*e-$ is thought to be a fossilized prefix (see, e.g., Bengtson 1995b.).

18 The dissimilation of $*ardar$ > *adar* is the same as in *adore* ‘courage’ < Latin *ardor*, *ardore-* (Trask 1997, p. 145). For Basque *adar* ‘branch’ (a homonym) see 3.2.b.

19 Basque *hardo*, *arda-* is contaminated in some dialects with words derived from Latin *cardu(u)s* ‘thistle’. For both phonetic and semantic reasons it is clear that *hardo*, *arda-* ‘tinder’ and Basque words such as *kardu*, *gardu* ‘thistle’ are of entirely distinct origins.

20 The Basque word (*helder* above) is easily confused and contaminated with Basque *lerde*, *lirdi* ‘drivel, saliva’, q.v., of a quite separate origin ~ PEC $*\bar{i}wirdi$ (LDC #19). Note also Basque (G) *bilder* (*bi-lder*) ‘drivel’, which apparently incorporates an old class marker ($*bi-/be-$) + *helder*.

21 Caucasian has $*=\bar{i}ra\bar{L}V$, so assimilation or dissimilation is assumed. Lak $\check{c}:arlu$ ‘kidney’ requires metathesis (< PEC $*=\bar{i}\bar{L}aV$), and assimilation would produce PEC $*=\bar{i}\bar{L}aIV$, close to the Basque form. The Basque word also has the fossilized class prefix *u-*.

22 Generally, *erdera* / *erdel-* to the south and west of Basque country, *erdara* / *erdal-* to the north and east.

‘trousers, breeches’, Lak *harč:ala* ‘cuff, trouser leg’, etc. < PEC **χwĩĤV* (NC 1081)

2.26. Basque (c) *hil, il* ‘dead, death, die’ ~ PNC **=iwλĤ* ‘to die, kill’ > Chechen =*al-* ‘to die’, Bezhta *-iλ’* ‘to kill’, etc. (NC 661)

In the following cases we find the unusual (non-trivial) correspondence of Basque */l/* = Burushaski */t/* (~ */th/*):

2.27. Basque *limuri* (Z) ‘humid’ ~ Burushaski *tam dél-* ‘to bathe’, etc. ~ PEC **λHwemV* ‘liquid’ (= **2.2**)

2.28. Basque *lirain* ‘slender’ ~ Burushaski (H) *tharén-um* ‘narrow’ ~ PNC **=iλĩIV* ‘thin’ (= **2.6**)

2.29. Basque (Z) *lape* ‘shelter under the eaves of a shed’ ~ Burushaski *tápi* ‘Felsterrasse’ ~ PEC **λēpV̄* ‘stone plate or shed’ (= **2.8**)

2.30. Basque *larru* ‘skin, leather’ ~ Burushaski *tar-íŋ* ‘skin bag’ ~ PNC **Lōli* ‘skin, color’ (= **2.12**)

2.31. Basque *leku, lekhu* ‘place’ ~ Burushaski *tik* ‘earth, ground; rust’²³

2.32. Basque *larre* (AN, BN, G, L, Z), *larra* (B) ‘grassland, pasture’, also (BN) ‘heath’ ~ Burushaski (Y) *ter* ‘summer pasture’ (Berger: ‘Hochweide, auf die das Vieh im Sommer etrieben wird.’)

In five of the six cases there is evidence from other Dene-Caucasian languages that the original initial consonant was a lateral affricate. In the sixth case (**2.32**) the pattern of correspondence suggests that the original initial was a lateral affricate, though I have found no direct evidence of one, since I do not know of any cognate in Caucasian or Na-Dene.

3. Basque Homonyms

We are dealing with comparisons between a language with a relatively simple phonetic system (Basque), and languages that are much more complex (Caucasian: especially as regards consonants). As seen at the beginning of this paper, Basque has about 23 consonant phonemes, while Proto-Caucasian had about twice as many. It is thus to be expected that some words that have phonetically merged in Basque would correspond to words that are distinct in Proto-Caucasian, and this is indeed the case, according to my findings. The examples discussed here are Basque *bel(h)ar* ‘forehead’ : *bel(h)ar* ‘grass, hay’; *adar* ‘horn’ : *adar* ‘branch’; *eho* ‘grind’ : *eho* ‘beat’ : *eho* ‘weave’; *hobi* ‘gum(s)’ : *hobi* ‘grave’. The distinct origins of these homonyms are shown by the comparisons below:

3.1.a. Basque (BN, Sal, Z) *belhar* ‘forehead’ (< **belha-r*) ~ Rutul *bäl*, Lezgi *p:el*, Kryz *bel*, Budukh *beliž* ‘forehead’, Archi *bat* ‘horn’, Tindi *bala* ‘edge, end, corner’, etc. < PEC **bʃāthō* (NC 285)²⁴ ~ Burushaski *bal* ‘wall’ (< **edge*)

3.1.b. Basque (BN, L, Z) *belhar* ‘(first mowing of) hay’, (AN, G, L) *belar* ‘grass, hay’, (B, G) *berar*, (B) *bedar* ‘grass, hay’ ~ Lezgi *werg* ‘nettle’, Archi *urk:i* ‘burdock’, etc. < PEC **uclV* (NC 1013)

23 Cf. also: PST **λ[ia]k* ‘iron’ > Tibetan *lčag-s* ‘iron’, etc. (ST III:68); Na-Dene: Haida (A) *łak* ‘land, place’, (S) *łįga* ‘land’; Tlingit *ł’éχ’kw* ~ *ł’áχ’kw* ‘soil’; Sarsi *gù-ł’is* ‘earth’).

24 NCED proposes the reconstructed meaning ‘edge, end’, whence ‘forehead, horn’ in some languages.

- 3.2.a.** Basque *adar* (*a-dar* < **a-řǵař*) ‘horn’²⁵ ~ Avar *ǰ:ar*, Chechen *kur* ‘horn’, etc. < PEC **ǰwřrV* (NC 771) ~ Burushaski (H) *-ltúr*, (Y) *tur* ‘horn’
- 3.2.b.** Basque *adar* ‘branch’ (< **ařǵař*)²⁶ ~ Avar *ǰarǰ’:él* ‘branch, bough’, Tsez *aǰ’iru* ‘pod’, etc. < PEC **ǰǰǰVřV* (NC 508) ~ Burushaski (H, N) *yáltar* ‘the upper leafy branches of a tree’
- 3.3.a.** Basque (c) *eho*, (B) *eio* ‘to grind’, (c) *eihera* ‘mill’, etc. ~ Ingush *aǰ-* ‘to grind’, *ǰajra* ‘mill’, Andi *ǰiǰwǵo-qi-* ‘to grind’, etc. < PNC **HǰmǰwV* ‘to grind’ (NC 559)
- 3.3.b.** Basque (c) *eho* ‘to beat’, (Z) ‘to kill; put lights out’, (AN) *eo* ‘give (someone) a thrashing, beat (someone) soundly’, (B) *eio* ‘to get very tired, get fatigued’, etc. ~ Avar =*uǰ-* ‘to beat, hit’, Rutul =*ǰǰa-* ‘to beat, hit’, etc. < PNC **HřǰA* (NC 581)
- 3.3.c.** Basque (c) *eho*, ‘to weave’, *ehun* ‘to weave; cloth’, (B) *eio* ‘to braid’ ~ PEC *=*irǰwVn* ‘to knit, weave, spin’ > Chamalal *ǰ:in-* ‘to spin’, Dargwa =*imǰ-/=umǰ-* ‘to plait, weave’, Agul *ruǰ-* ‘to knit’, etc. (NC 655)
- 3.4.a.** Basque (BN, L, Z) *hobi*, (B, G) *oi* ‘gum(s) (of mouth)’ ~ Akhwakh *oq’:o* ‘throat’, Tsez *haqu* ‘(inside of) mouth’, Circassian *řwǵ* ‘mouth’, etc. < PNC **ǰǵmǰwř* (NC 526)
- 3.4.b.** Basque (c) *hobi* ‘grave, tomb’ ~ PEC **řwř* ‘grave’ > Avar *ǰob*, Tindi *hoba*, Lak *haw*, etc. (NC 428)

In the case of **3.2.a.** and **3.2.b.** both words are preserved in all three Macro-Caucasian branches, but only in Basque do the words merge phonetically

- [**3.2.a.** Basque *adar* ‘horn’ : Avar *ǰ:ar* ‘horn’ : Burushaski *-ltúr* ‘horn’]
 [**3.2.b.** Basque *adar* ‘branch’ : Avar *ǰarǰ’:él* ‘branch’ : Burushaski *yáltar* ‘branches’]

Conclusions

Luis Michelena (1961, *et al.*) provided us a tremendous service in cataloguing the diverse phonetic forms of the Basque dialects, and giving us some direction in understanding the changes. Michelena did not accept the relationship between Basque and Caucasian, and thus could not apply external comparison to the problems of Basque phonology. In Michelena’s defense I would point out that in his lifetime the Basque-Caucasian comparisons that had been published were very uneven in quality and haphazard, and even the available materials on Caucasian languages were very sparse, with no deep reconstructions. We now have a significant advantage because of new sources and reconstructions of Caucasian languages that are now available (*e.g.*, Nikolayev & Starostin 1994, Chirikba 1996). For Burushaski we now have the definitive books by Berger (1974, 1998). With these materials we now have a solid basis of what to compare from the Caucasian and Burushaski side.

This essay is only a beginning. The extensive comparisons involving consonants will be published separately.²⁷ (Only the reflexes of PDC lateral affricates were discussed in depth here.) However, I suggest that the evidence presented here is already strongly indicative that the proposed genetic relationship between Basque and Caucasian is highly probable, and that it can

25 The dissimilation of **ardar* > *adar* is analogous to that in Basque *adore* ‘courage’ < Latin *ardor*, *ardore-* (Trask 1997, p. 145).

26 There is also a Basque variant with /b/, *abar* ‘branch’, which is difficult to explain.

27 These would add about 60 pages to this paper.

be verified by numerous recurrent phonological correspondences.²⁸

Abbreviations

AN	Alto Navarro = <i>Nafarroa Garaia</i> = High Navarrese (Basque dialect)
arc	archaic
B	<i>Bizkaia</i> = Biscayan (Basque dialect)
BN	Basse Navarre = <i>Nafarroa Beherea</i> = Low Navarrese (Basque dialect)
c	common (Basque) = <i>Euskara Batua</i>
CWC	<i>Common West Caucasian</i> = Chirikba 1996
DC	Dene-Caucasian = Sino-Caucasian
G	<i>Gipuzkoa</i> = Guipúzcoa (Basque dialect)
H	Hunza (Burushaski dialect)
L	<i>Lapurdi</i> = Labourdin (Basque dialect)
LDC	“Lexica Dene-Caucasica” = Blažek & Bengtson 1995
N	Nagiri, Nagari (Burushaski dialect); northern (Basque)
NC	North Caucasian; in reference citations = NCED
NCED	<i>North Caucasian Etymological Dictionary</i> = Nikolayev & Starostin 1994
PA	Proto-Athabaskan
PDC	Proto-Dene-Caucasian
PEA	Proto-Eyak-Athabaskan
PEC	Proto-East Caucasian (= Proto-Nakh-Daghestanian)
PNC	Proto-(North) Caucasian
PND	Proto-Na-Dene
PST	Proto-Sino-Tibetan
PWC	Proto-West Caucasian (= Proto-Abkhazo-Adygean)
PY	Proto-Yeniseian
R	Roncalese = <i>Erronkari</i> (Basque dialect)
S	southern (Basque)
Sal	Salazarese = <i>Saraitza</i> (Basque dialect)
SSEJ	“Srvnitel’nyj slovar’ enisejskix jazykov” = Starostin 1995
ST	(<i>A Comparative Vocabulary of Five Sino-Tibetan Languages</i>) = Peiros & Starostin 1996
Y	Yasin(i) = Werchikwar (Burushaski dialect)
Z	<i>Zuberoa</i> = Souletin (Basque dialect)

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28 See the index of Basque words (Appendix B), in which many words exhibit more than one correspondence with Caucasian.

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Appendix A: Key to Phonetic Characters

ãẽrõ ù	nasal vowels
c: k: ʃ: p: s: t:, etc.	tense obstruents
c' k' ʃ' p' t', etc.	glottalized obstruents (NCED ɕ ɣ ʃ̣ p̣ ṭ, etc.)
ć ć' ʒ	hissing-hushing affricates (NCED ć ć' ʒ)
č č' ʒ	hushing affricates (NCED č č' ʒ)
ð	voiced dental fricative: e.g., Basque <i>adar</i> [aðaɾ] 'horn', <i>erdi</i> [eɾði] 'half, middle'
ɠ	voiced uvular stop
ɣ	voiced velar fricative (Caucasian, Na-Dene); voiced uvular fricative (Burushaski)
ɣ̣	voiced uvular fricative (NCED ɣ̣)
ħ	voiceless emphatic laryngeal fricative
ɦ	voiced laryngeal fricative
ɬ	lateral resonant or glide (in PNC and PST reconstructions)
ɬ̣	voiceless lateral fricative (NCED ɬ̣)
L	voiced lateral fricative in NCED (= ɮ)
ɮ	voiced lateral affricate (NCED)
λ	voiceless lateral fricative in NCED (= ɬ)
ʎ	voiceless lateral affricate
ʎ̣	palatalized voiceless lateral affricate
ʎ'	glottalized voiceless lateral affricate (NCED ʎ')
ʎ̣'	palatalized glottalized lateral affricate
ɭ	palatalized lateral resonant
ɮ	voiced lateral fricative (NCED L)
ɭ	palatalized rhotic resonant
̣	rhotic trill (= Basque <i>rr</i>)
ɮ	voiced uvular fricative (= Burushaski ɣ)
ś	voiceless hissing-hushing fricative
š	voiceless hushing fricative
ʂ	voiceless retroflex fricative (Burushaski)
ɖ	voiceless retroflex stop (Burushaski)
ɸ	labial glide (in Caucasian reconstructions)
x	voiceless uvular fricative (Burushaski); voiceless velar fricative (Caucasian, Na-Dene)

χ	voiceless uvular fricative (= Burushaski x)
χ̠	pharyngealized voiceless uvular fricative (NCED χ1)
ɣ̠	retroflex velarized spirant (Burushaski)
ʒ	voiced hissing affricate (= <i>dʒ</i>)
ʒ̠	voiced hissing-hushing affricate (= <i>dʒ̠</i>)
ʒ̥	voiced hushing affricate (= <i>dʒ̥</i>) (= Burushaski j)
ʔ	glottal stop
ʔ̥	glottalized emphatic laryngeal stop (Caucasian)
ʕ	voiced emphatic laryngeal fricative

Appendix B: Index of Basque Words Cited

Words are generally cited in their common Basque (*euskara batua*) form, following Aulestia & White (1992). Some dialectal forms, especially Bizkaian and Zuberoan, are also cited with a cross-reference to the common Basque form (e.g., *aizta* see *ahizpa*). Phonemic /h/ that is pronounced in northern Basque dialects but not found in standard Basque spelling is shown as (*h*), e.g., *k(h)arats* ‘bitter’, *ol(h)o* ‘oats’.

a-, -a *see* ha-0
 abere ‘domestic animal(s), cattle’ **1.46**
 adar ‘branch’ **3.2.b**
 adar ‘horn’ **2.17, 3.2.a**
 ahizpa ‘sister (of a woman)’ **1.66**
 aho ‘mouth’ **1.82**
 ahuña, ahuñe ‘kid’ **1.91**
 ahur ‘palm, hollow (of hand)’ **1.99**
 aizta *see* ahizpa
 al(h)o *see* ol(h)o
 alontza ‘mixture of grain’ **1.80**
 apal ‘shelf’ **1.11**
 apo ‘hoof’ **1.4**
 ardai ‘tinder’ **1.29, 2.19**
 ar(h)e ‘harrow, rake’ **1.19**
 atso ‘old woman’ **1.69**
 atze ‘tree’ **1.15**
 aundi *see* handi

beharri *see* belarri
 behatz ‘toe, thumb’ **1.3**
 behi ‘cow’ **1.43**
 bek(h)o ‘forehead’ **1.30**
 belarri ‘ear’ **1.22**
 bel(h)ar ‘forehead’ **3.1.a**
 bel(h)ar ‘grass, hay’ **1.32, 3.1.b**
 beso ‘arm’ **1.45**
 bilder *see* elder
 bizar ‘beard’ **1.48**
 bizi ‘to live; alive; life’ **1.51**
 budar *see* bul(h)ar
 bul(h)ar ‘breast, chest’ **1.102**

edur *see* el(h)ur
eho ‘to grind’ **3.3.a**
eho ‘to beat’ **3.3.b**
eho, ehun ‘to weave’ **3.3.c**
eihera ‘mill’ **3.3.a**
eio *see* eho
elder, erde ‘drool, drivel’ **2.20**
el(h)e ‘speech, story, word’ **1.34**
el(h)ur ‘snow’ **1.104**
erde *see* elder
erdera, erdara ‘foreign language’ **2.23**
erdi ‘half, middle’ **1.33, 2.18**
erdoil ‘rust’ **1.77, 2.16**
erdu ‘come ye!’ **2.15**
ez ‘not’ **1.40**

fuiñ *see* (h)un, hün

gar(h)i ‘thin’ **1.16**
garkola, garkhora ‘nape’ **1.70**
gau ‘night’ **1.18**
gogor ‘hard’ **1.78**
gor(h)i *see* gurin
gose ‘hunger, hungry’ **1.36**
gune ‘place, space’ **1.96**
gurin, gur(h)i, gor(h)i ‘butter, fat’ **1.94**

ha-, -a article, demonstrative **1.1**
habe ‘pillar, beam’ **1.37**
haga ‘long pole, rod’ **1.20**
handi ‘big, great’ **1.13**
har ‘worm’ **1.17**
hardo *see* ar dai
hari ‘thread, string, wire’ **1.12**
harri ‘stone, rock’ **1.25**
har-tu ‘to take, receive’ **1..21**
hatz ‘finger’ **1.3**
hegi ‘edge, ridge’ **1.44**
helder, herde *see* elder, erde
herri ‘town, people, nation’ **1.42**
hezur ‘bone’ **1.90**
hil ‘die; dead; death’ **1.47, 2.26**
hiri ‘village, city’ **1.60**
hitz ‘word’ **1.53**
hobi ‘grave’ **3.4.b**
hobi ‘gum(s)’ **1.73, 3.4.a**
hor, ho *see* or
hosin *see* osin
(h)un, hün ‘marrow, pith, brain’ **1.88**
hur *see* ur

idulki ‘block of wood’ **1.103**
ihintz ‘dew’ **1.64**
il(h)inti, ilindi ‘firebrand’ **1.61**
imiñi *see* ipini

ipini 'to put, place' **1.49**

itzuli 'to turn' **1.57**

izar 'star' **1.6**

izardi *see* izerdi

izeba 'aunt' **1.50**

izerdi 'sweat, sap' **2.21**

k(h)arats 'bitter, sour' **1.23**

k(h)ino 'bad odor, bad taste' **1.63**

lahar 'bramble' **2.11**

laino 'fog, mist' **1.28, 2.3**

lamika-tu 'to lick' **1.9**

lanbro *see* laino

lape 'shelter' **1.27, 2.8, 2.29**

larre, larra 'grassland, pasture' **2.32**

larri 'worried, serious', etc. **1.26, 2.13**

larru 'skin, leather' **2.12, 2.30**

lasto 'straw, hay' **1.8, 2.5**

laz 'beam, rafter' **2.9**

lehia 'diligence, laboriousness', etc. **2.14**

leka 'bean pod, husk' **1.31**

lek(h)u 'place' **2.31**

lema 'rudder' **1.41, 2.10**

lerde 'drivel, drool' **1.62**

lerro 'line, file, row' **2.7**

limuri 'slippery; humid' **2.2, 2.27**

lirain 'slender, svelte' **1.65, 2.6, 2.28**

lirdi *see* lerde

lizun 'mold, mildew' **1.56, 2.1**

loki, lokun 'temple (of head)' **2.4**

luia 'adverse wind' **1.98**

mardo 'luxuriant, vigorous; soft, smooth' **2.24**

mardul 'robust, healthy, strong' **2.24**

miko 'a little bit' **1.54**

muin, muñ 'pith, marrow, brain' cf. **1.88** (footnote)

mul(h)o 'heap, mound' **1.86**

negar, nigar 'weeping, tears' **1.35**

oi *see* ohe, hobi

oihal 'cloth' **2.25**

ol(h)o 'oats' **1.83**

ontzi 'vessel' **1.71**

or 'dog' **1.76**

osin 'well, depth' **1.67**

oso 'whole, complete' **1.68**

otso 'wolf' **1.75**

punpu(i)l(l)a 'tear, blister, bubble' **1.87**

sabel 'belly' **1.7**

sagu 'mouse' **1.10**

sare, sale 'net(-work)' **1.2, 1.38**

sor- 'body' **1.74**

sor-balda 'shoulder' **1.74**

takoin 'heel (of shoe)' **1.14**

tipi 'little, small' **1.55**

tuntun 'Basque drum' **1.97**

tutu 'tube, pipe' **1.101**

tximitxa 'bedbug' **3.53, 8.17, 9.59**

txori 'bird' **1.81**

txorru 'root of hair' **1.79**

udagara 'otter' **1.5**

ugabere, ugadara, ugadera *see* udagara

un *see* (h)un

une *see* gune

untzi *see* ontzi

ur 'water' **1.92**

urdail 'stomach, abomasum, womb' **2.22**

urde '(male) pig' **8.100**

uri *see* hiri

urin *see* gurin

xori *see* txori

zahar 'old' **1.24**

ze 'not' **1.40**

zelai 'meadow, plain' **1.39**

zik(h)iro 'castrated ram' **1.52**

zimitz, zimintza 'bedbug' **1.58**

zoli *see* zor(h)i

zor(h)i 'luck; mature' **1.72**

zu 'you' **1.85**

zulo 'hole, burrow' **1.100**

zumar 'elm' **1.84**

zur, zul 'wood, timber, lumber' **1.89**

zurzulo, zurzuil 'nape' **1.95**

zuzun 'poplar, aspen' **1.93**