

Introduction & The sound structure of Basque

Ander Egurtzegi (CNRS-IKER)

Advanced course in Sound Change with a focus on Basque

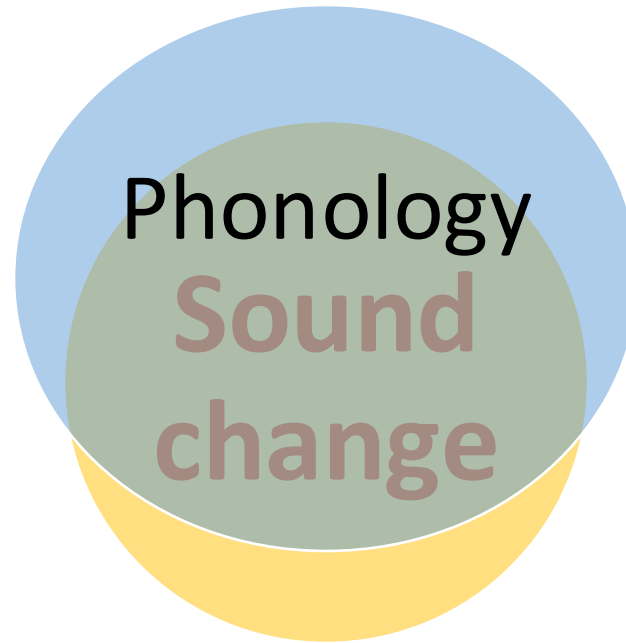
University of Chicago, 2025/03/24

- Historical laboratory phonologist.
- Sound change: all angles.
 - Historical, theoretical, and laboratory phonology.
 - Acoustic and articulatory phonetics.
 - Linguistic typology.
 - Philology and corpus linguistics.
 - Socio- and contact linguistics.
- Basque; endangered languages.

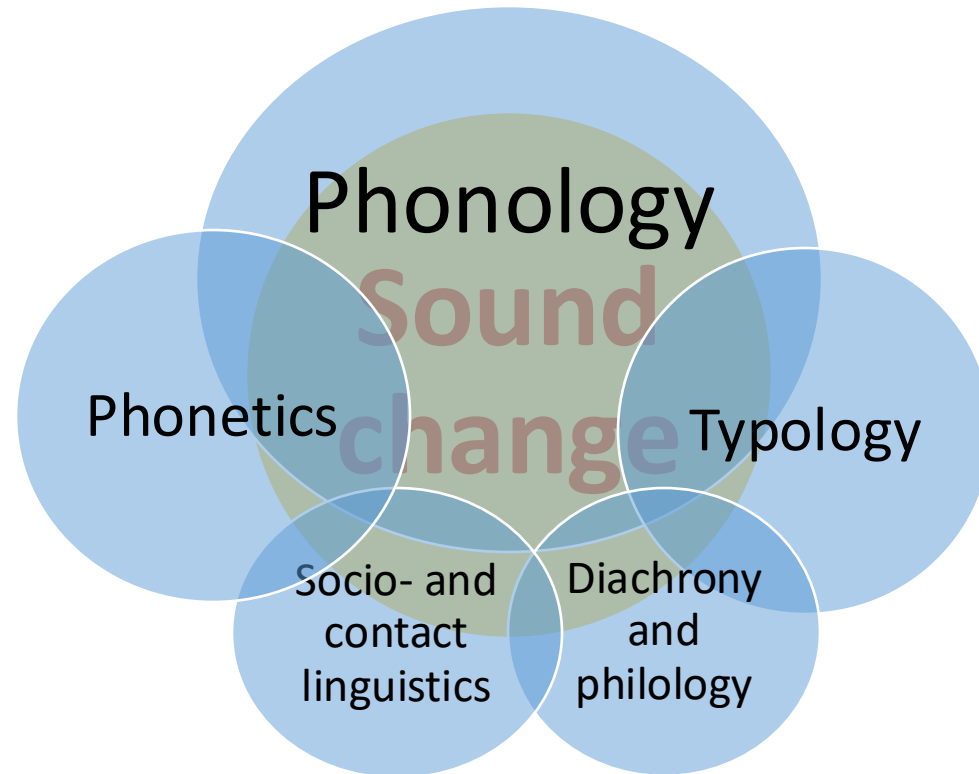
HELLO THERE!
MY NAME IS
ANDER
EGURTZEGI

Methodology

Interdisciplinarity of sound change research



Interdisciplinarity of sound change research



Philology

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/u/-fronting

/u/ → /y/

Philology

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Phonology

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Inhibitory contexts:

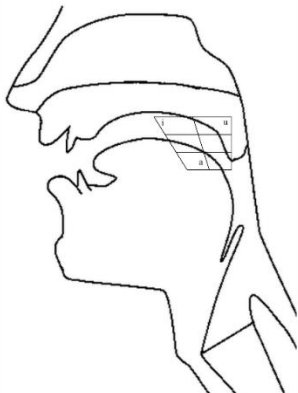
/s, z, r, rt, rt^h, rd/

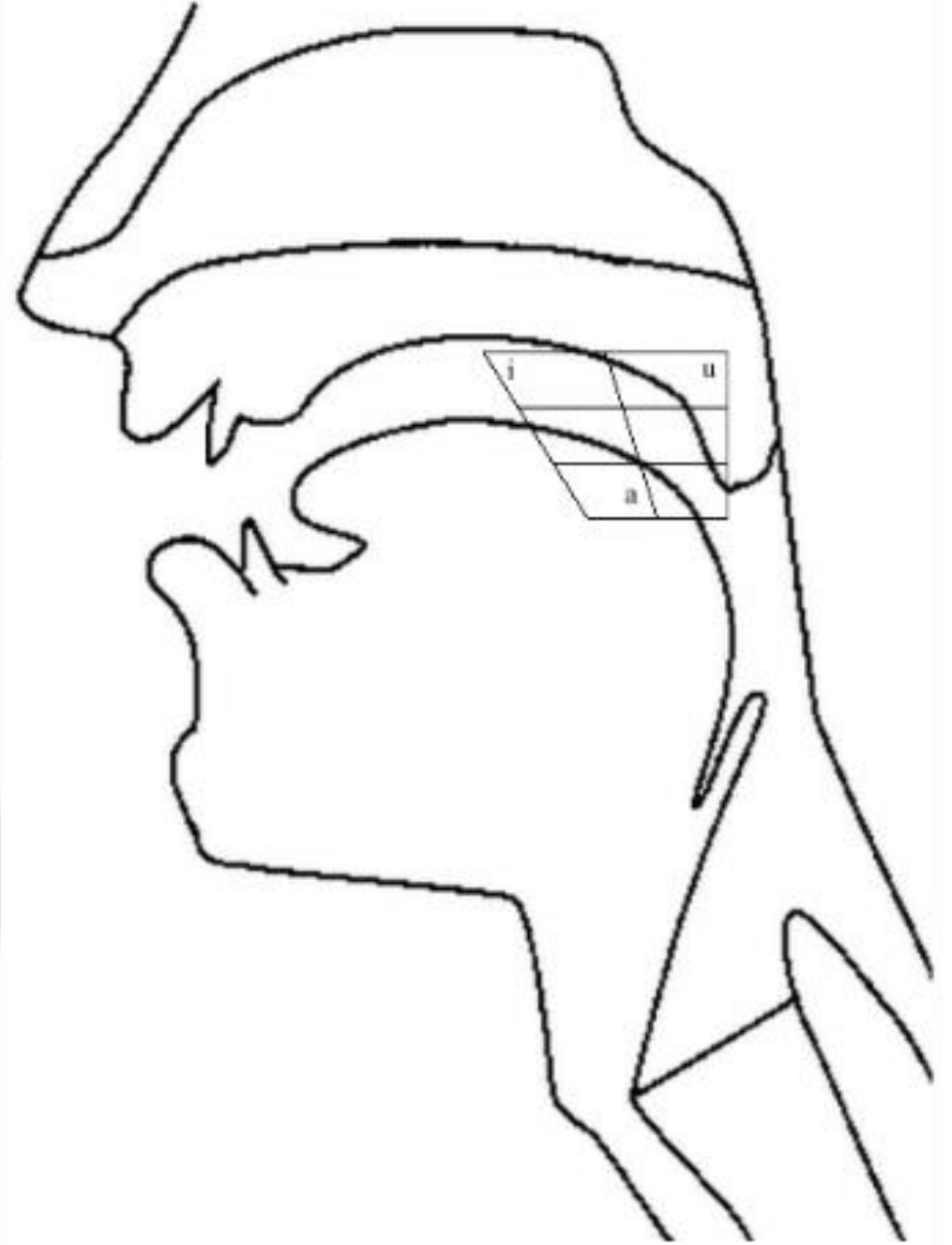
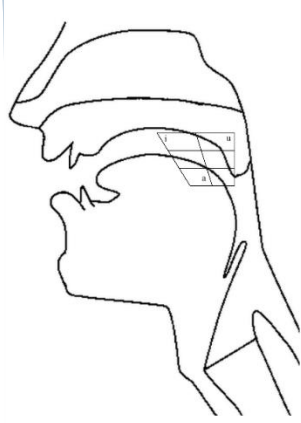
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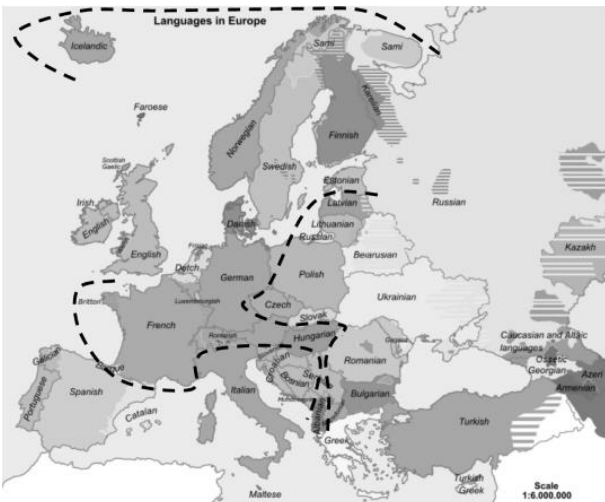
Fronting contexts:

/p, b, t, d, c, ʃ, k, g, f, s̺, z̺, t̺, ʃ̺, ʒ̺, m, n, ɲ, l, λ, h, h̃/

Phonetics







Philology

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/u/-fronting

Typology

Phonology

/u/ → /y/

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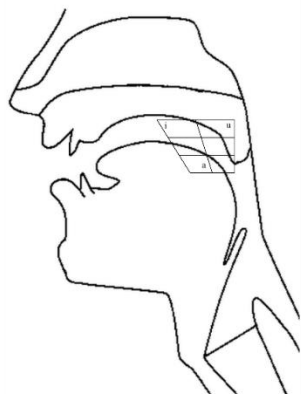
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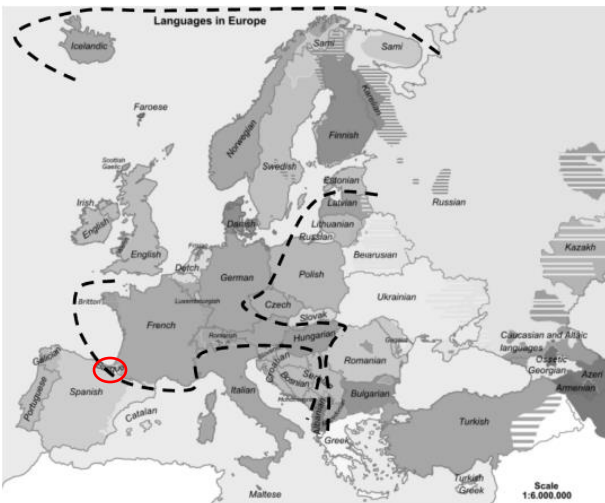
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Phonetics



Typology





Philology

/u/-fronting

Typology

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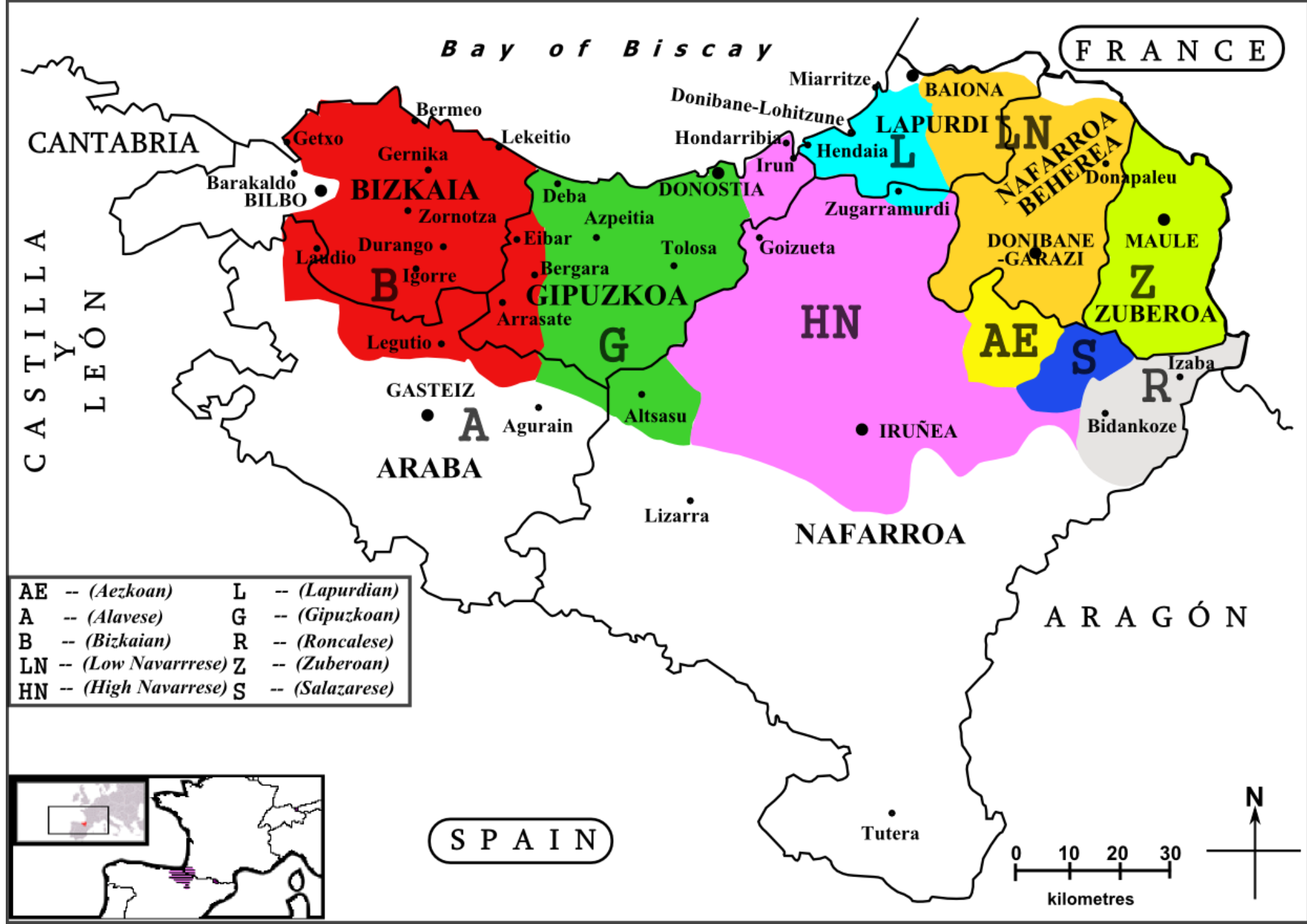
Research program: Sound change & Proto-Basque

- **Problem:** Limits of the historical-comparative method.
- **General aim:** To improve our understanding of Basque historical phonology from an interdisciplinary approach.
- **New approach:** To combine the historical-comparative method with phonetic detail and quantitative typological data.

Research program: Sound change & Proto-Basque

- **Why Basque?:** It's the best attested language isolate of the world.
- **Why isolates?:** They represent unique pathways in the evolution of human language.
- **Why now?:** Advances in quantitative linguistic methods and sound change theory.

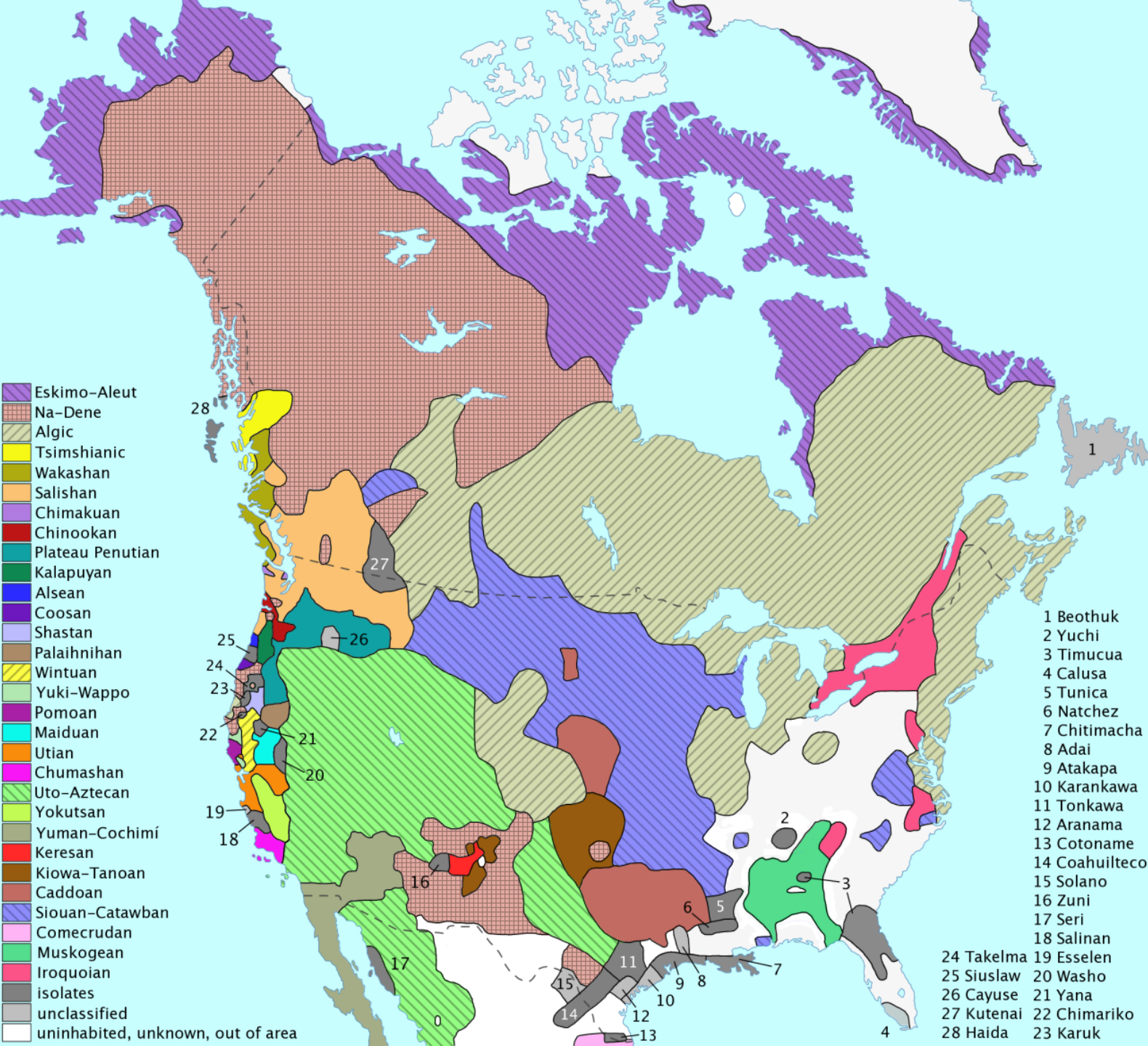
Basque



What makes Basque different?

- Why is it often said that Basque is different?
 - Because Basque is an isolated language.
- Are isolated languages unusual?
 - Basque is the only isolated language in Europe.
 - However, in the world, they are not that unusual.

Language isolates in North America



Language isolates (Campbell 2017)

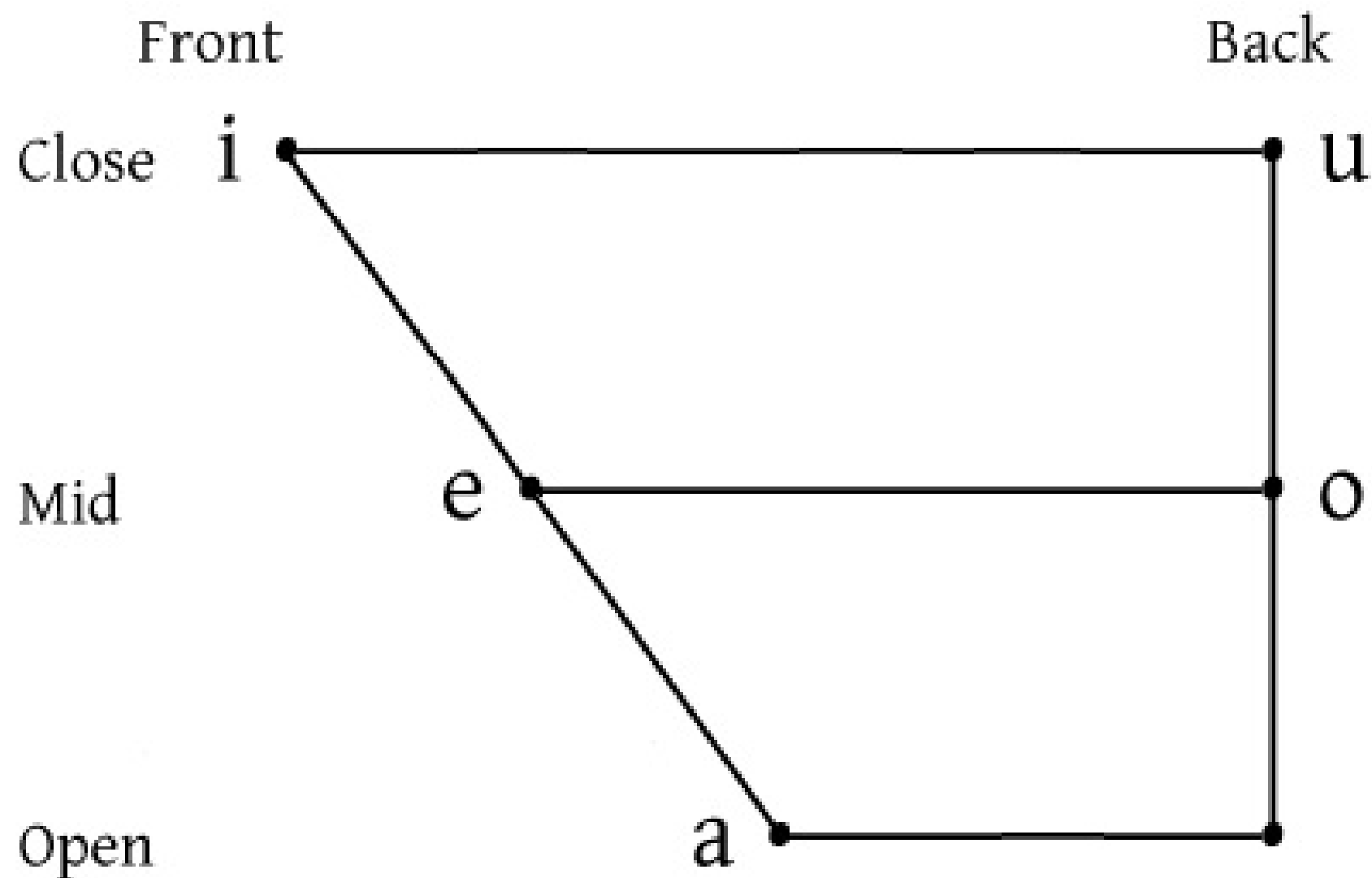
- Estimated number of language isolates in the world: c. 159.
- 39% of the world's language families (c. 407).
- “Monumental importance” to linguistic theory and language typology:
 - each of them “an independent lineage among the world's languages”
 - an invaluable look at what is possible in human language.
- Yet, the comparative method finds most difficulties when applied to languages that lack relatives.
- Saussure (1916: 298) and Meillet (1925: 11-12) assume that no reconstruction is possible in languages such as Basque.

Intro to Basque Phonology

Standard Basque — Euskara Batua (Hualde 2003)

		labial		apical		laminal	predorsal		postdorsal
		bilabial	labio-dental	apico-dental	apico-alveolar		palato-alveolar	palatal	
stop	voiceless	p		t				c	k
	voiced	b		d				ɟ	g
	fricative		f		s	ʃ	ʃ		x
	affricate				ts		tʃ		
	nasal	m			n			ɲ	
	lateral				l			ʎ	
	tap				r				
	trill				r				
	front	central	back						
	high	i		u					
mid	e			o					
low		a							

VOWELS



Vowels at right & left of bullets are rounded & unrounded.

Vowels

- Standard Basque has a simple 5-vowel system which is also found in most varieties of the language: */a, e, o, i, u/*
- Nonetheless, Zuberoan and Mixean Basque have a 6th vowel quality:
 - Described as */y/* in the literature: *üñhürri, hüts, etc.*
 - But potentially [ɥ] in Mixean (Egurtzegi & Carignan 2020).
- Some varieties might have a (yet) non-contrastive [ɛ̞] that developed from the article *–a* through high-vowel assimilation:
mendi + a → mendixe [mẽndiɛ̞], kale + a → kalie [kaliɛ̞], etc.

Vowels

- On the other hand, **Zuberoan Basque** has **nasalized vowels**:
 - **Before or after a nasal**: *abentü* [aβẽ̃nt̪y], *arrano* [arãñõ], *mamu* [mãmũ]
 - **Before or after a /h̃/**: *ahate* [ãh̃ãte], *uhue* [ũh̃ũe] (*ohore*), *ahizpa* [ãh̃ĩ̯pa]
 - **Word finally**, after the loss of a nasal in the final syllable:
salũ /s̺a'lũ/ (*saloin*), *ardũ* /ar'dũ/, *bedezĩ* /bede'zĩ/

Only the last group involves a phonemic opposition, e.g., /ũ/, /ĩ/... The rest are considered allophones of their oral counterparts.

(Although this was not the case of the vowels surrounding /h̃/ not that long ago).

Diphthongs in Basque

/ai/	<i>ibai</i> 'river'
/ei/	<i>hodei</i> 'cloud'
/oi/	<i>lehoi</i> 'lion'
/au/	<i>gau</i> 'night'
/eu/	<i>geure</i> 'our (emphatic)'

Consonants in Basque (manner of articulation)

- **Stops:** /p/ <p>, /t/ <t>, /k/ <k> /b/ , /d/ <d>, /g/ <g> /c/ <tt>, /ʝ/ <dd>
- **Nasals:** /m/ <m>, /n/ <n> /ɲ/ <ñ>
- **Fricatives:** /f/ <f>, /j/, /x/ (South) <j>, /h/ <h>, /ħ/ <h> (Zuberoan)
/s̺/ <z>, /s̻/ <s>, /ʃ/ <x> (sibilants)
- **Affricates:** /t͡s̺/ <tz>, /t͡s̻/ <ts>, /t͡ʃ/ <tx> (affricate sibilants)
- **Laterals:** /l/ <l> /ɭ/ <ll>
- **Rhotics:** /r/ <r> /r/ (South), /R/ (North) <rr>

Consonants in Basque (place of articulation)

- **Bilabials:** /p/, /b/, /m/, /p^h/
- **Labio-dentals:** /f/
- **Dentals:** /t/, /d/, /t^h/
- **Alveolars:** /s̺/, /s̻/, /t̺s̺/, /t̺s̻/, /n/, /l/, /r/, /r/
- **Postalveolars:** /ʃ/, /tʃ/, /ʒ/ (Zuberoan)
- **Palatals:** /c/, /tʃ/, /ɲ/, /ʎ/
- **Velars:** /k/, /g/, /k^h/, /x/ (South)
- **Uvulars:** /R/ (North)
- **Laryngeals:** /h/, /ħ/ (Zuberoan, Mixean)

Stops

- **voiced** vs **voiceless**: *b, d, g* vs *p, t, k*
- voiceless **aspirated**: *ph, th, kh*
- **palatal** stops, not so usual but also part of the language: /c/ *tt*, /ɟ/ *dd*
 - Hypocoristic use: *tipi* → *ttipi*, *aita* → *atta*, etc.

Distribution of voiced vs. voiceless stops

- Opposition:
 - Between vowels (V_V): *zabal vs. zapal; ager vs. aker*
 - Word-initially (#_): *buru vs. puru, du vs. tu, gai vs. kai*
- Neutralization:
 - Word-finally: **-d, *-g > -t, -k: dut but dudan, dudala.*
 - Following a sibilant: *ospe, asto, asko.*
 - CC clusters: No TT or TsT: *dotore, erretore* (vs *doktore, errektore*).
 - Voicing after a sonorant (*l, n*): Lat. *altarem > aldare*, Lat. *tempora > denbora* (many exceptions: *kanpo, kantu, hanka, kolpe, bedeinkatu, malko, anker*).

Aspirated stops

- In **Zuberoan** and **Low Navarrese**.
- **First two syllables** only:
 - (i) Word-initially /#_: *phala, thúta, khanta*
 - (ii) Between vowels /V_V: *bákhun*
 - (iii) Following /r/ /r_: *arthó*
 - (iv) Following /n/ /n_: *manthár*
 - (v) Never after /s_: ***sph, **sth, **skh*, (e.g. *asto, hauspoa, aski*... no ***sb, **sg, **sd* either)

Sibilant fricative and affricates

- Fricatives (voiceless): /ʃ̺/, /ʃ̺/, /ʃ̺/
 - /ʃ̺/ lamino-alveolar fricative
 - /ʃ̺/ apico-alveolar fricative
 - /ʃ̺/ post-alveolar fricative
- All of them with **affricate** counterparts: /tʃ̺/, /tʃ̺/, /tʃ̺/

Sibilant fricative and affricates

- **Distribution:**
 - **Word-initially (/#_):** /s/ and /ʃ/ often, /t͡s/, /t͡ʃ/ rarely (*tzar*, *tzakur*). The distribution of /j/ and /t͡j/ changes from a variety to another.
 - **Between vowels (/V_V):** Opposition between /ʃ/ - /t͡ʃ/, and /s/ - /t͡s/: *azal*, *izan*, *atzo*, *etzi*, *etzan*, *esan*, *osaba*, *atso*, *otso*...
 - **Following a stop (/T_):** only in loans (*seksu*, *absolutu*). In the East, stop + sibilant → affricate (*etsenplu*, *atsolutoki*).
 - **Following a sonorant (/n, l, r_):** sibilant → affricate: *antz*, *pentsa*, *beltz*, *eltze*, *hartz*, *ertz*. But sonorant + fricative + stop: *beltz* > *belztu*, *hortz* > *horzkari*, *mendirantz* > *mendiranzko*...
 - **Preceding a consonant (/_C):** fricatives only: *esne*, *ahizpa*, *gaixto*, *ixtorio*. In compounded words: affricate → fricative: *hotz* > *hoztu*, *hitz* + *tegi* > *hiztegi*, *hetsi* > *hesten*...
 - **Word-finally (/_#):** affricates (*mahats*, *latz*), but, less often, fricatives are also possible (*maiz*, *arnas*).

Laryngeals

- Only in the East nowadays.
 - Restrictions in the distribution of /h/:
 - **only one aspirated segment** in a word: *hilerri*.
 - **only in the first or second syllable:**
hasi, hauts, hortz, ahal, aho, erhi, alhaba, üñhürri...
- Same restrictions for voiceless aspirated stops:
sorthü, sarthü vs. pharkatü, heltü, kobesatü...
- /*h̃*/ only intervocalically in the second syllable (nowadays only found in Zuberoan and Mixean):
añate, oñore, añizpa, miñi...

Other voiceless fricatives: /f/, /x/

- Relatively infrequent.
- The voiceless labio-dental fricative /f/ is contrastive nowadays, but not in earlier times (*festa* / *pesta*; *Fernando* / *Pernando*)
- /x/ is only found in the South, and it's not general even there (only found in loanwords in Bizkaian and High Navarrese).

Voiced sibilant fricatives

- All three counterparts of /s̺/, /s̠/, /x/ in Zuberoan: */z̺/, /z̠/, /z/*
- Mostly in loanwords, but not only:

bedezi /bede̺zi/; *aizina* /ai̺zina/

aisa [ai̺za]

- */z/*, the voiced counterpart of /ʃ/, evolved from an older *j. We find it in **Zuberoan** and in **Bizkaian** (Lekeitio, Bermeo). Utterance-initially it becomes an affricate:

mendia [me̺ɲɖi̺za], *harria* [ari̺za]

jan [ɖ̪̺an] vs. *asko jan dau* [a̺sko̺zã̺ɲɖaw]

Nasals

- Bilabial nasal /m/
- Alveolar nasal /n/
 - Both word-initially and intervocalically: *makila, neska, anaia, amua...*
 - Word-finally only /n/: *esan, egin, izan, izen, lagun, gizon...*
 - They are always voiced.

Nasals

- Palatal nasal /ɲ/
 - It can be phonemic, but it is not frequent in the language.
 - It also has a hypocoristic use: *ñimiño, andereño, Beñat, Arño...*
 - It's often allophonic: *min/miñ, zain/zaiñ, etc.*

Laterals

- Alveolar lateral /l/
 - Word-initially (*lan*), and between vowels (*ile*), word-finally (*zabal*, *azal*)
- Palatal lateral /ʎ/
 - Phonemic?
 - It also has hypocoristic use: *llagun*, *llabur*
 - Often allophonic: *mutila*/*mutilla*, *botila*/*botilla*, etc.

Rhotics

- **Intervocally**
 - Two **contrastive rhotics** (tap and trill): *ere vs. erre, bare vs. barre, gora vs. gorra*
- **Word-finally**
 - **Mostly /r/** at the end of the root: *ur, hor, zakur, eder, sagar*
 - **/r/ rarely**: *ur (> ura), barur (> barura), plater (> platera)*
- **Elsewhere → neutralization:**
 - **Preceding a consonant /_C**: *arto, erne, ertz, arno*
 - **Following a consonant /C_**: *pobre, andre, droga, prakak*
- **Word-initially → Restriction: no rhotics.**
 - Loans with prothetic e-: *errima, errege, Erroma, erregela*
 - Rarely i- or a-: *irrisa, arropa, arrazoin, arratoin, arraza*
 - Nowadays /r/ is also possible in recent loans: *rugbia, Realá...*

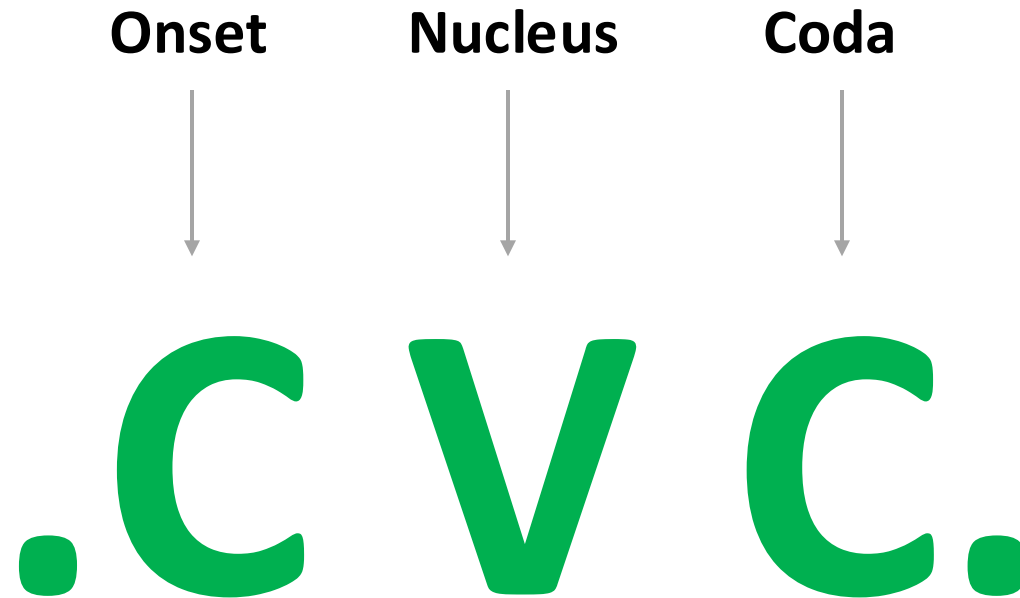
Rhotics

- The tap was lost in **Zuberoan** in the 19th c.:
 - Systematically dropped: *axeri* > *axei*, *gero* > *geo*, etc.
Afterwards, the production of the trill was shortened:
arreba > *areba*, etc.
 - However, it's still not as short as a /r/, and there's a lot of synchronic variation in its production.

Syllable

- An organized sequence of segments smaller than a word, containing at least a nucleus.

[**C** = consonant, **V** = vowel, **.** = syllable boundary]



Syllable onset

- Three possibilities:
 - **No onset:**
V(w), V(w)C, V(w)CC, etc.
 - **Simple onset:**
CV(w), CV(w)C, CV(w)CC, etc.
 - **Consonant cluster:**
CCV(w), CCV(w)C, CCV(w)CC, etc.

Syllable onset

- The only groups allowed in the onset are “muta cum liquida”:
/b, d, g, p, t, k, f/ + /r, l/
 - Some combinations are not attested: **/tl/ and **/dl/.
- Recent loans: *pobre, prakak, fresko, triste, krabelin, gris, dragoi, etc.*
- These clusters were not allowed in earlier stages of the language:
 - Loss of the obstruent: Lat. *placet* > *laket*, Lat. *pluma* > *luma*
 - Vowel epenthesis: Lat. *crucem* > *gurutze*, Lat. *librum* > *liburu*

Syllable nucleus

- Types of nuclei:

- Single vowel:

V, **VC**, **VCC**, **CV**, **CVC**, **CVCC**, **CCV**, **CCVC**, **CCVCC**, etc.

- Diphthong:

Vw, **VwC**, **VwCC**, **CVw**, **CVwC**, **CVwCC**, **CCVw**,
CCVwC, **CCVwCC**, etc.

Syllable nucleus

- In Basque, diphthongs are **falling**: *aita, euskara, suin, etc.*
/a, e, i, o, u/ + /j, w/
- Rising diphthongs are instead produced as hiatuses, separated by a syllable boundary: *men.di.a, na.zi.o, bu.ru.a, zu.ok, su.er.te, si.es.ta...*

Syllable coda

- Three coda options:
 - No coda:
V(w), CV(w), CCV(w), etc.
 - Single consonant:
V(w)C, CV(w)C, CCV(w)C, etc.
 - Consonant cluster:
V(w)CC, CV(w)CC, CCV(w)CC, etc.

Syllable coda

- Fewer possible consonants at the word-internal coda than at the end of the word.
- Consonant clusters:
 - Only two options word-medially.
 - More options word-finally.

Word-internal syllable coda

- A **nasal** sharing the place of articulation of the following consonant: [kãmpo], [ãṇḍre], [ãṇka], [fãṃfarroi], [õṇjo]
- A **liquid** (/r/ or /l/): *alde*, *arto*
- A **sibilant fricative**, shares the voicing of the following consonant : *esne* [eṣnẽ], *eṣti* [eṣti], *ixtorio* [iṣtorio]
- **Consonant clusters in morpheme boundaries:**
 - nasal + sibilant fricative: *mendirantzko* (*mendirantz*)
 - liquid + sibilant fricative : *belztu* (*beltz* + *-tu*)
- Stops and affricates are **disallowed**:
 - Stops are dropped: *doctore* > *dotore* (only maintained in recent loans, *doktore*).
 - Deaffrication: *mendirantz* + *-ko* → *mendirantzko*, *huts* + *-tu* → *hustu*, *beltz* + *tu* → *belztu*

Word-final syllable coda

- A nasal (/n/): *gizon, eman, ehun, egin*
- A liquid (/r/ or /l/, but not /r/): *azal, mutil, adar*
 - /r/ was possible in Roncalese and Zuberoan *(h)ur* vs. *(h)urr*
- A sibilant fricative /ʃ/, /ʒ/, /ʝ/: *arnas, maiz, exkax*
- An affricate /tʃ/, /tʒ/, /tʝ/: *hots, hotz, amets, ametz, honatx*
- A stop /k/, /t/: *zonbat, neskak*
 - /p/ only in phonaesthetic words: *bap! eup! iep!*

Word-final syllable coda

- **Dialectally widespread consonant clusters:**
 - /n/ + affricate: *antz, mendirantz...*
 - Liquid /r, l/ + affricate : *beltz, bortz, beltz, umezurtz, herts...*
 - Fricative sibilant + /t/: *bost, zizt...*
- **+ two other options in the East:**
 - /n/ + stop: *galant, hunk...*
 - /r/ + stop: *idort, bart...*

Synchronic variation and ongoing changes

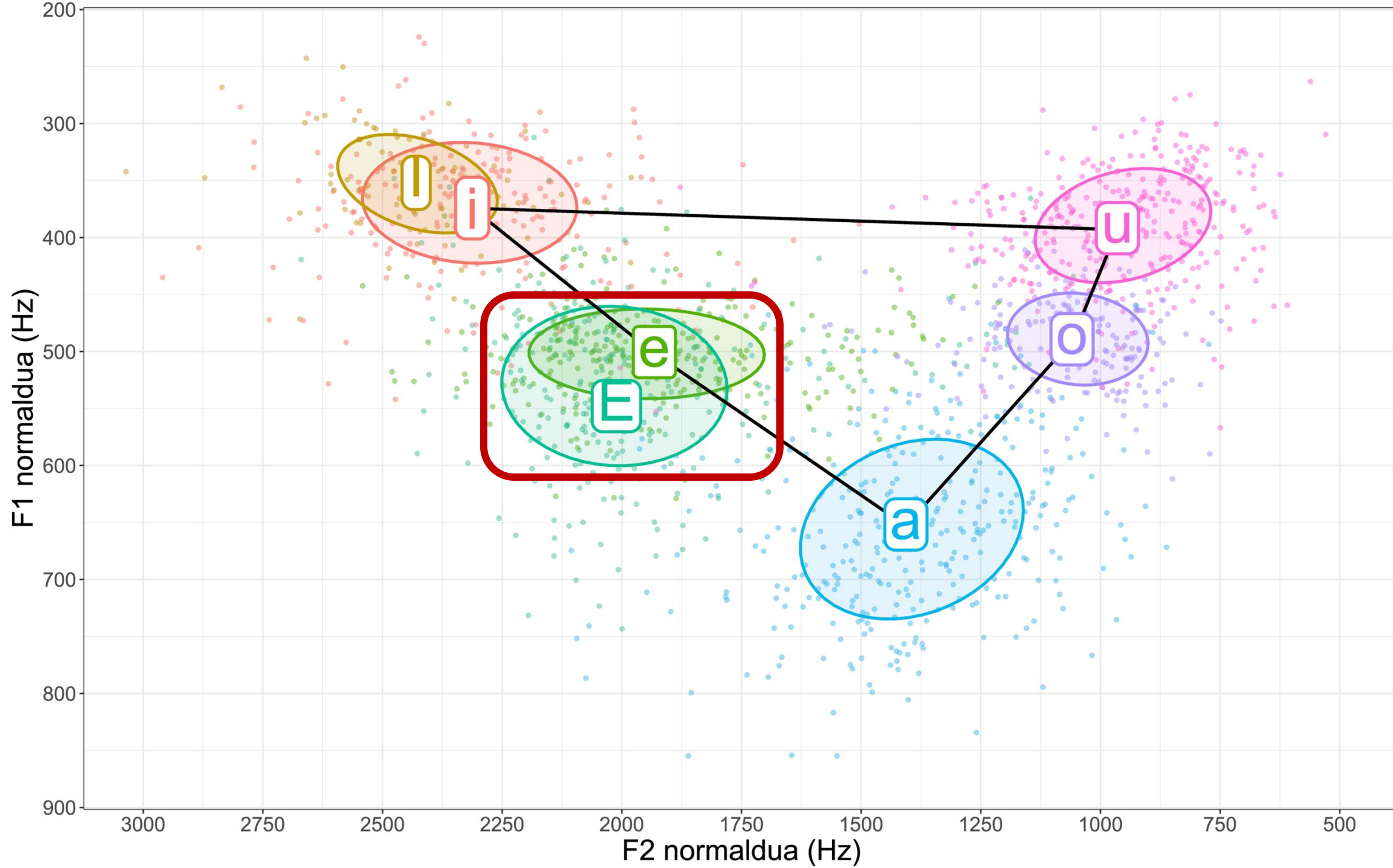
Low vowel assimilation

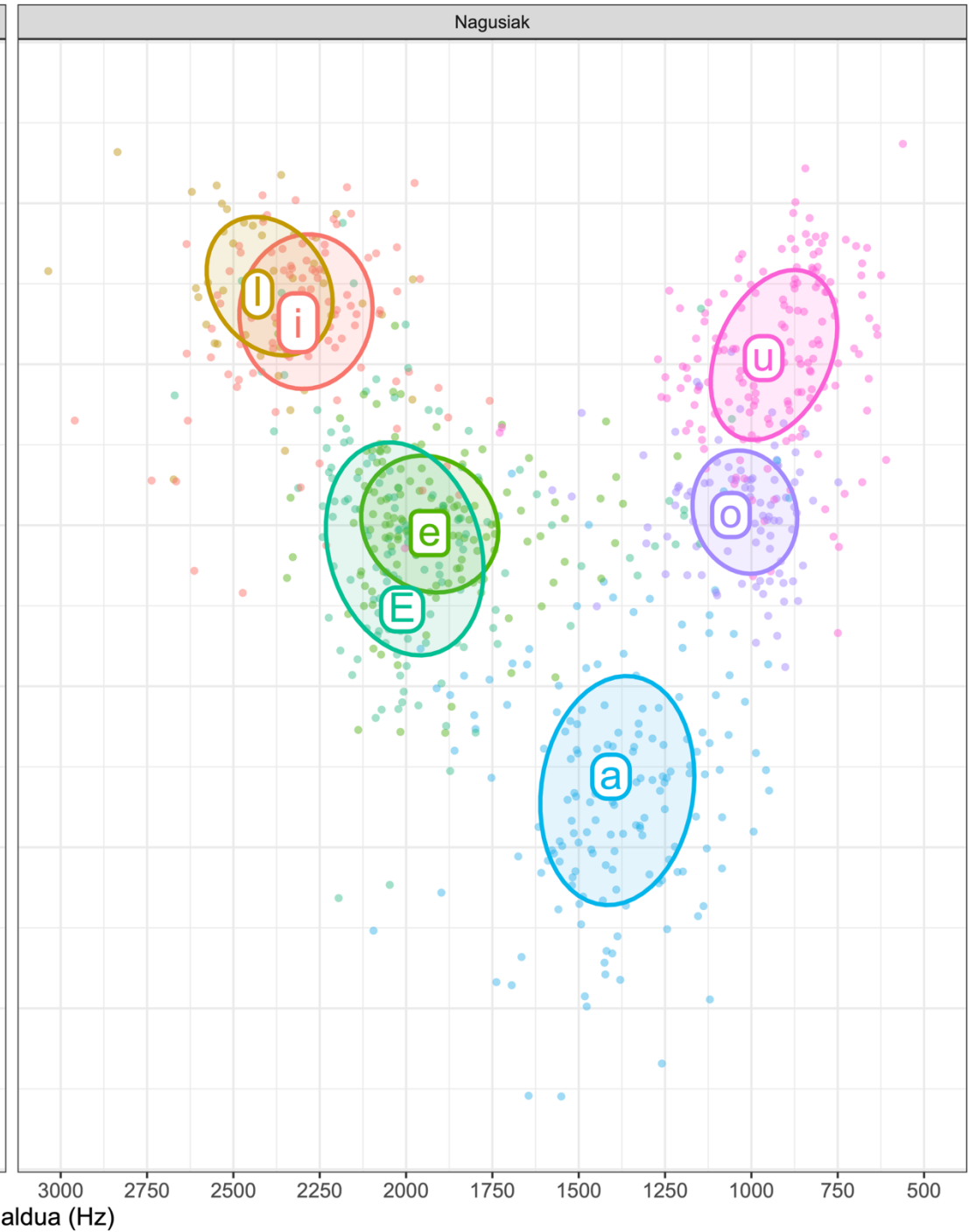
/a/ → [e] /i, u(C)_

- Assimilation: /a/ is produced as [e] when preceded by a high vowel.
- In Bizkaian, Gipuzkoan, and High Navarrese.
- Examples:
 - Word-medially: *indar* ~ *inder*; *mila* ~ *mile*; *izan* ~ *izen*; *sukalde* ~ *sukelde*...
 - Declension: *lagun* ~ *lagune*; *mutil* ~ *mutile*...
 - With *bat* 'one' or auxiliary verbs: *lagun bat* ~ *lagun bet*; *etorri da* ~ *etorri de*...

Low vowel assimilation

- Not found in compounds / with some particular suffixes: ***buru-hendi; **bigerren; **baserriter*.
- In Ondarroa -a needs to be word-final: *lagune* but *lagunak*.
- Usually described as /a/ > /e/, but there's [e̞] in Azpeitia, Azkoitia, Zaldibar, etc.

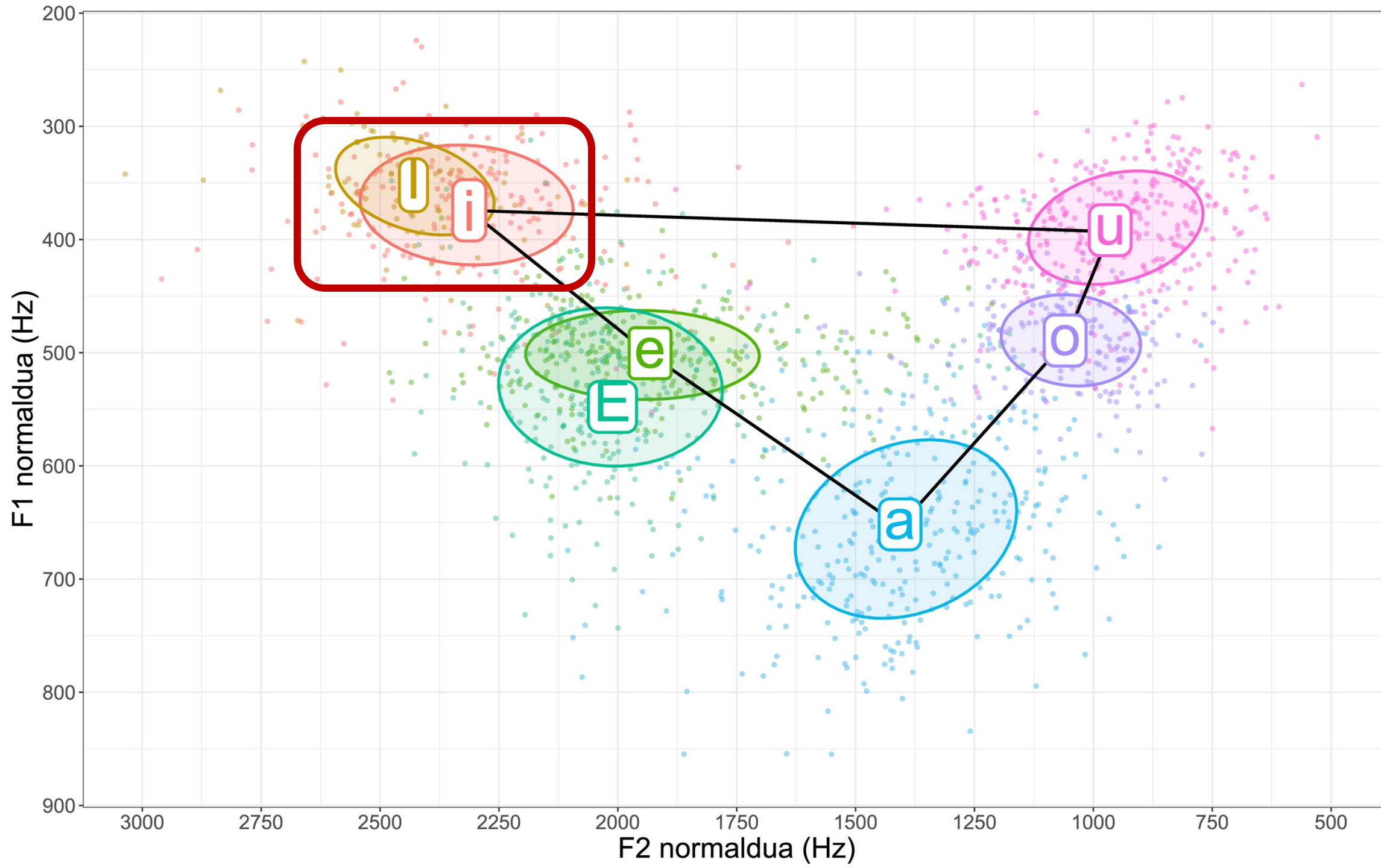


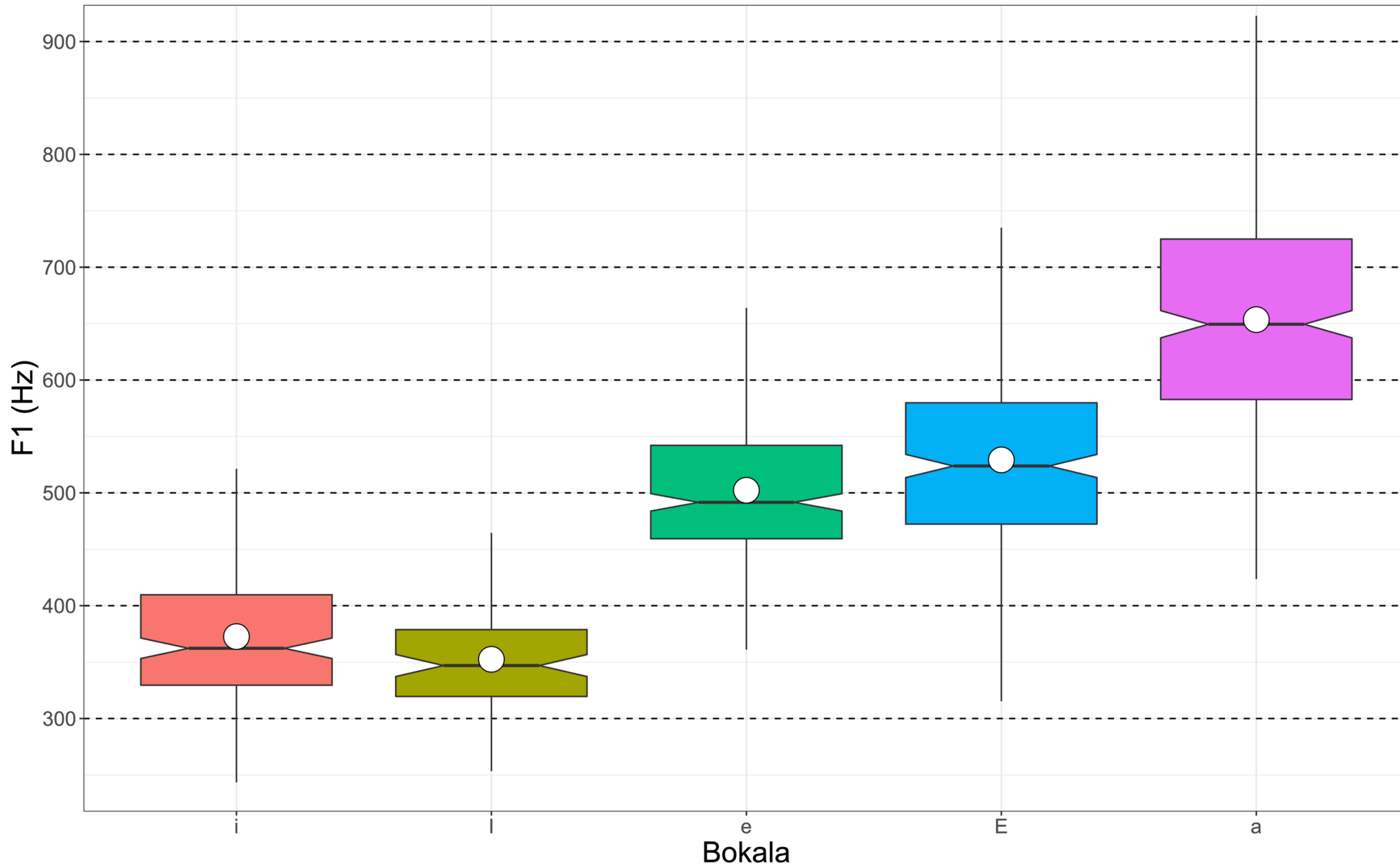


Mid vowel raising

/e/ → [i] and /o/ → [u] / _V

- /e/ is produced as [i], and /o/ is produced as [u] when followed by a vowel (e.g., the determiner *-a*).
- Examples:
 - Declension: *etxe+a* → *etxia*; *kale+a* → *kalia*; *baso+a* → *basua*; *itsaso+a* → *itsasua*
 - Sometimes word-medially: *bear* > *biar*; *beor* > *bior*





Hipotesi lineala	Estimaturua	<i>SE</i>	z-balioa	$Pr(> z)$
I - i == 0	-21.702	8.434	-2.573	ez esanguratsua
e - i == 0	120.625	6.647	18.146	< 0.001
E - i == 0	153.377	6.180	24.820	< 0.001
a - i == 0	280.811	6.206	45.251	< 0.001
e - I == 0	142.327	8.192	17.374	< 0.001
E - I == 0	175.078	7.520	23.281	< 0.001
a - I == 0	302.513	7.661	39.485	< 0.001
E - e == 0	32.752	5.910	5.541	< 0.001
a - e == 0	160.186	5.580	28.705	< 0.001
a - E == 0	127.435	5.332	23.901	< 0.001

Consonant epentheses after high vowels

/∅/ → [j], [ɟ], [tʃ], [ʃ], [ʒ] (depending on the variety) /i_V

/∅/ → [w], [β], [b] (depending on the variety) /u_V

- When a high vowel (/i/, /u/) is followed by another vowel, a consonant is added between the two.
- Examples:
 - Declension, after /i/: *mendi+a* → *mendiya*, *mendidxa*, *mendixa...*
 - Declension, after /u/: *buru+a* → *buruba* (Gipuzkoan and Navarrese); *su+a* → *suya* (Etxepare 1545).
 - Also word-medially: *biar* > *biyar*, *bidxar*, *bixar...*

Vowel raising and complete assimilation

/a/ → [e] /_a (absolute singular)

- Root-final /a/ is produced as [e] in the absolute singular form, dismantling a sequence of two low vowels (dissimilation).
- Western & Central varieties.
- Examples:
 - noun + article = *alaba+a* → *alabea*, *fabrika+a* → *fabrikea...*

Vowel raising and complete assimilation

Consecutive sound changes:

- Dissimilation /aa/ > /ea/ (dissimilatory low vowel raising).
- Dissimilation /ea/ > /ia/ (mid vowel raising) (Lekeitio, Eibar..).
- Assimilatory low vowel raising: /ia/ > /ie/ (Bermeo, Gernika, Azkoitia): *alabie, alkondarie, neskie...*
- Assimilatory development of long vowels: /ie/ > /ii/ (original -a and -e: *alaba, ume*): *umiin ama...*
- Complete assimilation and reduction: *neskie > neskii > neski* (Ondarroa), *neskea > neskee > neske* (Getxo).

Unrounding

/y/ → [i] /_a,e (Zuberoan)

- Examples:
 - Before an article: *lekhü+a* ~ *lekhia*, *lekhiek*, *mündü* ~ *mündia*, etc.
 - In Roncalese, unrounding or metathesis? *lekiua*, *mundiua*, etc.

Regressive rounding assimilation

/i/ → /y/ /_Cy (Zuberoan)

/i/ → /u/ /_Cu (Roncalese)

- Always regressive, additional backing in Roncalese (no /y/).
- Examples:
 - Zuberoan: *ithürri* > *üthürri*, *iñhürri* > *üñhürri*...
 - Roncalese: *iturri* > *uturri*, *iñurri* > *uñurri*...

Vowel loss: *syncope and aphaeresis*

- Unaccented vowels are reduced in Western Navarre (Bortziri, Malerreka).
- Loss of posttonic vowels before a consonant in Arantza: *básotik* > *bástik* 'glass' (vs. *basótik*), *eskólatik* > *eskóltik*, *elízatik* > *elíztik*...
- This results in new clusters and codas: *ateetatik* > *atét.tik* (vs. *atétik*), *eskopeta* > *eskop.ta*, *berriketan* > *berrik.tan*...
 - More complex codas: *(h)an.ketan* > *ank.tan*, *ekar.tzeko* > *kártz.ko*...
- Roncalese & Salazarese: *tipula* > *tupla*, *tempora* > *tempra*...
- Aphaeresis is also attested in Baigorri and Navarre: *(e)maztea*, *(e)karri*

The ongoing fortition of *j

- In Gipuzkoa, Bizkaia and Upper Navarre, pre-vocalic /j/ has undergone the same evolution as in Spanish:

[j] > [j̞] > [ɟ] > [ʝ] > [x]

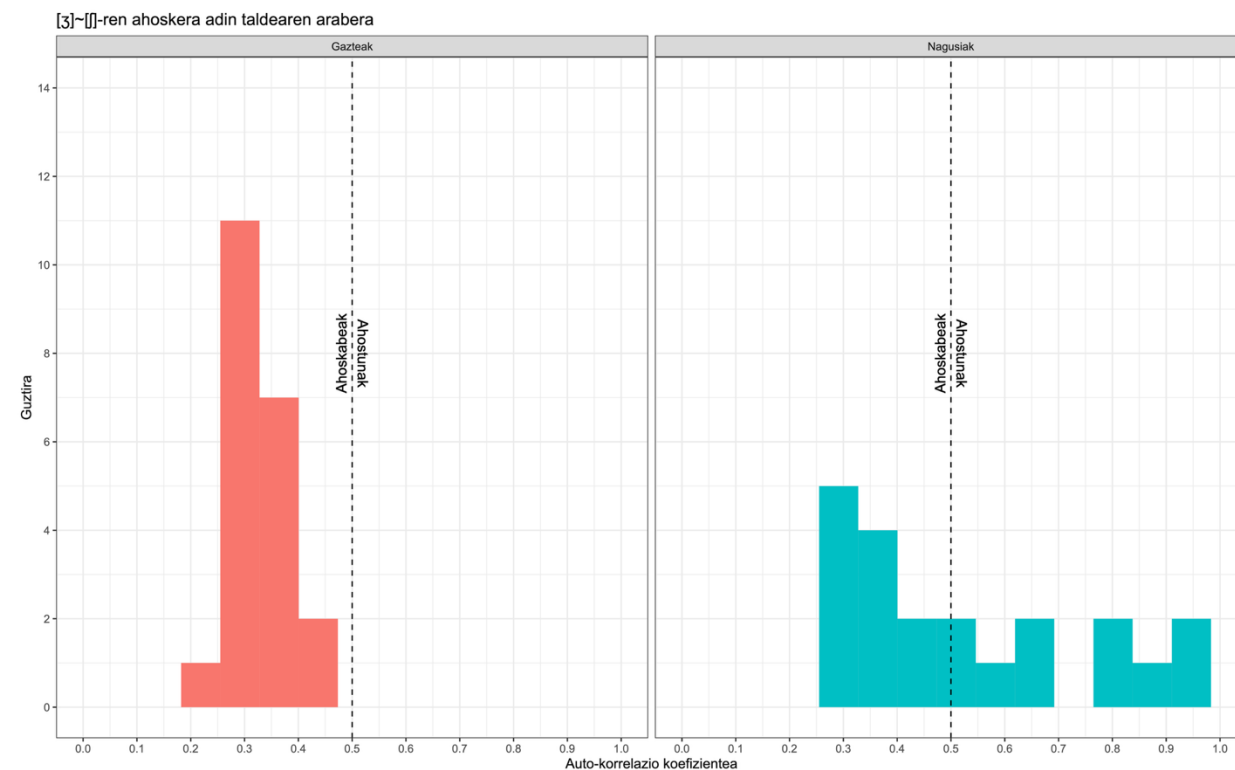
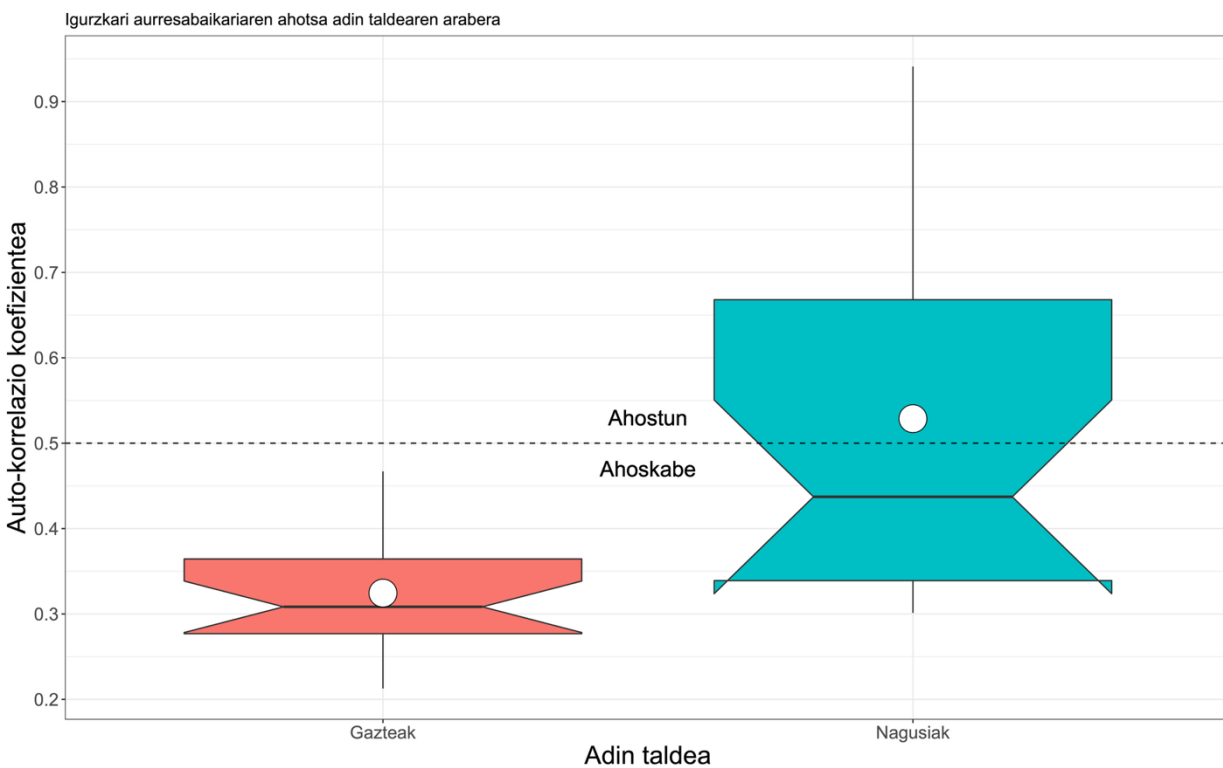
- In other places, this evolution has stalled at some intermediate stage.

The ongoing fortition of *j

- i) In Zuberoan and Northern Bizkaian, a voiced post-alveolar sibilant: [ʒãn].
- ii) In High Navarrese (Erronkari and Zaraitzu) voiceless: [ʃãn].
- iii) Velar [x] mostly in Gipuzkoan. It resulted from contact with Spanish (some adaptations can also be found, e.g. *Jose* > *Kose*).
- iv) In Lapurdian, Low Navarrese, High Navarrese, Bizkaian: [ɟãn].

The ongoing fortition of *j

- Nonetheless, some “stalled” evolutions can eventually continue their course.
 - [ʒ] > [j] in older-to-younger speakers of Zaldibar Basque.



Assimilatory palatalization

/l/, /n/, /t/ → [ʎ], [ɲ], [ç] /i,j_(V)

- Some consonants are palatalized when following a front vowel /i/ or glide [j].
- Examples:
 - *langile* > *langille*, *mutila* > *mutilla*; *ditut* > *dittut*; *mina* > *miña*...

Affective palatalization

/l/ ~ /ʎ/; /n/ ~ /ɲ/; /t/ ~ /c/; /ɣ, ʒ/ ~ /ʃ/

- The same palatalization processes may occur without a triggering phonological context due to affective palatalization.
 - *xuxen, xagu, xahar, xexen, xoxo, xoro.*
- Some affective forms have been lexicalized, and are now unmarked:
 - *txerri, txakur* (*zerri* and *zakur* only for big animals or as insults).
- In fewer varieties /t, d/ and /l, r/ are also affectively palatalized:
 - *tanta ~ ttantta, kutun ~ kuttun, eder ~ edder.*
 - *lagun ~ llagun, labur ~ llabur, polita ~ pollita, bero ~ bello, hori ~ holli.*

Affective palatalization

- In general, varieties with widespread assimilatory palatalization don't show much affective palatalization.
- On the other hand, in varieties with no assimilatory palatalization the incidence of affective palatalization is very high.
- Also used in child-directed speech: *zoazi, errakozu, zatoz... > xaxi, errakoxu, xato...*

Heterosyllabic consonant clusters

- Stop clusters are simplified, both historically and synchronically:
gizonak datoz [giʃõnãtatoʃ], *ez dakit ba* [eʃtakipa].
- Stop + fricative:
 - /t/ + /ʃ, ʒ/ > /tʃ/: *bait zira* [bajtʃira].
 - /k, p/ + /s/ > /t.s/: *lagunak ziren* [lã.ɣũ.nãk.ʃi.rẽn].
 - In the East /t/ + /s/ > /tʃ/ (*absoluto* >> *atsoluto*, *exemple* >> *etsenplu*), also synchronically (*lagunak ziren* > [laɣũnãtʃirẽn]).

Heterosyllabic consonant clusters

$/\widehat{t\text{ɬ}}/ \rightarrow [t\text{ɬ}] / _C$

- Deaffrication before a stop.
- Examples:
 - *hitz ~ hiztegi, hizlari; hortz ~ horzkari; mendirantz ~ mendiranzko...*

Stop devoicing

/D/ → [T] / S_

- Stop devoicing after a sibilant.
- Examples:
 - *gara ~ kara (gara ~ ezgara); bada ~ pada (bada ~ ezpada).*
 - *gain ~ kain (Berrogain ~ Azkaine); doi ~ toi (Ihidoi ~ Ameztoi); di ~ ti (pagadi ~ harizti).*

Stop voicing

/t, k/ → [d, g] /n, l_

- Voicing after sonorants (mostly /n, l/).
- Examples:
 - *-tu ~ -du (nekatu ~ galdu); -ta ~ -da (ikusita ~ eginda); -ko ~ -go (ikusiko ~ jango); -tik ~ -dik (Bidarraitik ~ Irundik); -tar ~ -dar (Bilbotar ~ Baztandar)...*

Sibilant voicing

/ʃ, ʒ/ → [z̞, ʒ̞] /_b,d,g,n,m,l...

– Voicing of sibilants before a voiced consonant.

- Examples:

- *desgogo, ezberdin, esne, asmatu, hizlari...*

- Preceding a stop mostly with prefixes.

- In older words, stop devoicing instead.

Post-sonorant affrication

$/\underset{\text{q}}{\text{s}}, \underset{\text{z}}{\text{s}}/ \rightarrow [\widehat{\text{t}\underset{\text{q}}{\text{s}}}, \widehat{\text{t}\underset{\text{z}}{\text{s}}}] / \text{n, l, r_}$

- Sibilants are affricated when following a sonorant.
- Examples: *zen* ~ *tzen* (*joan zen* → *joantzen*); *zara* ~ *tzara* (*hil zara* → *hiltzara*); *zuen* ~ *tzuen* (*hor zuen* → *hortzuen*).

“Dessibilisation” of affricates

$/\text{tʃ}_\text{ɹ}/ \rightarrow [\text{t}] / \text{S}_\text{}$

- Affricates following a sibilant become stops.
- Examples: *-tzen* ~ *-ten* (*etortzen* ~ *hesten*); *-tzaile* ~ *-taile* (*antolatzaile* ~ *moztaile*).

Intervocalic tap loss

/r/ → [∅] /V_V

- Loss of intervocalic taps.
- Common to many varieties, but systematic in Zuberoan.
- Examples: *zira* ~ *zia*; *zure* ~ *zue*; *hura* ~ *hua*.

Intervocalic voiced stop lenition and loss

/b/, /d/, /g/ → [∅] /V_V

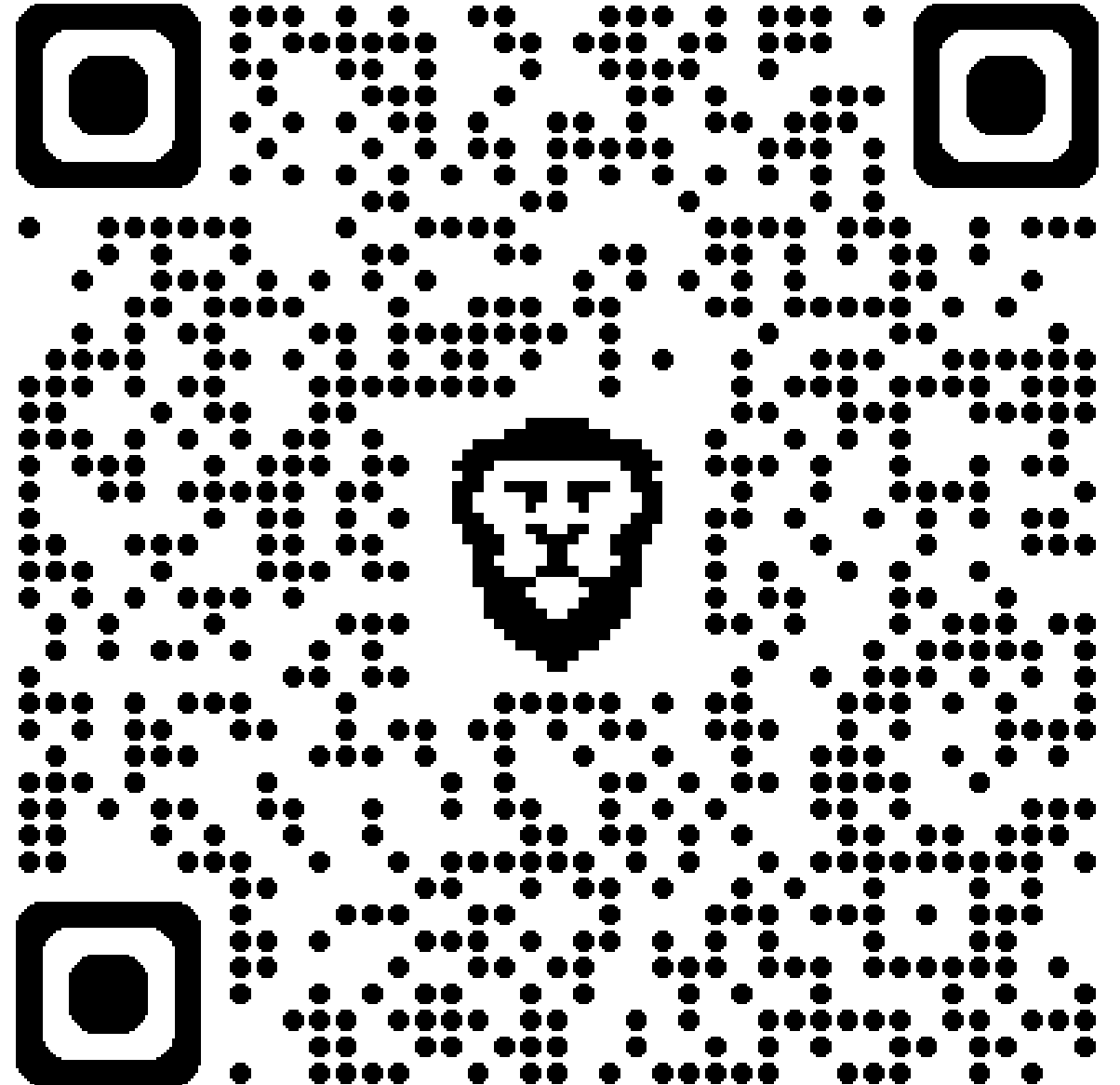
- Intervocalic voiced stops are lenited and often lost.
- Examples: *edan* ~ *eran*; *ederki* ~ *eerki*; *egarri* ~ *earri*.

Next week:

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