2 Phonemic Inventory: The Sounds of the Language

Summary   2.1 Background Information and Observation. – 2.2 Research. – 2.3 Analysis and Description.

2.1 Background Information and Observation

Both Hokkaidō Ainu and Sakhalin Ainu (that will be abbreviated as HA and SA respectively from now on) have five vowels, represented in the latin script by *a*, *e*, *i*, *o*, *u*, and twelve consonants, represented in the latin script by *p*, *t*, *k*, *c*, *s*, *r*, *m*, *n*, *w*, *y*, *h*, '. The apostrophe is used to signal the glottal stop /ʔ/, a plosive glottal voiceless consonant that consists in an obstruction of the airflow in the glottis and produces a sort of pause like when in English we exclaim *uh-oh*.
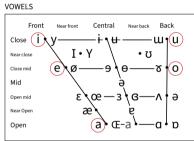
This orthography in the latin script represents the following phonemes. I refer the reader to this interactive IPA chart for sound (http://www.ipachart.com/) and to Ladefoged, Maddieson (1996) among others for further discussion:

Table 1 The Ainu orthography and phonemes

a	/a/	*p*	/p/
e	/e/	*t*	/t/
i	/i/	*k*	/k/
o	/o/	*c*	/t͡ɕ/
u	/u/	*s*	/s/
		r	/ɾ/
		m	/m/
		n	/n/
		w	/w/
		y	/j/
		'	/ʔ/

The following tables show the place of Ainu vowels and consonants in the IPA charts.

Table 2 The Ainu vowels

VOWELS

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

Table 3 The Ainu consonants, labio-velar approximant /w/ and affricate /t͡ɕ/ not included

CONSONANTS (PULMONIC)

	Bilabial	Labiodental	Dental	Alveolar	Post-alveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p　b			t　d		ʈ　ɖ	c　ɟ	k　g	q　ɢ		ʔ
Nasal	m	ɱ		n		ɳ	ɲ	ŋ	ɴ		
Trill	ʙ			r					ʀ		
Tap or Flap				ɾ		ɽ					
Fricative	ɸ　β	f　v	θ　ð	s　z	ʃ　ʒ	ʂ　ʐ	ç　ʝ	x　ɣ	χ　ʁ	ħ　ʕ	h　ɦ
Lateral fricative				ɬ　ɮ							
Approximant		ʋ		ɹ		ɻ	j	ɰ			
Lateral approximant				l		ɭ	ʎ	ʟ			

Where symbols appear in pairs, the one to the right represents a voiced consonant. Shaded areas denote articulations judged impossible.

➔ *Consider this additional information…*

1. Not all consonants of Ainu are allowed to occur at the end of a word. Precisely, the consonants not allowed word-finally are *c*, *h*, and the glottal stop in HA, and *p*, *t*, *k*, *c*, *r*, and the glottal stop in SA.
2. For plosive consonants there is no voiced-voiceless opposition, so that *p*, *t*, *k* can sometimes be realised respectively as *b* [b], *d* [d], *g* [g] without compromising the comprehensibility of the word and without changing its meaning.
3. The syllable structure is identical in HA and SA. SA might have a long vs. short vowel distinction in open syllables, which would have resulted in two more syllable types (i.e. CVV and VV). The status of long vowels is still debated (see Dal Corso 2021). The table below shows the possible syllable structure in both varieties.
4. Syllable-initially and especially between vowels, the glottal stop may or may not be there depending on the speaker's idiolect, or it may disappear in fast speech.
5. Before /i/ the consonant *s* is realised as [ɕ] (e.g. *sisam* > [ˈɕi.sam]).

Table 4 Syllable structure

HA	SA
CV	CV
CVC	CVC
V	V
VC	VC

➔ *Dataset 1 – Plosive consonants*

Consider the following words containing the consonants *p*, *t*, and *k* (the words are within curly brackets and the consonants under scrutiny are in bold). What is the actual pronunciation of *p*, *t*, and *k* in these words? Is the pronunciation always the same or does it change? If it does change, what does the change depend on? What differences between varieties do you notice? What revisions can you make to the information you were previously given?

Set 1.1 (Hokkaidō Ainu)
1. …*tane tunasno aʻuyna* {**k**uni} *hi neno an…*
2. …{**t**anto} *hene ya nisatta hene ya…*
3. …*heru* {i**p**e} *takup aki kor okaan…*
4. …*kani suy iyosno* {ta**p**an} *akor…*
5. …*akotanu un* {nis**p**a} *an kusu keraypo…*

6. …*tanto kani* {ana**k**} *tasum kur kusu…*
7. …{ka**t**u} *renkayne…*
8. …{a'en**k**opisi**p**} *kuye rusuy korka tanto…*
9. …*tono* {**p**uri} *ne yakun neno…*
10. …*ray wa isam* {ponan**p**a} *hi wano…*
11. …*easir* {yup**t**e**k**} *menoko ane kusu…*
12. …{ponkatkema**t**} *a'eoripak wa kusu…*
13. …{eypa**k**asnu**p**a} *kusu…*

Set 1.2 (Sakhalin Ainu)

1. …*'otakata* {**p**oro} *yaani…*
2. …{siri**p**irika} *kusu sakiita neampe…*
3. …*'anihi* {kamuyu**t**arikehe} *naa…*
4. …*'anunuhu* {'in**k**araha} *neampe…*
5. …*cascas kanne orowa cas wa 'oman kanna cas wa* {hosi**p**i}…
6. …*ran nean tani* {ci**p**} *tani 'atuykata rehta repun…*
7. …*'oman* {**k**usu} *neyke nean…*
8. …*pateh* {'an**t**ekihi} *'utah nimpa…*
9. …*husko 'aynu neyke kiro* {pate**k**} *'us…*
10. …*cih'ohta* {sa**p**ahci} *teh…*
11. …{ma**t**} *naa korohci…*
12. …*kito* {**t**ahci} *'usikehe woonekahci kusu arikihcihi…*

→   *Dataset 2 – The sibilant consonant* s

Consider the following words containing the consonant *s* (the words are
within curly brackets and the consonants under scrutiny are in bold). What
is the actual pronunciation of *s* in these words? Is the pronunciation al-
ways the same or does it change? If it does change, what does the change
depend on? What differences between varieties do you notice? What
revisions can you make to the information you were previously given?

Set 2.1 (Hokkaidō Ainu)

1. …*tane* {oru**s**pe} *ne yakka…*
2. …*nep akor* {ru**s**uy} *ka somo ki…*
3. …*orowano* {i**s**aci**s**e} *orun suy karpa oasi* {ku**s**}…
4. …*tanto kani anak* {ta**s**um} *kur kusu…*
5. …*tanpe poka pirka* {**s**ekor} *kuyaynu wa…*
6. …*nen poka tono* {ni**s**pa} *ka* {niwke**s**} *pe…*
7. …*hine* {rew**s**i} *okaan…*
8. …*aonaha aunuhu cis rok* {ci**s**} *rok kor…*
9. …{tektak**s**a} *poka e'ekar wa…*
10. …*kuhenoye* {**s**iri} *ne wa…*
11. …{a**s**e} *aeyayetokoyki…*

Set 2.2 (Sakhalin Ainu)

1. …*tah pahno* {**s**oyta} *'an teh…*
2. …*nean 'episkanpe ka* {'ahka**s**} *wa…*
3. …{'ara**s**uy} *kayki nean 'onnewrap 'uyna…*
4. …*kanna* {ni**s**kuru'onne} *rikinkehci kun pe he ka…*
5. …*'okayahci yayne* {**s**ine} *paa inuhci koh…*
6. …{ci**s**} *turano neya…*
7. …*'emuyke kehke wa cokoko wa* {'i**s**am}…
8. …*neya* {'a**s**pe} *koro kamuy…*
9. …*'ampene* {ke**s**etuyram} *'ankoro* {kesetuy**s**iw} *'ankoro kusu…*
10. …{ruron**s**ota} *'oman manu ike…*
11. …*paye'anihi teh* {'etara**s**an}…

2.2 Research

Now look at this other dataset and also read the examples from other languages given after it, which you will need for the third and last activity of this lesson.

➔ *Dataset 3 – The consonants* r *and* h

Consider the following words containing *r* and *h* (the words are within curly brackets and the consonants under scrutiny are in bold). What is the actual pronunciation of *r* and *h* in these words? Is the pronunciation always the same or does it change? If it does change, what does the change depend on? What differences between varieties do you notice?

Set 3.1 (Hokkaidō Ainu)

1. …*nokanan* {**h**ine} *anakne…*
2. …{si**r**kunne} *akus ene…*
3. …*kotan awente cis* {tu**r**a}…
4. …{u**h**uy} *nicica* {ci**h**etarpare} *<i> iyayko'okka…*
5. …*siyamam ka* {**h**etukpa} *a* {ko**r**ka}…
6. …*e* {easi**r**} *ukokusispa…*
7. …*tapan pe* {**r**ekor}…
8. …{unpi**r**ma} *an kusu…*
9. …*kamuy* {**r**enkayne} {**r**i} *usketa okaan kusu…*
10. …{**h**uci} *utar upaskuma…*
11. …*hemanta etoko* {yayka**r**} *kusu…*
12. …*nis* {koto**r**} *epitta nociw kur ka…*
13. …{kuyaykorpa**r**e} *hine…*
14. …*amaketa* {to**h**o} *anakne…*
15. …*itak uturu ne wa siran* {**r**uwe} *un…*
16. …{si**r**ukopuk**r**ototke} {siryas**r**ototke}…

Set 3.2 (Sakhalin Ainu)

1. …*siska tarayka* {na**h**} *'ayyee…*
2. …*sine 'orohko* {**r**ayki} *teh…*
3. …{hekaci'i**h**unkeh} *nee manuu…*
4. …*temana 'an sampe koro* {'uta**r**} *ee…*
5. …{'a**h**un} *manu neya sahpemuy 'ampa teh…*
6. …*neya* {supa**r**a} {**h**aaciri} *manu…*
7. …{**h**usko} *'ohta nah 'an…*
8. …{tukusi**h**} *naa hemoy naa cuhceh naa…*
9. …{eo**r**uspe} *korohci…*
10. …{**h**enke} *tu 'Orohko rayki* {te**h**}…
11. …*tu* {mahteku**r**} *teepis pateh 'an yahka…*
12. …*'ohkayo nee* {**r**uuhe'an} *manuu…*
13. …{kira**r**ehci} *manu ike* {neero**h**} *hekacita tani…*
14. …{**r**eeko**h**} *manka 'ohkayone 'okayahci…*
15. …*ku'ani tani* {toomu**h**} *kanne ku'itah omantene tani 'uwasi…*
16. …{neete**h**} *'orowa cukiita* {**h**osipihci} *teh tani…*

Examples from Other Languages

Italian (Romance, Italy)

What does the distribution of the sounds /p/ and /t/ in Italian tell us?

toro	/ˈtɔro/
poro	/ˈpɔro/
vista	/ˈvista/
vispa	/ˈvispa/
posto	/ˈpɔsto/
tosto	/ˈtɔsto/

In Italian, the distribution and overall the presence of the sounds /p/ and /t/ in a word cannot be **predicted** on the basis of the other sounds in that word – see the words 'toro' and 'poro' that have, besides /p/ and /t/, the same vowels and the same consonant (i.e. they are **minimal pairs**). The sounds /p/ and /t/ can appear in the same **phonetic environment**, in words with different meanings – they are therefore said to be in **contrastive distribution**. When two sounds are in contrastive distribution and their alternation causes a change in a word's meaning then these sounds represent **(separate) phonemes** of that language.

Hupa (Athabaskan, USA)
(examples from Genetti 2014, 59)

[tʰaːqʼ]	'three'
[taxʷeːt]	'how'
[nɪtaʔ]	'your mouth'
[nɪtʰaʔ]	'your father'
[ɬɪtʃʼuʍ]	'sand'
[tʰaːkʲʼuw]	'sweathouse'
[tʰɪn]	'trail'
[ʍɪmɪtʼ]	'my belly'
[tʃʼɪtʃʷʰuw]	'he is crying'

As exemplified in this limited data set, in Hupa there are no minimal pairs that are differentiated by the vowels [ɪ] and [u]. If we look at the sounds occurring before *and* after [ɪ] and [u] we do not find any identical phonetic environment where they appear – they are not in contrastive distribution, but rather in **complementary distribution**. This means that in some phonetic environments we will find one sound and in others the other sound – the distribution of [ɪ] and [u] is **predictable**. From the examples above we see that [u] only occurs before a labial-velar sounds (either [ʍ] or [w]), while [ɪ] never appears in this environment. We can therefore say that [ɪ] and [u] are **allophones** (different phonetic realisations) of the same phoneme. One or the other realisation depends on the environment where the sound is found. Since [ɪ] appears in the **most varied environments** (i.e. in between all kinds of consonants) but [u] appears only before a labial-velar consonant, we can conclude that /ɪ/ is the **underlying phoneme** (i.e. the 'original' sound) and [u] is the realisation it takes when in presence of a labial-velar consonant.

Formally, we can write this rule we just discovered as:

ɪ > |u| / _ʍ; _w OR ɪ > |u| / _C$_{\text{[labial-velar]}}$

ɪ > |ɪ| / [elsewhere]

Korean (Koreanic, Korea)

[hanɡuk]	'Korea'
[t͡sʰip]	'house'
[kit͡sʰajʌk]	'train station'

In Korean, stops at the end of a word (and generally in coda position within a syllable) are realised as unreleased. We signal the lack of audible sound with '˺' in IPA.

Tausug (Austronesian, Philippines)
(examples from Soderberg, Ashley, Olson, 2012)

[sarsila]	'genealogy'
[palman]	'word'
[salṭaʔ]	'simultaneously'
[parman]	'word'
[sarṭaʔ]	'simultaneously'
[salsila]	'genealogy'

> In Tausug, the phoneme /r/ can be realised either as [r] or as [l] in some words. These words do not change meaning when this change in pronunciation occurs. Preference for one or the other sound in this case depends on the speaker, and precisely on where the speaker lives – in the city or in a village. In this instance [r] and [l] are in **free variation**.

Gujarati (Indo-Aryan, India)
(examples from Esposito, Dowla Khan 2012)

[ba̤r]	'outside'
[ba̤nũ]	'excuse'
[dɔ̤lũ]	'polluted'

> In Gujarati, vowels can be pronounced with less strength, almost as breathing or whispering, This happens under the influence of particular syllable structure, tone, and other factors. A **breathy vowel** is signaled in IPA with '̤'.

2.3   Analysis and Description

Once you are finished with your analysis of the data, describe in no less than 300 words the phonetic changes that characterise *r* and *h* in Ainu citing the necessary examples from the analysed data (optionally also describe the phonetic changes occurring for the consonants taken into account in datasets 1 and 2). Try to comment on the following in your description.

- From what premises did your analysis start?
- What have the data you have analysed revealed?
- Try to transcribe into IPA the words you cite as examples.
- Making reference to examples from other languages, how can you technically define what happens in Ainu (and, optionally, how do you formalise these phenomena)?
- What aspects of the pronunciation of *r* and *h* remain dubious?
- In your opinion, what kind of examples could be useful to clarify these doubts?