

4 Inalienable Possessive Forms

Summary 4.1 Background Information and Observation. – 4.2 Research. – 4.3 Analysis and Description.

4.1 Background Information and Observation

HA makes a distinction among first, second, third, and fourth person, while SA only distinguishes first, second, and third person. The term ‘fourth person’ is actually an improper term since it could be easily misunderstood as referring to the obviative person in a direct-inverse alignment (see e.g. Jacques, Antonov 2014). Tamura (2000) prefers to discuss it as ‘indefinite person’. However, since referencing to an indefinite agent is only one of the functions of fourth person, this latter term has found its place in Ainu studies and it continues to be widely employed.

The so-called fourth person of HA is used to mark a first person plural inclusive (that is, a first person plural ‘we’ that includes the speaker and the interlocutor) (1), as opposed to the first person plural exclusive (that is, a first person plural ‘we’ that includes the speaker, some other referent(s) but not the interlocutor). The fourth person is otherwise used to mark an indefinite agent (2), a second person honorific (3) and a first person in direct speech (4).

- (1) *‘Eun ‘i-nu-‘an kuni p somo ne na.*
3/towards AP-hear-4S COND thing NEG COP FP
[These] are things **we** (= you and I) shouldn’t pay attention to.’ (Tamura 2000, 63)

- (2) *Cise-tumam* ‘*anak* *ki* *ani* ‘*a-kar*.
 house-wall TOP reed with **4S**-3PO/make
 ‘The walls of the house are made of reed [lit.: **someone** made the walls of the house with reed].’ (Tamura 2000, 71)
- (3) *Ku-yupo,* *sinenne* ‘*a-ani* *ruwe* *he* ‘*an?*
 1S-older.brother.POSS alone **4S**-3SO/carry DIR.RSN <FOC> DIR.RSN
 ‘Older brother, did **you** carry [that] by yourself?’ (Tamura 2000, 67)
- (4) *Ta-p* ‘*a-e_upaskuma* *tane* *ka* *ki* ... *sekor* *Haca* *sekor*
 this-thing **4S**-APPL-3SO/tell now even SLV/VO/do COMP Haca COMP
 ‘*a-ye* ‘*acapo* *hawean*.
 4S-3SO/say old.man 3SS/speak
 ‘An old man called Haca said: “indeed now **I** tell these facts ...”’ (Tamura 1984, 22)

In SA there is no separate fourth person. In this Ainu variety the personal affixes *an-/an*, cognates of the HA ones, are treated as the default forms for first person plural (Murasaki 1979). Nevertheless, the affixes overlap functionally in the two varieties to some extent, enough that the meanings illustrated in examples (2) and (4) are also attested for the SA *an-/an* (5)-(6). For this reason, it makes sense to acknowledge the presence of a polysemic ‘fourth person’ in SA as well (Dal Corso 2021). Differently from HA, the fourth person forms in SA have become the only way to express first person plural.

There are of course some differences with the HA fourth person. Since there is no separate marking for fourth person and first person plural, a formal distinction between first person plural inclusive and exclusive is absent. Moreover, fourth person markers in SA are not used to cross-reference an honorific second person.

- (5) *Ene* *an* *tok-[i]hi* ‘*an-kara* *pe*.
 like.this 3SS/exist.PC 3/mark-POSS **IP**-3PO/make thing
 ‘Such [enormous] structures [could have made one think that] **someone** made them [on purpose].’ (Dal Corso 2021)
- (6) ‘*An-kamesu-hu* *hee* ‘*an-kaasiw-e[he]* *he* ‘*an-ki* *kusu*
4S-3SO/help-NMLZ FOC **4S**-3SO/aid-NMLZ FOC **4S**-3SO/do CAU.FIN
neampe *nah* *ramu*.
 TOP COMP 3SS/3SO/think
 ‘She thought: “How in the world [can] **I** do to help or assist it?”’ (Dal Corso 2021)

Person is marked on Ainu verbs via affixes (both prefixes and suffixes). In both HA and SA third person singular is signalled by the

lack of affixes. While for HA this is also true for third person plural, in SA this latter can sometimes be marked overtly. **Personal affixes are only used for the subject and the object (or indirect object) of a verb and a maximum of two affixes can be attached to a verb.** The following tables show all personal agreement markers (subject referent) of the verbal paradigm on an intransitive and a transitive verb.

Table 1 Personal agreement affixes of HA and SA with the intransitive verb *mina/miina* ‘laugh’

person	HA	SA
1sg	<i>ku-mina</i>	<i>ku-miina</i>
2sg	<i>e-mina</i>	<i>e-miina</i>
3sg	<i>mina</i>	<i>miina</i>
1pl	<i>mina-as</i>	-
2pl	<i>eci-mina</i>	<i>eci-miina</i>
3pl	<i>mina</i>	<i>miina(-hci)</i>
4	<i>mina-an</i>	<i>miina-an</i>

Table 2 Personal agreement affixes of HA and SA with the transitive verb *nukar/nukara* ‘see, look’, with implied third person singular object

person	HA	SA
1sg	<i>ku-nukar</i>	<i>ku-nukara</i>
2sg	<i>e-nukar</i>	<i>e-nukara</i>
3sg	<i>nukar</i>	<i>nukara</i>
1pl	<i>ci-nukar</i>	-
2pl	<i>eci-nukar</i>	<i>eci-nukara</i>
3pl	<i>nukar</i>	<i>nukara(-hci)</i>
4	<i>a-nukar</i>	<i>an-nukara</i>

→ Consider this additional information...

HA distinguishes between alienable and inalienable possession. When property of something can be suspended or removed, possession is said to be alienable. On the contrary, possession is inalienable when the property of something cannot be denied nor suspended and resumed – this kind of possession is common for nouns referring to body parts, bodily excretions, relatives and family, personal utensils, etc.

HA employs two distinct constructions to mark alienable and inalienable possession. Alienable possession is expressed with an analytic construction involving the verb *kor* ‘have’ on which the possessor is cross-referenced via transitive personal agreement markers in the subject form (7), while inalienable possession is expressed through

dedicated morphology in a synthetic construction (8) (see e.g. Tamura 2000, 81-9; Bugaeva 2004, 19-21).

- (7) 'A-*kor* *cise-soy-ta*.
4S-have house-outside-in
 'Outside of my house [lit.: the house that I have].' (Bugaeva 2004, 291)
- (8) '**A-*unu-hu-***'*oka-ke*.
4S-mother-POSS-behind-PTV
 'Behind my mother.' (Bugaeva 2004, 229)

In the synthetic possessive construction the possessor is again cross-referenced via transitive personal agreement markers in the subject form attached on the possessed noun. This latter noun also hosts the possessive suffix, which is *-hu* in (8).

The vowel in the possessive suffix is not fixed, but it is copied from the final vowel of the noun stem the suffix attaches to – e.g. *kampi* 'letter' > *kampihi* 'his/her/their letter', *sapa* 'head' > *sapaha* 'his/her/their head'. Therefore, we can provisionally treat the possessive suffix as having the form *-hV*. If the noun stem ends in a consonant, the possessive suffix takes the form *-VhV* and the copied vowel is the pre-consonant one in the noun stem – e.g. *kisar* 'ear' > *kisara* 'his/her/their ear', *tek* 'hand' > *tekehe* 'his/her/their hand'.

SA only displays the synthetic possessive construction for all nouns – formally there is no distinction between alienable and inalienable possession (Murasaki 1979, 81-4).

→ Dataset 1 - Transitive agreement¹

Consider the following example sentences and the relative translations (sentences marked with * are ungrammatical). Can you determine the full transitive agreement paradigm of Ainu verbs? Try to fill in the tables below. Can you determine what is the correct version of sentences marked as ungrammatical? What peculiarities do you notice? What generalisations on the syntactic typology of the language can you make? What revisions/additions to the previously given information can you propose?

¹ For the reader's convenience, in this lesson I intentionally repeat Dataset 1 and part of the examples from other languages at the end of the activities from Lesson 3, since a proper understanding of the possessive forms' morphology featured in Dataset 2 follows from having completed (or revised) this activity on personal agreement affixes.

Set 1.1 (Hokkaidō Ainu)

1. <i>Aynu poyson se.</i>	The man carries the baby on his back.
2. * <i>Ciecinukar.</i>	We (exc.) see you all.
3. <i>Huci wakkata kopan.</i>	The old woman hates drawing water.
4. <i>Poyson kuse.</i>	I carry a baby on my back.
5. <i>Yupoho ekopan.</i>	The older brother hates you.
6. <i>Ecinukar.</i>	I see you all.
7. <i>Aese.</i>	Someone carries you on their back.
8. * <i>Kuennukar.</i>	I see myself.
9. <i>Aise.</i>	We (exc.) carry someone on our back.
10. <i>Ecikopan.</i>	I hate you.
11. <i>Poro sike ecise.</i>	You all carry a big luggage on your back.
12. * <i>Ciese.</i>	We (exc.) carry you on our backs.
13. <i>Huci ise.</i>	The old woman carries someone on her back.
14. <i>Aecinukar.</i>	Someone sees you all.
15. <i>Apkas'as.</i>	We (exc.) walk.
16. * <i>Enanukar.</i>	Someone sees me.
17. <i>Aenkopan.</i>	Someone hates me.
18. <i>Eciense.</i>	You all carry me on your back.
19. * <i>Ainukar.</i>	We (inc.) see ourselves.
20. <i>Tan poyson unkopan.</i>	This baby hates us (exc.).
21. <i>Aunse.</i>	Someone carries us (exc.) on their back.
22. <i>Aynu ennukar.</i>	A person sees me.
23. * <i>Eense.</i>	You carry me on your back.
24. <i>Ni ase.</i>	We (inc.) carry firewood on our back.
25. <i>Kuise.</i>	I carry someone on my back.
26. <i>Ecikopan.</i>	We (exc.) hate you all.
27. * <i>Kuekopan.</i>	I hate you.
28. <i>Unnukar.</i>	You see us (exc.).
29. * <i>Ikuse.</i>	I carry someone on my back.
30. <i>Apkasan.</i>	We (inc.) walk.
31. <i>Ni ese.</i>	You carry firewood on your back.
32. <i>Teta eciinukar.</i>	You all see someone here.
33. <i>Eciunkopan.</i>	You all hate us (exc.).
34. <i>Poyson ecinukar.</i>	The baby looks at you all.
35. <i>Ainukar.</i>	Someone sees us (inc.).
36. <i>Ni cise.</i>	We (exc.) carry firewood on our back.
37. <i>Enkopan ruwe?</i>	Do you hate me?
38. <i>Ecise.</i>	We (exc.) carry you on our back.
39. <i>Aynu ka poyson ka unnukar.</i>	The man and the baby look at us (exc.).
40. <i>Eise.</i>	You carry someone on your back.

Set 1.2 (Sakhalin Ainu)

1. <i>Eciinuu.</i>	You all hear us.
2. <i>Tan aynu etura.</i>	This person accompanies you.
3. <i>Wen aynu seta koyki.</i>	The bad man beats up the dog.
4. <i>Ceh ankoyki.</i>	We beat up (= kill) the fish.
5. <i>Ecikoykiyan.</i>	I beat you all.
6. * <i>Eentura.</i>	You accompany me.
7. <i>Annuuhci.</i>	We hear them.
8. <i>Ekasi ucaskuma nuu.</i>	The old man hears the tale.
9. <i>Ennuu.</i>	You hear me.
10. <i>Ukoykian.</i>	We beat up (= strike) ourselves.
11. * <i>Kuenuu.</i>	I hear you.
12. <i>Ahci ecitura.</i>	You all accompany the old woman.
13. <i>Esetaha ekoykihci.</i>	You beat up your dogs.
14. <i>Ennuuhci.</i>	Someone hears me.
15. * <i>Kuenkoyki.</i>	I beat up (= strike) myself.
16. <i>Ecikoykihci.</i>	They beat you all.
17. <i>Enturayan.</i>	You all accompany me.
18. <i>Ahciutah seta koyki.</i>	The old women beat up the dog.
19. <i>Annuu.</i>	We hear them.
20. <i>Inuu.</i>	You hear us.
21. <i>Ahci ka ekasi ka eciturahci.</i>	You all accompany the old woman and the old man.
22. <i>Ahci nuuhci.</i>	The old woman hears them.
23. <i>Ecikoyki.</i>	I beat you up.
24. * <i>Anikoyki.</i>	We beat up ourselves.
25. <i>Iturahci.</i>	They accompany us.
26. <i>Inuuyan.</i>	You all hear us.
27. <i>Ahci kunuu.</i>	I hear the old woman.
28. <i>Anetura.</i>	We accompany you.
29. <i>Ahci ka ekasi ka seta koykihci.</i>	The old woman and the old man beat up the dog.
30. <i>Ahciutah kuturahci.</i>	I accompany the old women.
31. <i>Aynu inuu.</i>	The man hears us.
32. <i>Ekoykihci.</i>	They beat you up.
33. <i>Ahciutah ekasi ka seta ka nuuhci.</i>	The old women hear an old man and a dog.
34. <i>Ekasi ecitura.</i>	The old man accompanies you all.
35. * <i>Ahci nuuhci.</i>	The old woman hears someone.
36. <i>Ecinuuyan.</i>	We hear you all.
37. <i>Ceh ekoyki.</i>	You beat up (= kill) the fish.
38. <i>Aynu 'enkoyki.</i>	The man beats me up.

Transitive agreement paradigm (HA)

	1SO	1PO	2SO	2PO	3SO	3PO	4O
1SS							
1PS							
2SS							
2PS							
3SS							
3PS							
4S							

Transitive agreement paradigm (SA)

	1SO	1PO (4O)	2SO	2PO	3SO	3PO
1SS						
1PS (4S)						
2SS						
2PS						
3SS						
3PS						

Once you are finished, compare your results with the tables in the appendix.

4.2 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 2 - Phonological changes*

Consider the examples given below that show some nouns in the non-possessive and in the possessive forms. All noun forms are given in IPA (note that: indicates a long vowel/double consonant; ungrammatical examples are marked with *). What changes do you notice in the phonological realisation of the possessive suffix $-(V)hV$ and in that of the personal agreement prefixes cross-referencing the possessor? Do you notice any behaviors at odds with the information you were previously given?

Set 2.1 (Hokkaidō Ainu)

1. topa	'group'	topaha	'his/her/their group'
2. set	'nest'	kuset̄ɕiɕi	'my nest'
3. ɕike	'luggage'	aɕikehe	'our (inc.) luggage'
4. kotparā	'chest'	ekotparoho	'your chest'
5. nan	'face'	kunanuɕu	'my face'
6. kewtum	'feeling'	kewtumuɕu	'his/her/their feeling'
7. ʔiriwak	'sibling'	kuiʔiwakiɕi	'my sibling'
8. kew	'body'	eɕikewehe	'you all's body'
9. etu	'nose'	eʔetuɕu	'your nose'
10. kujʔoj	'bladder'	kujʔojehe	'his/her/their bladder'
11. ɕut̄ɕi	'grandmother'	* eɕiɕut̄ɕiɕi	'you all's grandmother'
12. otop	'hair'	t̄ɕotopiɕi	'our (exc.) hair'
13. ɕik	'eye'	kuɕikiɕi	'my eye'
14. emko	'half'	emkoho	'his/her/their half'
15. ru	'path'	t̄ɕiruwehe	'our (exc.) path'
16. etu	'nose'	e:tuɕu	'your nose'
17. osoro	'buttocks'	kosorooho	'my buttocks'
18. mat	'wife'	mat̄ɕiɕi	'his/her/their wife'
19. hapo	'mother'	korɔ hapo	'his/her/their mother'
20. kotparā	'chest'	ekotparo	'your chest'
21. topa	'group'	topa	'his/her/their group'
22. uni	'house'	kuniɕi	'my house'
23. uni	'house'	eɕiʔuniɕi	'you all's house'
24. iriwak	'younger brother'	t̄ɕiriwakiɕi	'our (exc.) younger brother'
25. kisarā	'ear'	ekisaraha	'your ear'
26. ɕike	'luggage'	kuɕike	'my luggage'
27. hon	'belly'	ahoniɕi	'our (inc.) belly'
28. haw	'voice'	kuhawehe	'my voice'
29. kuru	'shadow'	ekuriɕi	'your shadow'
30. ɕut̄ɕi	'grandmother'	eɕiɕikorɔ ɕut̄ɕi	'you all's grandmother'
31. iro	'colour'	kujroho	'my colour'
32. hoku	'husband'	ehokuɕu	'your husband'
33. uni	'house'	eɕiuniɕi	'you all's house'
34. hapo	'mother'	* hapoho	'his/her/their mother'
35. kujʔoj	'bladder'	kujʔoje	'his/her/their bladder'

Set 2.2 (Sakhalin Ainu)

1. ƒikiri	‘marrow’	ƒikiriƒi	‘his/her/their marrow’
2. sapa	‘head’	?esapaha	‘your head’
3. kem	‘blood’	?ekemiƒi	‘your blood’
4. miƒ	‘grandson’	am:iƒiƒi	‘our grandson’
5. seturu	‘back’	eseturuƒu	‘your back’
6. kotan	‘village’	kotaniƒi	‘his/her/their village’
7. teh	‘hand’	anteki	‘our hand’
8. itah	‘speech’	eitakiƒi	‘your speech’
9. utara	‘people’	anutariƒi	‘our people’
10. re:	‘name’	kure:he	‘my name’
11. meko	‘cat’	eƒimekoho	‘you all’s cat’
12. etu	‘nose’	ku?etuƒu	‘my nose’
13. seturu	‘back’	eseturiƒi	‘your back’
14. om	‘thigh’	omiƒi	‘his/her/their thigh’
15. teh	‘hand’	antekiƒi	‘our hand’
16. ƒara	‘mouth’	ƒaruƒu	‘his/her/their mouth’
17. am	‘nail’	kuamiƒi	‘my nail’
18. noh	‘chin’	notiƒi	‘his/her/their chin’
19. etu	‘nose’	kuetuƒu	‘my nose’
20. mun	‘waste’	eƒimuniƒi	‘you all’s waste’
21. seremaka	‘ancestor’	seremakaha	‘his/her/their ancestor’
22. sariani	‘cradle’	ansaraniƒi	‘our cradle’
23. tumam	‘hip’	etumamuƒu	‘your hip’
24. atuj	‘sea’	atujehe	‘his/her/their sea’
25. ƒi?amah	‘savings’	antƒi?amapu	‘our savings’
26. ƒi	‘eye’	eƒiƒikiƒi	‘you all’s eye’
27. jarapoh	‘hip’	aj:arapokiƒi	‘our hip’
28. moƒiri	‘land’	emoƒiriƒi	‘your land’
29. ƒiros	‘ciros (fish)’	antƒirosiƒi	‘our ciros’
30. ƒum	‘sound’	ƒumiƒi	‘his/her/their sound’
31. nan	‘face’	an:anuƒu	‘our face’
32. seh	‘nest’	kusetiƒi	‘my nest’
33. takuƒ	‘shoulder’	eƒitakupiƒi	‘you all’s shoulder’
34. non	‘saliva’	kunoniƒi	‘my saliva’
35. emus	‘sword’	e?emusƒi	‘your sword’
36. ƒi?amah	‘savings’	antƒi?amapu	‘our savings’
37. iporo	‘colour’	kuiporiƒi	‘my colour’
38. ojpeh	‘spoon’	kuojperiƒi	‘my spoon’
39. ƒi	‘boat’	eƒipiƒi	‘your boat’
40. ramah	‘soul’	antamatuƒu	‘our soul’
41. oh	‘spear’	opiƒi	‘his/her/their spear’
42. sapa	‘head’	esapa	‘your head’
43. re:	‘name’	ante:he	‘our name’

44. sas	‘konbu seaweed’	kusasuφu	‘my konbu seaweed’
45. mi:	‘clothes’	kumijehe	‘my clothes’
46. mah	‘wife’	eṭ̄im̄at̄cīi	‘you all’s wife’
47. haw	‘voice’	hawehe	‘his/her/their voice’
48. ru:	‘path’	eruwehe	‘your path’
49. atuj	‘sea’	kuʔatujehe	‘my sea’

Examples from Other Languages...

Ancient Greek (Hellenic, Greece)

γράφειν ‘to write’: perfect tense *γεγραφ- /γεγραφ/

γέγραφα	γεγραφα	‘I have written’
γέγραφας	γεγραφας	‘you have written’
γέγραφε	γεγραφε	‘he has written’
γεγράφαμεν	γεγραφamen	‘we have written’
γεγράφατε	γεγραφατε	‘you all have written’
γεγράφατον	γεγραφατον	‘you two have written’
γέγραμμαι	γεγραμ:ai	‘I have been written’
γέγραψαι	γεγραψai	‘you have been written’
γέγραπται	γεγραπtai	‘he has been written’
γεγράμμεθα	γεγραμ:eθα	‘we have been written’
γέγραφθε	γεγραφθε	‘you all have been written’
γέγραφθον	γεγραφθon	‘you two have been written’

In Ancient Greek the perfect tense of the verb γράφειν is formed from the stem *γεγραφ- [γεγραφ], that is made up of two **bound morphemes**: the verbal root γραφ- and the prefix Ce- (realised as γε- in this instance). When personal endings are added, the final sound of the verbal stem and the first sound of the personal suffix may be difficult to pronounce in sequence. Therefore, one of the two sounds is accommodated to ease pronunciation – one sound undergoes **assimilation** to the other. If the change concerns the second sound in the sequence, assimilation is said to be **progressive**. If the change concerns the first sound in the sequence, assimilation is said to be **regressive**. The case above shows two instances of regressive assimilation in the forms γεγραμμαί, γεγραμμεθα and γεγραπται, where the voiceless bilabial fricative /φ/ assimilates to the bilabial nasal /m/ and to the voiceless dental-alveolar plosive /t/ respectively, acquiring the same manner of articulation thus becoming itself the bilabial nasal [m] in the first case, or the voiceless bilabial plosive [p] in the second case. In all other phonetic environments /φ/ remains unchanged since we do not encounter difficulties in pronunciation.

We can formalise this assimilation as follows:

/φ/ > [m] / _m

/φ/ > [p] / _t

/φ/ > [φ] / elsewhere

The phonological change that concerns /φ/ in the form γεγραψαι is, on the contrary, a case of dissimilation (see below).

Sanskrit (Indo-Aryan, India)

Declension of the noun /go:d^huk/ ‘cow-milker’.

	singular	dual	plural
nom	go:d ^h uk	go:duhaw	go:duh ^h h
voc			
acc	go:duh ^h am	go:d ^h ugb ^h ja:m	go:d ^h ugb ^h i ^h
ins	go:duha:		go:d ^h ugb ^h j ^h h
dat	go:duhe:		go:duha:m
abl	go:duh ^h h	go:duho:h	go:d ^h uk ^h su
gen			
loc	go:duhi		

Throughout its declension, the Sanskrit noun go:d^huk ‘cow-milker’ features two phonological processes. The first process is assimilation (i.e. /k/ > [g] / _C_{voiced}) and the second is **dissimilation** which is the opposite of assimilation. With dissimilation a sound becomes less similar to another to ease pronunciation. In the case at hand the aspiration imposed on the voiced dental-alveolar plosive /d^h/ is lost whenever the voiceless glottal fricative /h/ appears in the noun ending. Like assimilation, dissimilation can be progressive or regressive. We formalise dissimilation in Sanskrit as follows:

/d^h/ > [d] / _uh

Hanunó'o (Austronesian, Philippines)

(data from Olson, Schultz 2002 in Payne 2006, 87)

ʔusa	'one'	kasʔa	'once'
duwa	'two'	kadwa	'twice'
tulu	'three'	katlu	'three times'
ʔupat	'four'	kapʔat	'four times'
pitu	'seven'	kapitu	'seven times'

In Hanunó'o numeral adverbs are formed with the addition of the prefix *ka-* to the cardinal number form. However, the first vowel of the cardinal number form disappears if it is *u*. This phonological process is called **elision** and again it serves to ease pronunciation. In addition to elision, cardinal numbers where *u* is preceded by the glottal stop also show **metathesis** – the glottal stop and the consonant following the elided *u* are inverted. We can formalise elision in adverbial numerals as follows:

/u/ > Ø / C_C

We can formalise elision followed by metathesis as:

/u/ > Ø / ʔ_C; ʔC_i > C_iʔ

If elision concerns the final segment of a word, it is otherwise called **truncation** or **apocope**.

Niimiiputímt (Plateau Penutian, USA)

(data from Aoki 1970)

mæq	'paternal uncle'	næʔmæq	'my paternal uncle'
tot	'father'	nɑʔtot	'my father'
ʔic	'mother'	næʔic	'my mother'
cic	'paternal aunt'	nɑʔcic	'my paternal aunt'

Vowels in Niimiiputímt are divided into two classes – dominant and recessive. This subdivision serves to account for the phonological changes we witness when morphemes containing certain vowels attach to other morphemes. In this language /o/ and /a/ are dominant vowels and /æ/ and /u~ʉ/ are recessive vowels. The vowel /i/ belongs to both groups. When two or more morphemes combine, if any of these morphemes contain a dominant vowel then all recessive vowels present in all the morphemes of that word need to change to their dominant counterpart (see the first singular possessive /næʔ-/ that changes into /nɑʔ-/ under the influence of the dominant vowel /o/ in the noun root /tot/). The reverse does not happen. This phenomenon is called **vowel harmony** and it is a kind of long-distance assimilation, by which two or more non-contiguous sounds assimilate. Since /i/ belongs to both vowel groups it may or may not trigger vowel harmony. We can formalise vowel harmony for the first singular possessive prefix of Niimiiputímt as follows:

V > V_[front] / _ CV_[front]

English (Germanic, UK)
(data from Payne 2006, 76)

ækjəɹət	‘accurate’	ɪnækjəɹət	‘inaccurate’
kɔŋɡruəs	‘congruous’	ɪŋkɔŋɡruəs	‘incongruous’
pɔsəbəl	‘possible’	ɪmpɔsəbəl	‘impossible’
dəskraɪbəbəl	‘describable’	ɪndəskraɪbəbəl	‘indescribable’
tɔləɹənt	‘tolerant’	ɪntɔləɹənt	‘intolerant’
sensɪtɪv	‘sensitive’	ɪnsensɪtɪv	‘insensitive’
vɛɹiəbəl	‘variable’	ɪnvɛɹiəbəl	‘invariable’
ɡlɔɹiəs	‘glorious’	ɪŋɡlɔɹiəs	‘inglorious’
mɛɹʒərəbəl	‘measurable’	ɪmmɛɹʒərəbəl	‘immeasurable’
bæləns	‘balance’	ɪmbæləns	‘imbalance’

Morphemes can take different realisations depending on the **phonological environment** they are in. Sometimes, the phonological processes a morpheme undergoes (among which the ones above) can affect its realisation to the point where it is difficult to recognise the separate forms actually as the same morpheme. Usually semantics helps us in this case, giving us a hint to a same source for the separate forms we see. The prefixes [ɪn-], [ɪm-] and [ɪŋ-] in English are one such case, for which we can assume a same origin given the systematic meaning they contribute to the word they attach to (i.e. a negative meaning). To make linguistic analysis and description easier, morphemes are presented in one ‘representative’ form which may change due to phonological processes – this form is the **underlying form**. The underlying form should be the form that occurs in the largest number of environments and the one that is most difficult to derive by a rule – these two precautions save us a lot of time in writing derivation rules! In the case at hand, [ɪn-] appears before æ, d, t, s, v, [ɪm-] appears before p, m, b, and [ɪŋ-] appears before k, g. The most varied environment is the one of [ɪn-] that we take as our underlying form, while the other two realisations are **alloforms** of this latter. We can formalise the derivation rules as follows:

/ɪn-/ > [ɪm-] / _C_[bilabial]

/ɪn-/ > [ɪŋ-] / _C_[velar]

/ɪn-/ > [ɪn-] / elsewhere

See Payne 2006, 70-3 for further explanation.

4.3 Analysis and Description

Once you finish your analysis of the data, describe, in no less than 300 words, the phonological processes that characterise personal affixes cross-referencing the possessor in HA and SA and the possessive suffix (if any, highlight problematic cases). Try to provide the right name for these processes and, optionally, write a formal rule to describe them.

- From what premises did your analysis start?
- What is the underlying form of the SA first person plural subject/possessor?
- What is the underlying form of the possessive suffix in HA and SA? Justify your answer.
- If any, what doubts remain that prevent you from confidently answering this last question?
- How could these doubts be clarified?