

### 3 Personal Affixes, Reciprocal and Reflexive

**Summary** 3.1 Background Information and Observation. – 3.2 Research. – 3.3 Analysis and Description.

#### 3.1 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), or 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...

1. The verbal prefix *yay-* expresses reflexivity: the action carried out by the doer falls back on them – e.g. *yay-kar* (HA), *yay-kara* (SA) 'become [lit.: make oneself]'
2. The verbal prefix *u-* expresses reciprocity: the verb has a plural subject whose parts carry out an action towards each other – e.g. *u-koyki* (HA, SA) 'fight [lit.: beat each other up]'

→ Dataset 1 - Transitive agreement

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?

## 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>Kuyupoho ekopan.</i>	My 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>Apkasas.</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>Kuyaynukar.</i>	I see myself.
30. * <i>Ikuse.</i>	I carry someone on my back.
31. <i>Apkasan.</i>	We (inc.) walk.
32. <i>Ni ese.</i>	You carry firewood on your back.
33. <i>Teta eciinukar.</i>	You all see someone here.
34. <i>Eciunkopan.</i>	You all hate us (exc.).
35. <i>Poyson ecinukar.</i>	The baby looks at you all.
36. <i>Ainukar.</i>	Someone sees us (inc.).
37. <i>Ni cise.</i>	We (exc.) carry firewood on our back.
38. <i>Enkopan ruwe?</i>	Do you hate me?
39. <i>Eciunukar.</i>	You all look at each other.
40. <i>Ecise.</i>	We (exc.) carry you on our back.
41. <i>Aynu ka poyson ka unnukar.</i>	The man and the baby look at us (exc.).
42. <i>Eise.</i>	You carry someone on your back.
43. * <i>Yayecinukar.</i>	You all see yourselves.

## 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) each other.
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>Yaykukoyki.</i>	I beat up (= strike) myself.
21. <i>Inuu.</i>	You hear us.
22. <i>Ahci ka ekasi ka seta eciturahci.</i>	You all accompany the old woman and the old man.
23. <i>Ahci nuuhci.</i>	The old woman hears them.
24. <i>Ecikoyki.</i>	I beat you up.
25. * <i>Anikoyki.</i>	We beat up ourselves.
26. <i>Iturahci.</i>	They accompany us.
27. <i>Inuuyan.</i>	You all hear us.
28. <i>Ahci kunuu.</i>	I hear the old woman.
29. <i>Anetura.</i>	We accompany you.
30. <i>Ahci ka ekasi ka seta koykihci.</i>	The old woman and the old man beat up the dog.
31. <i>Ahciutah kuturahci.</i>	I accompany the old women.
32. <i>Kuyaykoyki.</i>	I beat up (= strike) myself.
33. <i>Aynu inuu.</i>	The man hears us.
34. <i>Ekoykihci.</i>	They beat you up.
35. <i>Ahciutah ekasi ka seta ka nuuhci.</i>	The old women hear an old man and a dog.
36. <i>Ekasi ecitura.</i>	The old man accompanies you all.
37. * <i>Ahci nuuhci.</i>	The old woman hears someone.
38. <i>Ecinuuyan.</i>	We hear you all.
39. <i>Ceh ekoyki.</i>	You beat up (= kill) the fish.
40. <i>Aynu enkoyki.</i>	The man beats me up.

Transitive agreement paradigm (HA)

	<b>1SO</b>	<b>1PO</b>	<b>2SO</b>	<b>2PO</b>	<b>3SO</b>	<b>3PO</b>	<b>4O</b>
<b>1SS</b>							
<b>1PS</b>							
<b>2SS</b>							
<b>2PS</b>							
<b>3SS</b>							
<b>3PS</b>							
<b>4S</b>							

Transitive agreement paradigm (SA)

	<b>1SO</b>	<b>1PO (4O)</b>	<b>2SO</b>	<b>2PO</b>	<b>3SO</b>	<b>3PO</b>
<b>1SS</b>						
<b>1PS (4S)</b>						
<b>2SS</b>						
<b>2PS</b>						
<b>3SS</b>						
<b>3PS</b>						

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

### 3.2 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 verb forms that appear in the following short sentences. All verb forms are given in IPA (note that: indicates a long vowel/double consonant) and they feature some of the intransitive and transitive personal agreement affixes, and the reflexive and reciprocal prefixes *yay-* [jaj-] and *u-* [u-] that you have just analysed. What changes do you notice in their phonological realisation or in the realisation of the verb they are attached to?

## Set 2.1 (Hokkaidō Ainu)

1. ajnu suma kik'	The man hits the rock.
2. teta itanki kama	I put the bowl here.
3. eṭṭaus	You all extinguish.
4. sajo itanki?or oma	The rice is in the bowl
5. itanki kukik'	I hit the bowl.
6. ɸutṭai seta ere	The old woman feeds the dog.
7. ṭṭaikehe ṭṭama	We (exc.) put down our luggage.
8. atuj?orun kapkas	I walk to the sea.
9. eapkas	You walk.
10. kujosura	I throw someone.
11. ɸunakun eṭṭai?osura ja	Where do you throw it?
12. ajnu pujaraḡ kari suma osura	The man throws the rock through the window.
13. kera?an kam patek'ke	I eat only delicious meat.
14. ɸutṭai ipe	The old woman eats.
15. ajnu itantṭai?ot:a su ama	The man puts the pot on the floor.
16. ṭṭep' ṭṭe ka somo ki	We (exc.) do not eat fish.
17. a?iosura	Someone throws us (inc.).
18. seta aere	We (inc.) feed the dog.
19. utaraḡ uwoma	The people are in each other (=gather together).
20. nupuri ejka	You cross the mountain.
21. ɸutṭai rurū e	The old woman eats soup.
22. suma kosura	I throw the rock.
23. utaraḡ ukik'	The people hit each other.
24. ?a?inukaraḡ	Someone sees us (inc.).
25. kosura	I throw [it].
26. pet?ot:a suma ṭṭosura	We (exc.) throw the rock into the river.
27. ipe?as	We (exc.) eat.
28. juk'pet?orun arapa	The deer goes to the river.
29. toan nupuri kujka	I cross that mountain.
30. ɸutṭai ijere	The old woman feeds us (inc.).
31. tanto kuipe ka somo ki	Today I do not eat.
32. juk:am eṭṭie	You all eat deer meat.
33. poron:o eṭṭai:pe	You all eat a lot.
34. tunasno apkas	They walk fast.
35. pase ṭṭike kuk'	I take a heavy luggage.
36. eciapkas	You all walk.
37. suma ṭṭuk'	We (exc.) take a rock.
38. nupuri ṭṭaika ka eajkap'	We (exc.) cannot cross the mountain.
39. kus	I extinguish.
40. kamuj kuṭikehe uk'	A bear takes my luggage.
41. ipe?an	We (inc.) eat.

## Set 2.2 (Sakhalin Ainu)

- |   |   |
|---|---|
| 1. itanki ku?ampa                       | I bring a bowl.   |
| 2. ajnu ramu                            | The man thinks of it.   |
| 3. ah̄t̄ai jo:nohka                     | The old woman lulls us.   |
| 4. itanki eampaha                       | Do you bring a bowl?  |
| 5. meko t̄ceh kue:re                    | I feed fish to the cat.   |
| 6. nupuru anika:                        | We cross the mountain.  |
| 7. ah̄t̄ai t̄ceh ēt̄ai?e:re            | The old woman feeds you all fish.                                   |
| 8. kuramu                               | I think of it.  |
| 9. ajnu nupuru ika:                     | The man crosses the mountain.                                       |
| 10. ah̄t̄ai iwante                      | The old woman knows us.   |
| 11. ah̄t̄ai ten:ehpo o:nohka            | The old woman lulls the baby.                                       |
| 12. ni: ku?uφ                           | I take firewood.  |
| 13. ni: ēt̄aiuφ                        | You all take firewood.  |
| 14. ajnu haru jajkara                   | The man prepares provisions himself.                                |
| 15. ah̄t̄ai ajnu itah kue:t̄ca:kasno    | I teach the old woman the Ainu language.                            |
| 16. ku?oman                             | I go.   |
| 17. ah̄t̄ai t̄ceh je:re                 | The old woman feed us fish.   |
| 18. seta ni: uφ                         | The dog takes firewood.   |
| 19. nupuru kuika:                       | I cross the mountain.   |
| 20. ah̄t̄ai meko ajnu itah e:t̄ca:kasno | The old woman teaches the Ainu language to the cat.                 |
| 21. ten:ehpo t̄ceh su: o:mare           | The baby puts the fish in the pot.                                  |
| 22. haru aj:ajkara                      | We prepare provisions ourselves.                                    |
| 23. itanki anampa                       | We bring a bowl.  |
| 24. ajnu i?a:re                         | The man makes us sit down.  |
| 25. t̄ceh su: e?o:mare                  | You put the fish in the pot.  |
| 26. antamu                              | We think of it.   |
| 27. meko t̄ceh ēt̄ai:e:re              | You all feed fish to the cat.                                       |
| 28. ah̄t̄ai ajnu itah ije:t̄ca:kasno    | The old woman teaches us the Ainu language.                         |
| 29. ni ku:φ                             | I take firewood.  |
| 30. ah̄t̄ai su: io:mare                 | The old woman puts us in the pot.                                   |
| 31. ten:ehpo t̄ceh ampa                 | The baby brings the fish.   |
| 32. ah̄t̄ai ten:ehpo a:re               | The old woman makes the baby sit down.                              |
| 33. ajnu itanki wo:mare                 | The man puts the bowls away [lit. makes the bowls be in each other] |
| 34. nupuru an?ika:                      | We cross the mountain.  |
| 35. hemata eampaha                      | What do you bring?  |
| 36. ah̄t̄ai aw:ante                     | We know the old lady.   |
| 37. ten:ehpo eo:nohka                   | You lull the baby.  |
| 38. su: kuampa                          | I bring the pot.  |
| 39. nupuru ku?ika:                      | I cross the mountain.   |
| 40. ah̄t̄ai t̄ceh i?e:re                | The old woman feeds us fish.  |



41. ἄρει εἰδιῶφι	You all take the fish.
42. ten:ehpo kuo:nohka	I lull the baby.
43. ajnu an?a:re	I make the man sit.

## Examples from Other Languages...

### Ancient Greek (Hellenic, Greece)

γράφειν 'to write': perfect tense \*γεγραφ-/γεγραφ/

ἔγραφα	γεγραφα	'I have written'
ἔγραφας	γεγραφας	'you have written'
ἔγραφε	γεγραφε	'he has written'
εἰγράφαμεν	γεγραφαμεν	'we have written'
εἰγράφατε	γεγραφατε	'you all have written'
εἰγράφατον	γεγραφατον	'you two have written'
ἔγραμμαι	γεγραμ:αι	'I have been written'
ἔγραψαι	γεγραψαι	'you have been written'
ἔγραπται	γεγραπται	'he has been written'
εἰγράμμεθα	γεγραμ:εθα	'we have been written'
ἔγραφθε	γεγραφθε	'you all have been written'
ἔγραφθον	γεγραφθον	'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 γεγραμμαι, 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<sup>h</sup>uk/ ‘cow-milker’.

	<b>singular</b>	<b>dual</b>	<b>plural</b>
nom	go:d <sup>h</sup> uk	go:duhaw	go:duh <sup>h</sup> h
voc			
acc	go:duh <sup>h</sup> am		
ins	go:duha:	go:d <sup>h</sup> ugb <sup>h</sup> ja:m	go:d <sup>h</sup> ugb <sup>h</sup> ih
dat	go:duhe:		go:d <sup>h</sup> ugb <sup>h</sup> j <sup>h</sup> h
abl	go:duh <sup>h</sup> h	go:duho:h	go:duha:m
gen			go:d <sup>h</sup> uk <sup>h</sup> su
loc	go:duhi		

Throughout its declension, the Sanskrit noun go:d<sup>h</sup>uk ‘cow-milker’ features two phonological processes. The first process is assimilation (i.e. /k/ > [g] / \_C<sub>voiced</sub>) 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<sup>h</sup>/ 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<sup>h</sup>/ > [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<sub>1</sub> > C<sub>1</sub>ʔ

Ancient Greek (Hellenic, Greece)

Declension of the noun ἀνὴρ 'man' /aner/ (root \*ανρ- /anr/)

ἀνὴρ	aner	'the man'
ἀνδρός	andros	'of the man'
ἀνδρί	andri	'to the man'
ἄνδρα	andra	'the man'
ἄνερ	aner	'oh man'

The declension of the noun ἀνὴρ 'man' in Ancient Greek starts from the root \*ανρ- /anr/ that contains a consonant cluster that is difficult to pronounce (i.e. /nr/). In order to ease pronunciation, an epenthetic sound is added – this process is called **insertion** (or **epenthesis**) and it is the opposite of elision.

We formalise insertion as it appears in the case at hand as follows: Ø > [d] / n\_r

English (Germanic, UK)

(data from Payne 2006, 76)

ækjəət	'accurate'	ɪnækjəət	'inaccurate'
kɒŋɡruəs	'congruous'	ɪŋkɒŋɡruəs	'incongruous'
pɒsəbəl	'possible'	ɪmpɒsəbəl	'impossible'
dəskraɪbəbəl	'describable'	ɪndəskraɪbəbəl	'indescribable'
tɒləənt	'tolerant'	ɪntɒləənt	'intolerant'
sensɪtɪv	'sensitive'	ɪnsensɪtɪv	'insensitive'
veɪriəbəl	'variable'	ɪnveɪriəbəl	'invariable'
ɡlɒriəs	'glorious'	ɪŋɡlɒriəs	'inglorious'
meɪzərəbəl	'measurable'	ɪmmeɪzərəbəl	'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 of the 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<sub>[bilabial]</sub>

/ɪn-/ > [ɪŋ-] / \_C<sub>[velar]</sub>

/ɪn-/ > [ɪn-] / elsewhere

See Payne 2006, 70-3 for further explanation.

### 3.3 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 of HA and SA. Provide the right name for them and, optionally, write a formal rule to describe them.

- From what premises did your analysis start?
- What is the underlying form of the HA first person singular subject and of the SA first person plural subject/fourth person (in transitive agreement)? Justify your answer.
- What type of alignment does Ainu display?
- If any, what doubts remain that prevent you from confidently answering this last question?
- How could these doubts be clarified?