Aymara Tense/Person Agreement

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Outline

- Overview of the language and the paradigm
- Linearisation
- Reduplication and vowel deletion
- Vocabulary entries

Aymara

- isolate language spoken in parts of Peru, Bolivia, Chile and Argentinia
- SOV, suffix-only, modifier-head word order
- 4 person categories: 1st person, 2nd person, 3rd person, 3rd person inclusive (further referred to as 1in)
- 4 core tenses: future (FUT), simple (SIM), recent past (RCPST), remote past (RMPST)

The Paradigm

	FUT	SIM	RCPST	RMPST
1⁝3	:	$_c$ta$_c$[1]	ja:ta$_c$	ta:ta$_c$
2⁝3	:ta	$_c$ta	ja:ta	ta:ta
3⁝3	ni	$_c$i	:na$_c$	tajna
1in⁝3	ñani	$_c$tana$_c$	ja:tan$_c$	ta:tan$_c$
1⁝2	:ma	$_c$sma	ja:sma	ta:sma
3⁝2	:tama$_c$	$_c$tama$_c$	ja:tam	ta:tam
2⁝1	$_c$ita:ta	$_c$ista	$_c$istana	$_c$ista(:)sta
3⁝1	itani	$_c$itu	$_c$itana	$_c$itu(:)tu
3⁝1in	istani	$_c$istu	$_c$istana	$_c$istu(:)tu

[1] Some of the suffixes trigger lengthening of the preceding vowel (indicated by ":") or deletion / shortening of the preceding or following vowel (indicated by subscript c)

Examples

(1) *sara* - 'to go'

	singular	plural
1⩥3.SIM	sar-$_c$ta	sara-p-$_c$x$_c$-$_c$ta
2⩥3.SIM	sar-$_c$ta	sara-p-$_c$x$_c$-$_c$ta
3⩥3.SIM	sar-$_c$i	sara-p-$_c$x$_c$-$_c$i
1in⩥3.SIM	sar-$_c$tana	sara-p-$_c$x$_c$-$_c$tana

When followed by another suffix, for example the declarative suffix *-wa*, the 1⩥3 suffix loses its vowel:

(2)

1⩥3.SIM	sar-$_c$t$_c$-wa
2⩥3.SIM	sar-$_c$ta-wa

Coler (2015) on the paradigm

"Despite the fact that constitutional elements of the traditional tense suffixes never seperate, **it is tempting to try to take apart the subject and object components of these suffixes**. There is, afrerall, clearly a similarity between some of the suffixes [...] **However, it is impossible to systematically break down these suffixes into tense + person compounds in a regular and meaningful way.**"
(Coler 2015:529, emphasis mine)

Regularities in the paradigm I

	FUT	SIM	RCPST	RMPST
1⩺3	:	$_c$ta$_c$	ja:ta$_c$	ta:ta$_c$
2⩺3	:ta	$_c$ta	ja:ta	ta:ta
3⩺3	ni	$_c$i	:na$_c$	tajna
1in⩺3	ñani	$_c$tana$_c$	ja:tan$_c$	ta:tan$_c$
1⩺2	:ma	$_c$sma	ja:sma	ta:sma
3⩺2	:tama$_c$	$_c$tama$_c$	ja:tam	ta:tam
2⩺1	$_c$ita:ta	$_c$ista	$_c$istana	$_c$ista(:)sta
3⩺1	itani	$_c$itu	$_c$itana	$_c$itu(:)tu
3⩺1in	istani	$_c$istu	$_c$istana	$_c$istu(:)tu

Regularities in the paradigm II

	FUT	SIM	RCPST	RMPST
1⩺3	:	$_c$ta$_c$	ja:ta$_c$	ta:ta$_c$
2⩺3	:ta	$_c$ta	ja:ta	ta:ta
3⩺3	ni	$_c$i	:na$_c$	tajna
1in⩺3	ñani	$_c$tana$_c$	ja:tan$_c$	ta:tan$_c$
1⩺2	:ma	$_c$sma	ja:sma	ta:sma
3⩺2	:tama$_c$	$_c$tama$_c$	ja:tam	ta:tam
2⩺1	$_c$ita:ta	$_c$ista	$_c$istana	$_c$ista(:)sta
3⩺1	itani	$_c$itu	$_c$itana	$_c$itu(:)tu
3⩺1in	istani	$_c$istu	$_c$istana	$_c$istu(:)tu

Regularities in the paradigm III

	FUT	SIM	RCPST	RMPST
1⩺3	:	$_c$ta$_c$	ja:ta$_c$	ta:ta$_c$
2⩺3	:ta	$_c$ta	ja:ta	ta:ta
3⩺3	ni	$_c$i	:na$_c$	tajna
1in⩺3	ñani	$_c$tana$_c$	ja:tan$_c$	ta:tan$_c$
1⩺2	:ma	$_c$sma	ja:sma	ta:sma
3⩺2	:tama$_c$	$_c$tama$_c$	ja:tam	ta:tam
2⩺1	$_c$ita:ta	$_c$ista	$_c$istana	$_c$ista(:)sta
3⩺1	itani	$_c$itu	$_c$itana	$_c$itu(:)tu
3⩺1in	istani	$_c$istu	$_c$istana	$_c$istu(:)tu

Regularities in the paradigm IV

	FUT	SIM	RCPST	RMPST
1⩺3	:	$_c$ta$_c$	ja:ta$_c$	ta:ta$_c$
2⩺3	:ta	$_c$ta	ja:ta	ta:ta
3⩺3	ni	$_c$i	:na$_c$	tajna
1in⩺3	ñani	$_c$tana$_c$	ja:tan$_c$	ta:tan$_c$
1⩺2	:ma	$_c$sma	ja:sma	ta:sma
3⩺2	:tama$_c$	$_c$tama$_c$	ja:tam	ta:tam
2⩺1	$_c$ita:ta	$_c$ista	$_c$istana	$_c$ista(:)sta
3⩺1	itani	$_c$itu	$_c$itana	$_c$itu(:)tu
3⩺1in	istani	$_c$istu	$_c$istana	$_c$istu(:)tu

Regularities in the paradigm V

	FUT	SIM	RCPST	RMPST
1⩺3	:	$_c$ta$_c$	ja:ta$_c$	ta:ta$_c$
2⩺3	:ta	$_c$ta	ja:ta	ta:ta
3⩺3	ni	$_c$i	:na$_c$	tajna
1in⩺3	ñani	$_c$tana$_c$	ja:tan$_c$	ta:tan$_c$
1⩺2	:ma	$_c$sma	ja:sma	ta:sma
3⩺2	:tama$_c$	$_c$tama$_c$	ja:tam	ta:tam
2⩺1	$_c$ita:ta	$_c$ista	$_c$istana	$_c$ista(:)sta
3⩺1	itani	$_c$itu	$_c$itana	$_c$itu(:)tu
3⩺1in	istani	$_c$istu	$_c$istana	$_c$istu(:)tu

Regularities in the paradigm VI

	FUT	SIM	RCPST	RMPST
1⩺3	:	$_c$ta$_c$	ja:ta$_c$	ta:ta$_c$
2⩺3	:ta	$_c$ta	ja:ta	ta:ta
3⩺3	ni	$_c$i	:na$_c$	tajna
1in⩺3	ñani	$_c$tana$_c$	ja:tan$_c$	ta:tan$_c$
1⩺2	:ma	$_c$sma	ja:sma	ta:sma
3⩺2	:tama$_c$	$_c$tama$_c$	ja:tam	ta:tam
2⩺1	$_c$ita:ta	$_c$ista	$_c$istana	$_c$ista(:)sta
3⩺1	itani	$_c$itu	$_c$itana	$_c$itu(:)tu
3⩺1in	istani	$_c$istu	$_c$istana	$_c$istu(:)tu

Regularities in the paradigm VII

	FUT	SIM	RCPST	RMPST
1⩺3	:	$_c$ta	ja:ta$_c$	ta:ta$_c$
2⩺3	:ta	$_c$ta	ja:ta	ta:ta
3⩺3	ni	$_c$i	:na$_c$	tajna
1in⩺3	ñani	$_c$tana$_c$	ja:tan$_c$	ta:tan$_c$
1⩺2	:ma	$_c$sma	ja:sma	ta:sma
3⩺2	:tama$_c$	$_c$tama$_c$	ja:tam	ta:tam
2⩺1	$_c$ita:ta	$_c$ista	$_c$istana	$_c$ista(:)sta
3⩺1	itani	$_c$itu	$_c$itana	$_c$itu(:)tu
3⩺1in	istani	$_c$istu	$_c$istana	$_c$istu(:)tu

Preliminary Feature Decomposition

Person		Tense	
1	[+1 -2 +3]	FUT	[-α -pst +fut]
2	[-1 +2 -3]	SIM	[+α -pst -fut]
3	[-1 -2 +3]	RCPST	[-α +pst -fut]
1in	[+1 +2 -3]	RMPST	[+α +pst -fut]

Preliminary Vocabulary Entries

ta:	$\leftrightarrow$	[$+\alpha$ +pst -fut]
ja:	$\leftrightarrow$	[-α +pst -fut]
$_{C}$	$\leftrightarrow$	[$+\alpha$ -pst]
$_{V}$	$\leftrightarrow$	[-α -pst]
RED_{VCV}	$\leftrightarrow$	[$+\alpha$ -pst] / [-1 -3]
$\mathrm{RED}_{(V)CCV}$	$\leftrightarrow$	[$+\alpha$ +pst] / [-1-3]
$\mathrm{RED}_{(V)CV}$	$\leftrightarrow$	[$+\alpha$ +pst] / [-1]
na	$\leftrightarrow$	[-fut]
ni	$\leftrightarrow$	[-α -pst]
ma	$\leftrightarrow$	[+2]
ña	$\leftrightarrow$	[+1+2]
ta	$\leftrightarrow$	[-3]
tu	$\leftrightarrow$	[+3 $+\alpha$]
s	$\leftrightarrow$	[+1]
$_{C}$i	$\leftrightarrow$	[-1]

Issues

- Linearisation
- Reduplication and vowel deletion
- Revised Preliminary Vocabulary Entries (still incomplete)

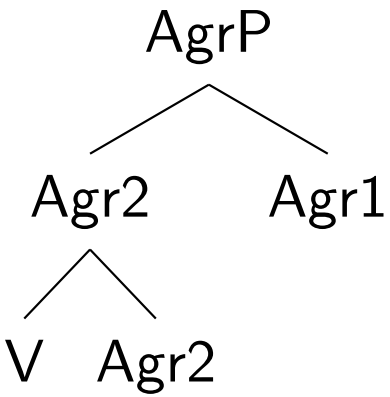
Linearisation - Observations

Aymara has not only differential object marking but differential affix order:

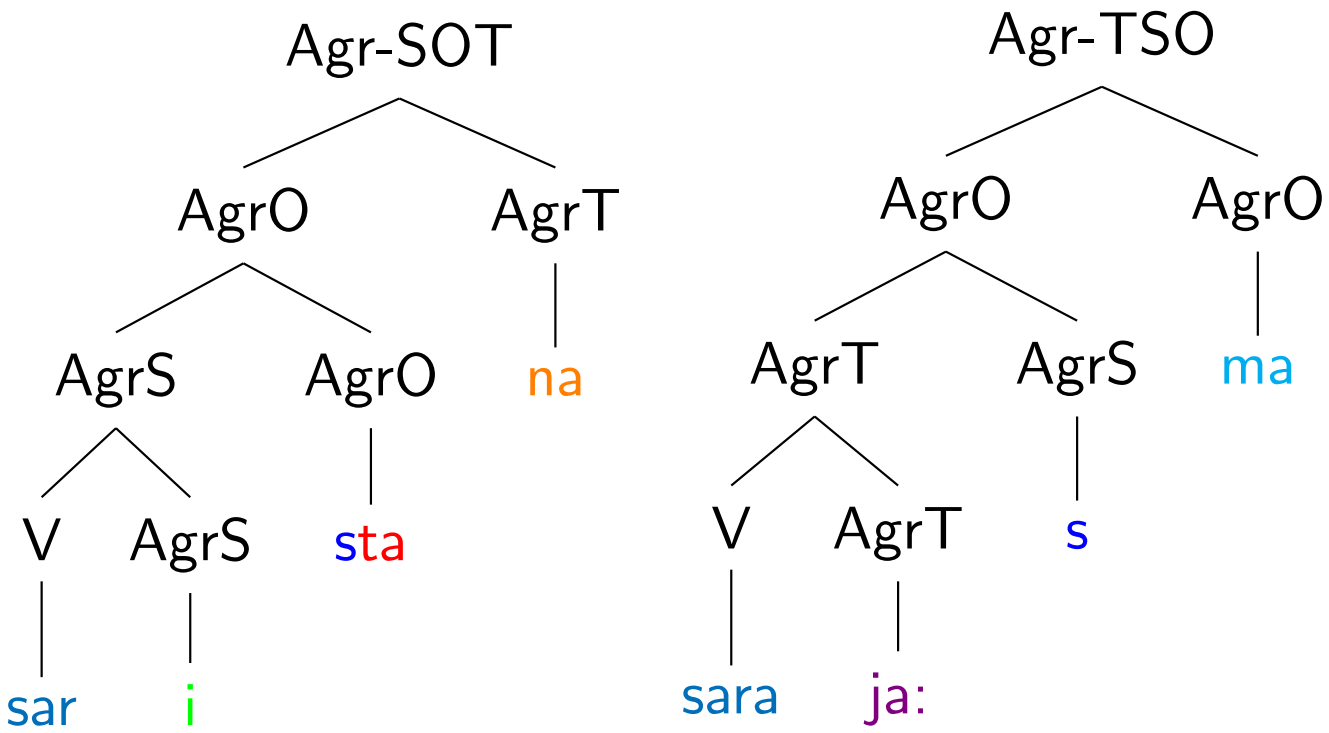
- In 2$\gtrdot$1, 3$\gtrdot$1, 3$\gtrdot$1in , person precedes tense
- 3$\gtrdot$3 and 1in$\gtrdot$3 are weird hybrids
- elsewhere, tense precedes person

	FUT	SIM	RCPST	RMPST
1⩺3	:	$_c$ta$_c$	ja:ta$_c$	ta:ta$_c$
2⩺3	:ta	$_c$ta	ja:ta	ta:ta
3⩺3	ni	$_c$i	:na$_c$	tajna
1in⩺3	ñani	$_c$tana$_c$	ja:tan$_c$	ta:tan$_c$
1⩺2	:ma	$_c$sma	ja:sma	ta:sma
3⩺2	:tama$_c$	$_c$tama$_c$	ja:tam	ta:tam
2⩺1	$_c$ita:ta	$_c$ista	$_c$istana	$_c$ista(:)sta
3⩺1	itani	$_c$itu	$_c$itana	$_c$itu(:)tu
3⩺1in	istani	$_c$istu	$_c$istana	$_c$istu(:)tu

Linearisation-General Scheme

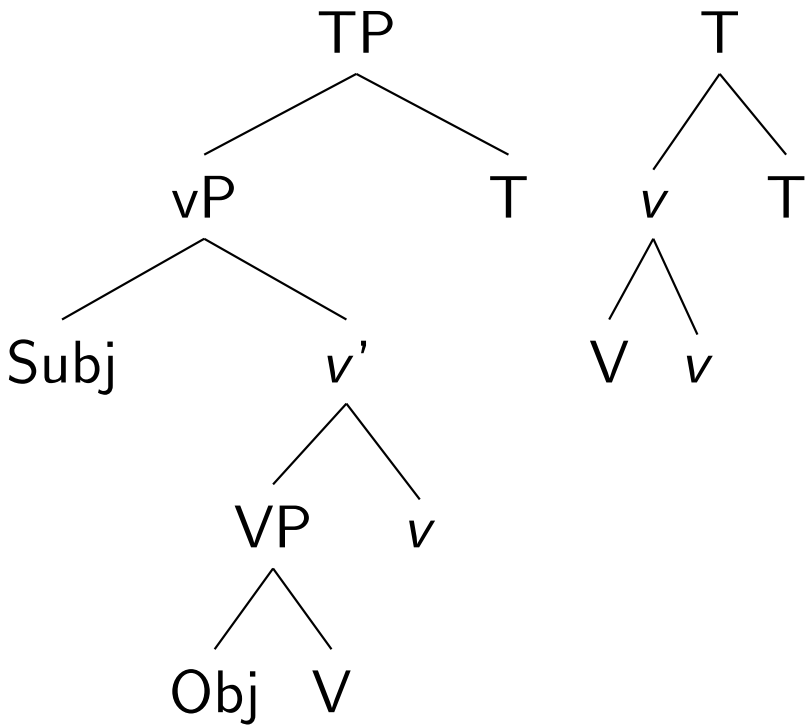


Linearisation-Agr nodes



Linearisation-Syntax

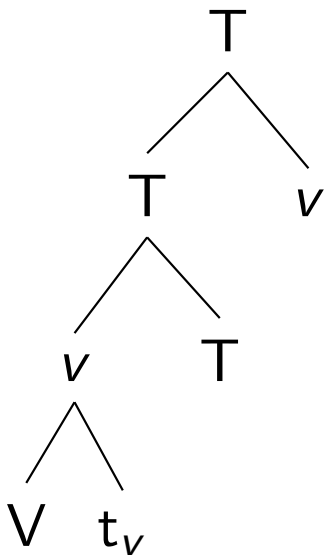
According to the Mirror Principle (Baker 1985), morphological structure must reflect syntactic structure.



v values its case features on the object DP which in turn values its ϕ features on *v*. T values its tense feature on *v*, which are strong and trigger *v*-to-T movement. T values its case feature on the subject DP and gets the DP's ϕ features in return

Linearisation - v to T adjunction for TSO

The Tense -Subject-Object affix order may be derived like this:



After v-adjunction to T, the head of v moves to T again - this time a bit higher.

Linearisation

Another way out would be to say Mirror Principle only generates an underlying form which in turn is input to an OT apparatus and either the ranking of constraints varies depending on the SUBJ≻OBJ constellation or constraints refer to specific subjects / objects ...

Reduplication and vowel deletion

In the 2⩾1.FUT as well as _⩾1(in).RMPST forms, tense is encoded by reduplication:

	FUT	SIM	RCPST	RMPST
2⩾1	ꞈita:ta	ꞈista	ꞈistana	ꞈista(:)sta
3⩾1	itani	ꞈitu	ꞈitana	ꞈitu(:)tu
3⩾1in	istani	ꞈistu	ꞈistana	ꞈistu(:)tu

Reduplication and vowel deletion

Marantz (1982) proposes an autosegmental analysis of reduplication: As in McCarthy's (1979) analysis of Arabic binyanim, all words are made up of

- *skeletons* consisting of **C**onsonant and **V**owel positions; so-called *melody carrying elements*
- segments, i.e. actual vowels and consonants, called *melodic elements*, which are associated to the melody-carrying elements

For reduplication,

1. a CV-skeleton is affixed to the basis (the stem)
2. the melodic elements of the basis are copied and associated to the melody carrying elements of the skeleton affix
3. melodic elements that are not associated to melody-carrying elements are deleted

Reduplication and vowel deletion

This means the tense-encoding reduplication patterns may be seen as suffixes of melody-carrying elements, with a V element being responsible

	VCV	$\leftrightarrow$	[-α -pst] / [+2]$\succ$[+1]
for lengthening:	VCCV	$\leftrightarrow$	[+α +pst] / [+2]$\succ$[+1]
	(V)CV	$\leftrightarrow$	[+α +pst] / [+3]$\succ$[+1]

First idea: If affixed V elements are responsible for lengthening, affixed C elements may account for vowel deletion.

$\rightarrow$ But in the meantime I found out Trommer and Zimmermann (2013) have a better idea...

Next Level Autosegmentality

Generalized Nonlinear Affixation: "insertion of pieces of nonlinear phonological representation" (Bermúdez-Otero cited by Trommer and Zimmermann 2013)

- For lengthening, a mora is integrated
- For vowel deletion, a defective syllable is integrated
- For vowel deletion or shortening before an affix, Trommer and Zimmermann (2013) assume mora usurpation: the affix in question does not have a mora itself but takes over the mora of the preceding vowel which gets deleted.

Things you can derive: *i(s)tu(:tu)*

	FUT	SIM	RCPST	RMPST
1≻3	:	$_c$ta	ja:ta$_c$	ta:ta$_c$
2≻3	:ta	$_c$ta	ja:ta	ta:ta
3≻3	ni	$_c$i	:na$_c$	tajna
1in≻3	ñani	$_c$tana$_c$	ja:tan$_c$	ta:tan$_c$
1≻2	:ma	$_c$sma	ja:sma	ta:sma
3≻2	:tama$_c$	$_c$tama$_c$	ja:tam	ta:tam
2≻1	$_c$ita:ta	$_c$ista	$_c$istana	$_c$ista(:)sta
3≻1	itani	$_c$itu	$_c$itana	$_c$itu(:)tu
3≻1in	istani	$_c$istu	$_c$istana	$_c$istu(:)tu

(3) Vocabulary entries:

ta ↔ -3

u ↔ $[+\alpha]$

The /u/ affix has no mora of its own, so it takes the mora of the preceding /a/ segment which gets deleted because it is no longer associated to a mora.

Things you can derive: *tajna*

	FUT	SIM	RCPST	RMPST
1⩺3	:	$_c$ta	ja:ta$_c$	ta:ta$_c$
2⩺3	:ta	$_c$ta	ja:ta	ta:ta
3⩺3	ni	$_c$i	:na$_c$	tajna
1in⩺3	ñani	$_c$tana$_c$	ja:tan$_c$	ta:tan$_c$
1⩺2	:ma	$_c$sma	ja:sma	ta:sma
3⩺2	:tama$_c$	$_c$tama$_c$	ja:tam	ta:tam
2⩺1	$_c$ita:ta	$_c$ista	$_c$istana	$_c$ista(:)sta
3⩺1	itani	$_c$itu	$_c$itana	$_c$itu(:)tu
3⩺1in	istani	$_c$istu	$_c$istana	$_c$istu(:)tu

(4) Vocabulary entries:

ta:	↔	[+α +pst -fut]
i	↔	[-1]
na	↔	[-fut]

The /i/ affix has no mora of its own, so it takes the second mora of /ta:/. Then, /na/ is affixed, yielding /taina/. The pronunciation of /i/ as /j/ is a result of lenition, as it occurs, for instance, in the English word *every*.

Revised Preliminary Vocabulary Entries

ta:	$\leftrightarrow$	[$+\alpha$ +pst -fut]
ja:	$\leftrightarrow$	[-α +pst -fut]
$_{C}$	$\leftrightarrow$	[$+\alpha$ -pst]
$_{V}$	$\leftrightarrow$	[-α -pst]
RED_{VCV}	$\leftrightarrow$	[$+\alpha$ -pst] / [-1 -3]
$\mathrm{RED}_{(V)CCV}$	$\leftrightarrow$	[$+\alpha$ +pst] / [-1-3]
$\mathrm{RED}_{(V)CV}$	$\leftrightarrow$	[$+\alpha$ +pst] / [-1]
na	$\leftrightarrow$	[-fut]
ni	$\leftrightarrow$	[-α -pst]
ma	$\leftrightarrow$	[+2]
ña	$\leftrightarrow$	[+1+2]
ta	$\leftrightarrow$	[-3]
u	$\leftrightarrow$	[$+\alpha$] / [-1]
s	$\leftrightarrow$	[+1]
$_{C}$i	$\leftrightarrow$	[-1]

Remaining problems

These entries are so underspecified many of them overapply. Instruments we have for blocking them are

- adding features (but we've already done that!)
- impoverishment rules (but we'd need too many of them)
- assuming fusion where $\textsc{subj} \gg \textsc{obj}$ hierarchy is preserved, and specifying hierarchy information on some of the markers (there is evidence for such specifications in Guaraní)
- assuming accidental homonymy (last resort)

Remaining problems

How are we to deal with the affix order hybrids in 3⩾3 and 3⩾1in?

Is Coler (2015) right in the end?

No,nay, never.

Thank you for your attention

And if you have any ideas, please do let me know!
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