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Vowel deletion in two Aymara varieties

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Aymara vowels delete under predictable phonotactic, syntactic, and morphophonemic conditions. We provide a detailed description of each of these processes, with special attention to morphophonemic vowel deletion. In this process, specific suffixes trigger the deletion of the preceding vowel, with no obvious phonological or semantic conditioning. This is both the most common type of vowel deletion in Aymara, and the most unusual one in cross-linguistic terms. We compare vowel deletion in Contemporary Aymara (Coler 2014) and Historical Aymara as attested in the 17th century (e.g. Bertonio 1612a) and reveal that both varieties delete vowels as a result of processes arising from phonotactic and morphophonemic motivation, though some processes of syntactic vowel deletion were not widespread in the historical variety. Notably, while morphophonemic vowel deletion was attested in both Contemporary and Historical Aymara, the suffixes which are lexically pre-specified to delete the preceding vowel are often different in the two varieties. Further, Historical Aymara lacks accusative inflection marking with subtractive disfixation, which is an important and typologically unusual aspect of Contemporary Aymara nominal morphology. In light of the typological rarity of morphophonemic vowel deletion (and disfixation in particular), we expect this description to be of interest to typologists.

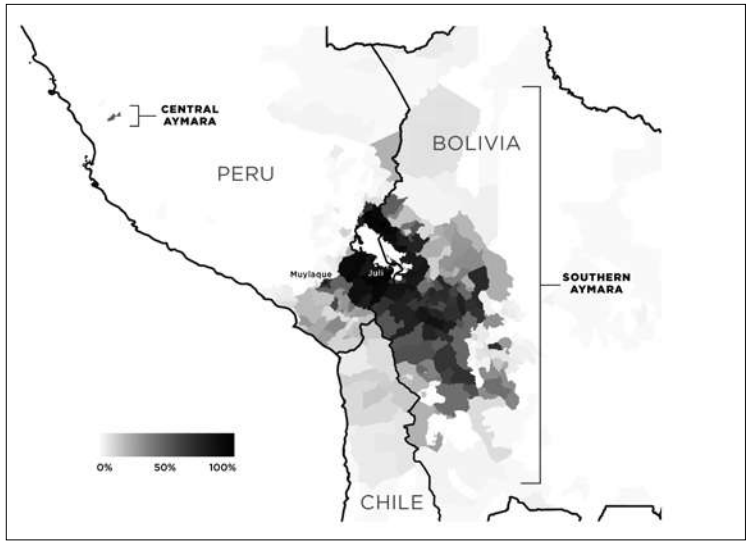
KEYWORDS: Aymara, colonial Aymara, vowel deletion, disfixation, Andean languages, phonotactics.

1. Introduction

This article describes vowel deletion in Aymara, an indigenous language spoken mainly in Bolivia, Peru, and Chile. Vowel deletion in Aymara is complex. Vowels are deleted under a range of mostly predictable circumstances, sometimes resulting in long sequences of six or more consonants. Our analysis distinguishes three types of vowel deletion: phonotactic, syntactic, and morphophonemic. In this paper we compare data from two Aymara varieties from Peru: one contemporary, and one historical from the 17th century. Vowel deletion functions similarly in the two varieties, but there are also a number of important differences

that raise interesting historical questions to which future work can be dedicated. A complete diachronic analysis is beyond the scope of this paper.

In the 2017 Peruvian census, 450,010 respondents identified Aymara as their first language, making up roughly 1.4% of Peru's total population of over 31 million (Instituto Nacional de Estadística e Informática 2017). Both varieties considered in this paper belong to the Southern branch of the Aymaran language family. Map 1 presents census data to show where Aymaran languages are spoken in Peru, Bolivia, and Chile today (Jaqaru, the sister language of Aymara spoken in Central Peru and the sole surviving member of the Central Aymaran branch, is also indicated on the map).[1] Speakers of Southern Aymaran varieties are concentrated in the highlands around and to the south-east of Lake Titicaca, though the language radiates outward both to the Pacific coast and far into the Amazonian lowlands. This interregional geographic distribution is consistent with the so-called 'vertical archipelago' pattern of cross-elevational mobility and land holding in the region (Murra 1972, Hirsch 2018), which can also be seen with Quechua across the Central Andean region (Emlen 2017a). For more about the structure, history, and sociolinguistic situation of the Aymara family, see Cerrón-Palomino (2000) and Adelaar & Muysken (2004: 259-319).



Map 1. Percentage of the population claiming Aymara as their first language, by district (Peru and Bolivia) and *comuna* (Chile).

The variety of contemporary Peruvian Aymara discussed in this paper is spoken in the village of Muylaque in the Department of Moquegua and is known locally as Muylaq' Aymara. We refer to this variety as Contemporary Aymara (CA). The historical variety, called Lupaca Aymara, was recorded by a Jesuit priest named Ludovico Bertonio and his consultants – particularly a man named Martín de Sancta Cruz – in the town of Juli in the early 1600s (both places are indicated on Map 1). We call this variety Historical Aymara (HA). While the CA/HA convention is useful shorthand, it should not be taken to suggest that the former variety developed from the latter variety.

The paper is structured as follows: In section 2 we describe the origins and types of linguistic data used in this contribution. Section 3 is dedicated to Aymara vowel deletion, which we split into three types: phonotactic (3.1), syntactic (3.2) and morphophonemic (3.3). Morphophonemic deletion receives the most attention owing to its typological rarity. This subsection is split into descriptions of morphophonemic vowel deletion preceding nominal (3.3.1), verbal (3.3.2) and phrase-final (3.3.3) suffixes. In section 4 we summarize our observations before concluding in section 5 with some final remarks and suggestions for future research.

2. Data

The CA language data presented here appear in Coler's Aymara grammar (2014), which provides a description of Aymara based on spontaneous speech collected from several native speakers gathered by the author during fieldwork in Muylaque. Each CA example is followed by the corresponding page number in Coler (2014) from which it was taken. The HA data come from a preliminary corpus of Bertonio's five major Aymara texts (1603; 1612a; 1612b; 1612c; 1612d). This corpus is part of an ongoing digital collaboration with Patrick Hall and the John Carter Brown Library. Bertonio's oeuvre is massive, and the data in this contribution come from the portion of Bertonio's work that has been added to the corpus so far. The *Vita Christi* (Bertonio 1612d), a remarkable, 600-page narrative text written by a native Aymara speaker named Martín de Sancta Cruz under Bertonio's oversight, is the source for the HA data presented here. While the compilation of the other Aymara texts was strictly organized by Bertonio himself, the *Vita Christi* represents a more unmediated sample of Aymara since it was composed by Sancta Cruz himself. This is important for the topic of vowel deletion discussed here: in parts of Bertonio's other works, he presents Aymara

examples in their full forms, retaining vowels which would be deleted in normal discourse (see Hardman 1986: 409-410). By contrast, these vowels are deleted in the *Vita Christi*. Bertonio described vowel deletion in considerable detail in his *Arte* (e.g. 1603: 330-336).[2] Most of the vowel deletion patterns in Bertonio's texts are fairly regular. However, there are some exceptions to these patterns. These may be due to linguistic irregularities, orthographic errors, or the typesetting of the original handwritten manuscript. Furthermore, the 400-year-old ink and paper have not been well preserved in all places. For these reasons, some arbitrary irregularities are to be expected. The HA examples in this article do not reproduce the orthographic conventions of 17th century Aymara, but rather use a modern normalized orthography. For more on the *Vita Christi*, see Albó (2012), Tavel Torres (2012), and Tavel Torres (2014). Page numbers in the *Vita Christi* are given, after HA, for each of the examples given in this article.

In a few places in this article, we draw on the Aymara sections of the *Rituale seu Manuale Peruanum*, a work composed by the Franciscan Jeronimo de Oré (1607). Oré learned Aymara in Ayacucho and the Colca Valley of Peru. The fact that similar vowel deletion patterns are found independently in both authors' works suggests that they are genuine features of Aymara phonology, and not artifacts of their textual practices. When data from Oré's *Rituale* are presented, they are identified as such, along with their page numbers.

3. Aymara vowel deletion

Vowel deletion in Aymara is triggered by a number of grammatical contexts, so it is important to begin with a few preliminary observations about the language's structure. It is a highly agglutinative suffix-only language with a rich morphology. The phonemic inventory comprises twenty-six consonants and three vowels (/i, a, u/). Most Aymara varieties also have distinctive vowel length (the Muylaque CA variety described here is an exception). As for the syllable structure and phonotactics, most – but by no means all – syllables are underlyingly CV. The application of vowel deletion processes yields strings of consonants on the surface that never occur underlyingly. Aymara does not permit adjacent vowels. For more about Aymara phonology, see Coler (2014).

Most syntactic relations are case-marked, typically on the NP head (the subject is unmarked). Roots can be divided into nouns, verbs, and particles. Suffixes, which may have a morphological or syntactic function, can be classified as nominal, verbal, transpositional, or 'other'.

This last class of suffixes not subcategorized for lexical categories can be divided into two sub-classes: (i) stem-external word-level suffixes (known as 'independent suffixes' in many Aymara descriptions), and (ii) phrase-final suffixes (known as 'sentence suffixes' in many Aymara descriptions).

One of the most distinctive aspects of Aymara grammar is the frequent deletion of vowels under (mainly) predictable circumstances. This occasionally results in long strings of consonants on the surface of an utterance which may be underlyingly composed of only (C)CV syllables. Speakers do not restore vowels in slow speech, unless the deleted vowel is word- or phrase-final, in which case they may restore it. All Aymaran varieties have vowel deletion, though there are differences between them, especially with respect to morphophonemic deletion. Some of these patterns of variation can be gleaned from Lucy Briggs' doctoral dissertation (1976), which gives a systematic comparison of the Aymara spoken in several communities. A comprehensive account of these dialectal differences, which is beyond the scope of this paper, would be a topic worthy of future research. It would also contribute to an eventual historical reconstruction of vowel deletion in Proto-Aymara.

As for HA, a broad analysis of Bertonio's works confirms the observation made by Adelaar (1986: 384) that 17th century Lupaca Aymara exhibits a lesser degree of vowel deletion than either Contemporary Aymara or Aymara's sister language, Jaqaru. Significantly, many of the vowel deletion patterns in Bertonio's 17th century works are also found in the Aymara sections of Oré (1607).

Note that vowel deletion cannot be explained as a product of stress assignment, which is regularly penultimate in Aymara. As an illustration of this claim, consider how the CA first person simple tense suffix *-t* always deletes the preceding vowel regardless of where it occurs in the word. Take the root *manq'a-* 'eat'; attached with the first person simple tense suffix it results in *manq'(a)-t* 'I eat', with the final vowel of the root deleted (throughout this article, deleted vowels appear between parentheses). Attaching the topicalizer *-xa* at the end has no impact on the vowel deletion: *manq'(a)-t-xa*. Likewise, when the inward directional suffix *-nta* precedes the first person, the *-t* suffix still deletes the preceding vowel: *manq'a-nt(a)-t* 'I eat it up'. The first person future tense suffix is *-xa*, a suffix which never deletes the preceding vowel. Accordingly, we find *manq'a-xa*, 'I will eat' and *manq'a-nta-xa* 'I will eat it up'. In neither case is the preceding vowel deleted, even when the topicalizer *-xa* is added to either word. The vowel preceding the first person future tense suffix is always preserved. These examples demonstrate that vowel deletion is not explained by stress assignment, but rather that the contexts

outlined below (phonotactic, syntactic, and morphophonemic) are sufficient for predicting vowel deletion.

3.1. Phonotactic vowel deletion

The first type of vowel deletion we describe is phonotactic deletion. This occurs, both in CA and HA, when two vowels become adjacent as a result of suffixation (1) or the formation of some noun phrases (2) (though the latter pattern is less common in HA) or compounds comprising two nouns. As mentioned above, adjacent vowels are not permitted in Aymara. Because all Aymara roots and stems are vowel-final, this means in practice that all vowel-initial suffixes trigger this process.

(1) *lurˈ(a)-iri*
work-AG
'worker' (CA: 497, HA: 39)

(2) *huntˈ(u)* *uma*
hot water
'hot water' (CA: 46)

The deleted vowel is predictable, in accordance with the following three rules:

1. If one of the vowels is /u/, the /u/ will surface:
   /tʰuqu-iri/ → [tʰuqu-(i)ri] 'dancer' (CA: 57)
   /hiča + uru/ → [hič(a) uru] 'today' (CA: 57)
   /mistu-iri/ → [mistu-(i)ri] 'one who leaves' (HA: 503)
2. If the vowels are /i/ and /a/, then /i/ will surface:
   /lura-iri/ → [lurˈ(a)-iri] 'worker' (CA: 57)
   /huta-ipana/ → [hut(a)-ipana] 'when he comes' (HA: 54)
3. If vowels are identical, only one will surface (that is, this process does not create long vowels)
   /sara-wja-či-i-χa/ → [sarˈ(a)-wj(a)-č(i)-i-χ(a)] 'he must have gone' (CA: 85)
   /juri-iri/ → [jurˈ(i)-iri] 'the one who is born' (HA: 49)

This hierarchy is not entirely unexpected. Work on vowel reduction in the Finnic languages of Ingria (Kuznetsova & Verkhodanova 2019) evidences two types of markedness hierarchies, one of which is $a > i > u$, the same one attested in Aymara. Additionally, frequency issues may be at play: it is readily apparent that /a/ is by far the most frequent vowel in Aymara and /u/ the least frequent.

3.2. Syntactic vowel deletion

In CA, syntactic vowel deletion occurs when a NP modifier has three or more vowels, sometimes called the 'three vowel rule' (Briggs 1976: 172; see also Coler 2014: 605). Consider the difference between the modifier /č'ijaɾa/ 'black' (which has three vowels) and /hanq'u/ 'white' (which has two vowels) when modifying /t'ant'a/ 'bread': The final vowel of the former must be deleted, whereas that of the latter is optionally deleted.

(3) *č'ijaɾ(a) t'ant'a*
'black bread' (CA: 57)

(4) *hanq'u t'ant'a ~ hanq'(u) t'ant'a*
'white bread' (CA: 57)

In HA, by contrast, the final vowel in trisyllabic modifiers is rarely deleted, as in the adjective /mačaqa/ 'new' from Bertonio in (5):

(5) *mačaqa wawapa*
'her new baby' (HA: 439)

Phrase-final vowels may also be deleted in CA, though that process is rare in HA. Failure to drop a phrase-final vowel in CA is generally judged as incorrect or substandard speech in CA (Coler 2014: 57). Consequently, the nucleus of the topicalizer in (6) is never realized since it is phrase-final, regardless of how the next sentence begins:

(6) *tunasa-ɾ(u)* *saɾa-χa-χ(a)*
cactus.pear-ALL go-1.FUT-TOP
'I will go to the cactus pears.' (CA: 57)

Consider the pair of examples below in which the final vowel in the benefactive suffix *-taki* is deleted in CA (7) but not in HA (8), both of which are phrase final:

(7) *… aka-t(a)* *puɾ(i)-t'a-ni-ña-tak(i)*
here-ABL arrive-MOM-H-ANMZ-BEN
'… to arrive from here.' (CA: 389)

(8) *… mutu-ña-pa-taki*
suffer-ANMZ-3.POSS-BEN
'… so that they suffer.' (HA: 350)

It is possible that syntactic vowel deletion was, in fact, more common in HA, but that Bertonio simply left those vowels in the text. However, other types of vowel deletion remain quite regular in those texts, including in the *Vita Christi* which, as mentioned earlier, was produced by Martín de Sancta Cruz, a native Aymara speaker, without a great deal of oversight by Bertonio. Artificially adding vowels would also be inconsistent with the spirit of the *Vita Christi*, which Bertonio took great pains to produce as a sample of how Aymara was actually spoken in Juli. This suggests that syntactic vowel deletion simply may not have been as widespread in Lupaca Aymara in the early 17th century. Note that syntactic vowel deletion is also uncommon – but attested – in the Aymara sections of Oré (1607).

3.3. Morphophonemic vowel deletion

Morphophonemic vowel deletion arises from the lexical prespecification of some suffixes to delete the preceding vowel, and/or to lose their own final vowel in most contexts. It is the most common type of vowel deletion in both CA and HA.

CA example (9) shows morphophonemic vowel deletion before the momentaneous (-$_{c}$*t'a*), noncompletive (-$_{c}$*ka*), and first person simple tense (-$_{c}$*t*) suffixes. HA example (10) demonstrates vowel deletion before the outward directional suffix (-$_{c}$*su*) and the additive suffix (-$_{c}$*sa*). Hereafter, following the convention first employed by Hardman *et al.* (2001: 67), the subscript -$_{c}$ precedes suffixes which are lexically specified to suppress the preceding vowel. When such suffixes operate inconsistently in this respect, the subscript -$_{c}$ is indicated between parentheses: -$_{(c)}$.

(9) *mun(a)-$_{c}$t'(a)-$_{c}$k(a)-$_{c}$t-t(i)*
want-MOM-NCPL-1.S.3.O.SIM-NEG
'Do I want it?' (CA: 60)

(10) *ap(a)-$_{c}$su-sin(a)-$_{c}$ska…*
carry-OW-SUB-SEQ
'when they took it off…' (HA: 406)

In a handful of cases, otherwise homophonous suffixes are distinguished at the surface by the fact that one is a suppressor while the other is not, as in (11) from CA. Here, all four suffixes are underlyingly /ta/, though context and position within the word also serve to disambiguate them.

(11) -$_c$*ta* 1st person simple tense (/-$_c$t/ in the variety of CA analyzed here)
-$_c$*ta* 2nd person simple tense
-ta ablative case
-ta resultative nominalizer

The class of vowel-suppressing suffixes cannot be defined in terms of a common morphological, morphosyntactic, or semantic property. The number of syllables in a suffix or whether those syllables are open or closed has no relation to a particular suffix's tendency to delete the preceding vowel. Rather, the tendency to delete or not to delete the preceding vowel is simply an idiosyncratic property of each suffix. However, there are some phonological patterns among the class of vowel-suppressing suffixes: glide-, rhotic-, and most nasal-initial suffixes never delete the preceding vowel, while initial stops and affricates are common onsets in vowel-suppressing suffixes.

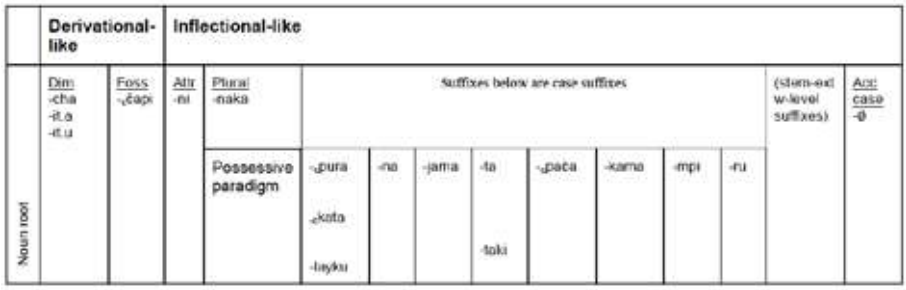
Some suffixes regularly lose their own nucleus, as is the case with the first person simple tense suffixes in HA and some CA varieties and the ablative in CA. We do not discuss this phenomenon further here, but mention it as an explanation of other cases of vowel deletion. For example, the full form of the ablative case is *-ru*, but the nucleus of this suffix is typically deleted in CA, irrespective of whether it is followed by a vowel suppressing suffix, as in (6) above.

Morphophonemic vowel deletion affects nominal, verbal, and phrase-final suffixes differently in CA and HA (we do not describe the word-level suffixes or transpositional suffixes because none of them suppress the preceding vowel in HA or CA). For this reason, we describe these categories of suffixes separately, see 3.3.1, 3.3.2, and 3.3.3.

3.3.1. Nominal suffixes

We begin our presentation of morphophonemic vowel deletion with the nominal system. The CA noun template appears in (12) below. Note that the order of attributive and plural can be reversed freely (there is no data in the corpus to indicate whether the order of the attributive and the members possessive paradigm can be likewise reversed). The horizontal line between *-naka* and the possessive paradigm and between *-ta* and *-taki* indicates that the suffixes are unordered with respect to each other, but occur in the same 'slot'. Note that this table does not include a variety of nonproductive nominal suffixes which have a very limited distribution. One relevant suffix for our purposes is -$_c$*sa* 'side', which only affixes to the demonstratives and *kawki* 'where'.,

(12) The CA nominal template



The nominal suffixes that trigger deletion of the preceding vowel in either CA or HA are shown in (13). We list them in the order of their proximity to the root in accordance with the table above. To help illustrate these differences, in this and following tables, the cells that contain vowel-suppressing suffixes are shaded. When a given suffix is unattested in CA or HA, and when not enough data exists to make a determination, the corresponding cell appears blank. As mentioned above, the striking difference that emerges from this comparison is that some case suffixes are suppressors in CA but not HA, while the 1st person inclusive possessive marker -$_{(c)}$*sa* and the 3rd person possessive -$_{(c)}$*pa* are suppressors in HA (predictably on certain nouns) but not in CA.

(13) Vowel-suppressing nominal suffixes in CA and HA

	CA	HA
Non-productive 'side'	/-$_{c}$sa/	
Delimitative	/-$_{c}$čapi/	
1st person inclusive possessor	/-sa/	/-$_{(c)}$sa/ (on certain nouns)
3rd person possessor	/-pa/	/-$_{(c)}$pa/ (on certain nouns)
interactive case	/-$_{c}$pura/	/-pura/
perlative case	/-$_{c}$kata/	/-kata/
comparative case	/-$_{c}$hama/	/-hama/
reciprocal/inclusor	/-$_{(c)}$pača/	/-pača/
limitative case	/-$_{(c)}$kama/	/-kama/
accusative	/-$_{c}$Ø/	/-Ø/

We now describe some of these patterns in greater detail. First, there is some variation regarding the CA reciprocal/inclusor -$_{(c)}$*pača* and the limitative -$_{(c)}$*kama*. The former sometimes but not always deletes the preceding vowel. The conditioning factors are unknown. The latter deletes the preceding vowel of a root with three or more vowels, but otherwise does not.

This holds across most varieties of CA. For this reason, the subscript -$_{c}$ preceding those suffixes is given between parentheses (as in other examples in (13)). For instance, in the pair of examples in (14) and (15), -$_{(c)}$*pača* attaches to a personal pronoun. However, in (14) the final vowel of the root is retained whereas in (15) it is deleted.

(14) *hupa-pača-w(a)* *hiwa-ya-si-whwa-tajna-χ(a)*
he-INC-DECL die-CAUS-REFL-BFR-3.DIST-TOP
'He killed himself.' (CA: 133)

(15) *hiws(a)-$_{c}$pača-w(a)* *lura-si-wha-tan-χ(a)*
we-INC-DECL do-REFL-BFR-1INCL.SIM-TOP
'We do it ourselves.' (CA: 167)

As for -$_{(c)}$*kama*, consider the following pair. In both (16) and (17), this suffix attaches to a root denoting a location, 'here' and '(the town of) Sijuaya', respectively. In (16) the final vowel of the root is retained and in (17) it is deleted because in the latter but not the former it is attaching to a root with three or more vowels.

(16) *aka-kama-ki-w(a)*
here-LI-DL-DECL
'As far as here.' (CA: 241)

(17) *Sihwaj(a)-$_{c}$kama-ki-w(a)*
Sijuaya-LI-DL-DECL
'I went only as far as Sijuaya.' (CA: 241)

Two other nominal suffixes that exhibit variation in HA are the first person inclusive possessive suffix -$_{(c)}$*sa* and the third person possessive suffix -$_{(c)}$*pa*, which delete the preceding suffix in some nouns but not others. For instance, those nominal person markers delete the final vowel of *tajka* 'mother' (18), but not *chujma* 'heart' (19). This behavior is predictable by noun, and as we describe below, it is also affected by accusative marking.

	-$_{(c)}$*sa* (1st person inclusive)	-$_{(c)}$*pa* (3rd person)
(18)	*tajk(a)-$_{c}$sa*	*tajk(a)-$_{c}$pa*
	mother-1INCL	mother-3.POSS
	'our mother' (HA: 76)	'his mother' (HA: 15)

(19) *čujma-sa* *čujma-pa*
heart-1INCL heart-3.POSS
'our hearts' (HA: 17) 'his heart' (HA: 331)

Other nouns whose final vowel is deleted by these two suffixes (at least in some cases) include *puraka* 'womb', *tata* 'lord' *juqa* 'son', *uta* 'house', *čika* 'half', *ampara* 'hand', *ñik'uta* 'hair', *marka* 'town', and *lak^{h}a* 'mouth'. These suffixes also delete the final vowel in the nominal pluralizer *-naka*, as in *chujma-nak(a)-$_{c}$pa-na* 'in their hearts'. Nouns whose final vowel is not deleted by these suffixes include *awki* 'father', *aru* 'word', *isaʎu* 'garment', *wawa* 'baby', *aruma* 'night', *quya* 'their queen', and many others. Nouns whose final vowels are subject to deletion by -$_{(c)}$*pa* and -$_{(c)}$*sa* are characterized, almost exclusively, by having final syllables with a voiceless consonant onset. This happens most regularly when the final vowel is /a/ – note, for instance, that *awki* 'father' above is not subject to vowel deletion by -$_{(c)}$*pa* and -$_{(c)}$*sa*, despite having a voiceless consonant /k/ as the onset of its final syllable. By contrast, nouns whose final syllable contains a voiced onset are rarely deleted. As a result, -$_{(c)}$*pa* and -$_{(c)}$*sa* end up adjacent almost exclusively to voiceless consonants. These two classes of nouns (those with voiceless onsets in the final syllable, and those with unvoiced onsets in the final syllable) appear in roughly equal proportion in the current iteration of the corpus. However, among the 94 tokens of vowel deletion before -$_{(c)}$*pa* and -$_{(c)}$*sa*, 92 belong to the former class. As the corpus grows, a full quantitative analysis of this pattern will be possible.

It is worth describing the phenomenon of accusative case inflection in more detail. In CA, accusative case is marked with subtractive inflection; that is, the accusative is what is known as a disfix. This is not attested in HA, though accusative marking blocks vowel deletion by the nominal person suffixes, on the nouns affected by this process (see below).

This morphosyntactic rule of vowel suppression in CA affects the final vowel of a nominal base (a bare noun or a nominalized verb) and classifies it as the direct object of a transitive verb or as the geographic goal of a motion verb. The presence of the accusative case suffix in CA is evident only in the deletion of the final vowel of the inflected noun, as evident in the second line of the interlinear gloss where it is given as -$_{c}$Ø. Both these functions are illustrated in (20). The first marks the geographic goal (here *uka marka* 'that town') while the second inflects *lawa* 'wood' as the direct object of the verb *apa-* 'take':

(20) *ʎuqaʎa uka mark(a)-$_{c}$Ø sara-whwa-m(a) uka-t(a) law(a)-$_{c}$Ø*
boy that town-ACC go-BFR-2.IMP that-ABL wood-ACC
ap(a)-$_{c}$t'a-ni-whwa-m(a)
take-MOM-H-BFR-2.IMP
'Go to that town, boy, and then bring some wood.' (CA: 205)

Accusative case in CA is not marked when the direct object is affixed with the declarative suffix *-wa*. Compare the two sentences below:

(21) *čiči-ki-Ø-w(a) mun(a)-$_{c}$t-χa*
meat-DL-ACC-DECL want-1.SIM-TOP
'It is only meat (that) I want.' (CA: 205)

(22) *čič(i)-$_{c}$Ø mun(a)-$_{c}$t-χa*
meat-ACC want-1.SIM-TOP
'I want meat.' (CA)

In contrast to CA, there are no instances of subtractive accusative marking (or any other vowel deletion resulting from case marking) in the HA corpus. Nominative and accusative constructions are homophonous, except when they are marked with certain possessive suffixes, as described below. This likely created some syntactic ambiguity that was dealt with pragmatically. Some examples of accusative constructions are given in (23-24):

(23) *maja aru-Ø kamači-tawina*
one word-ACC order-3.DIST
'He gave [them] one command.' (HA: 12)

(24) *č'ama-Ø čujma-Ø čur(a)-istu*
strength-ACC heart-ACC give-3.S.1INCL.O.SIM
'… he gave us strength [and] understanding [lit. heart].' (HA: 10)

However, nouns whose final vowels are deleted before the first person inclusive marker *-$_{(c)}$sa* and the third person marker *-$_{(c)}$pa* (for instance, *tajka* 'mother' in (18) above) behave differently in the accusative case: accusative case often blocks the deletion that we often find before possessive *-$_{(c)}$sa* and *-$_{(c)}$pa* in non-accusative constructions. For this reason, it is necessary to mark a null accusative suffix (-Ø) in HA. For instance, in (25-26), compare the examples in nominative case, in which the vowels are deleted, with the examples in accusative case, in which they are not:

	nominative	accusative
(25)	*yuq(a)-ʿpa*	*yuqa-pa-Ø*
	son-3.POSS	son-3.POSS-ACC

(26)	*ampar(a)-ʿpa*	*ampara-pa-Ø*
	hand-3.POSS	hand-3.POSS-ACC

It may be the case that the null accusative suffix should be placed between the root and the possessive suffix, since this is where the vowel deletion is blocked in the accusative constructions in (25-26). However, this would require positing that HA nominal suffix order is different from that of CA, in which person suffixes precede the subtractive accusative morpheme. Thus, until more can be learned about the interplay between possessive and accusative marking and its effects on vowel deletion, we have chosen to leave the accusative -Ø marker after the possessive suffixes, as in the CA data.

To summarize, the accusative marker deletes the final vowel of nouns in CA, but not in HA. On the other hand, the possessive markers -(c)*sa* (1st person inclusive) and -(c)*pa* (3rd person) suppress the preceding vowel in some cases in HA, but never in CA. In HA, however, this process of deletion is usually blocked when the possessed nouns are in accusative case. These differences are intriguing, and an explanation of them will require a rigorous comparative reconstruction of Proto-Aymara morphology and phonotactics.

3.3.2. Verbal suffixes

There are many suffixes exclusive to verbal constructions that are lexically specified to suppress the preceding vowel. The verbal template appears below.

(27) The CA verbal template

	Derivational-like												Inflectional-like		
Verb root	fossil -ˀČuxi	dir -qn -nta -ˀsu -ˀta	spat -kata -kipa -muka -ˀnuqa -tata -tapi -χata	ma -ra -rpaya	vol+ -ˀxʌsi -capi -ˀtʼa	cliter -ˀwa	vol+ -ja -si	dir -ˀha	spat -ni	other -ˀharma -ˀpaya	other -jwa	asp -aga -ˀču -ˀka -s.ka	Num -pʰa	evidentials -ˀŽhi -spʰa mood pres.cl past.cl Imperative paradigm	tense distal proximal simple future

The verbal suffixes in (28) are listed in order of their proximity to the root in the CA word.

(28) Vowel-suppressing verbal suffixes in CA and HA

	CA	HA
fossilized intensifier	/-$_{c}$č'uki/	/-$_{(c)}$č'uki/
outward directional	/-$_{c}$su/	/-$_{c}$su/
upward directional (1)	/-$_{c}$ta/	
movement across	/-$_{c}$kata/	/-$_{(c)}$kata/
contour motion, perifactive	/-kipa/	/-$_{c}$kipa/
placer spatial	/-$_{c}$nuqa/	/-nuqa/
diffuse spatial	/-$_{(c)}$naqa/	/-naqa/
valency increasing perdurative	/-$_{c}$χasi/	
valency increasing momentaneous	/-$_{c}$t'a/	/-t'a/
concentrative	/-$_{c}$tapi/	/-t^{h}api/
upward directional (2)	/-$_{c}$χata/	/-χata/
verbal comparative	/-$_{(c)}$hama/	/-hama/
intensifier	/-$_{c}$paja/	
factive completive aspect	/-$_{c}$ču/	
incompletive	/-$_{c}$ka/	/-ka/
conjectural evidential	/-$_{c}$či/	/-$_{c}$či/
first person simple and proximal past tense	/-$_{c}$t/	/-$_{c}$t^{h}a/ ~ /-t/
second person simple and proximal past tense	/-$_{c}$ta/	/-ta/
first person inclusive simple tense	/-$_{c}$tan/	/-tana/
third person subject second person object simple tense	/-$_{c}$tama/	/-$_{c}$tama/
third person subject first person inclusive object future tense	/-$_{c}$sitani/	

The verbal suffixes listed in (28) show that morphophonemic vowel deletion is widespread at every level of verbal morphology. However, there is substantial variation between CA and HA, as well as within each variety.

3.3.3. Phrase-final suffixes

In HA, a few phrase-final suffixes listed in (29) delete the preceding vowel when they follow a particular set of suffixes listed in (30). This is not the case in CA. The only such CA phrase-final suffix which deletes the preceding vowel is the conjectural -ˌ*haʎa*.

(29) Vowel-suppressing phrase-final suffixes in CA and HA

	CA	HA
additive	/-sa/	/-ˌsa/
negative	/-ti/	/-ˌti/
confirmatory	/-pi/	/-ˌpi/
sequential		/-ˌska/
reason		/-ˌpiʎa/
declarative	/-wa/	/-ˌwa/
conjectural	/-ˌhaʎa/	

These HA phrase-final suffixes delete the previous vowel when they immediately follow the person, tense, subordination, and case suffixes listed in (30) (with a few exceptions, discussed below). These preceding suffixes share the properties of being bound morphemes ending in the syllable /na/. Since this is by far the most common context in which the phrase-final suffixes in (29) delete the previous vowel, /a/ ends up being the most commonly deleted vowel, usually following /n/ (and sometimes after /m/; a handful of exceptions are discussed below). Since phrase-final suffixes are the only morphemes that can follow several of the suffixes in (30), in practice this means that nearly every construction with these suffixes has its final vowel deleted when followed by another suffix.[3]

(30) Suffixes whose final vowel is deleted by a following phrase-final suffix in HA

-tawina (3.DIST)	*-na* (3.PAST)	*-imana* (2.SUB)
-tana (1INCL.FUT)	*-sina* (SUB)	*-na* (LOC)
-istana (3.S.1.O.DIST)	*-ipana* (3.SUB)	*-na* (GEN)

Examples of combinations of the HA phrase-final suffixes in (29) and the suffixes in (30) are given in (31-33):

(31) *-tawina* (3.DIST) + *-ᶜti* (NEG)
hani *aka-hama* *lura-tawin(a)-ᶜti*
not this-CP do-3.DIST-NEG
'Apparently he didn't do it like this.' (HA: 409)

(32) *-sina* (SUB) + *-ᶜska* (SEQ)
ña *isaʎu-pa-Ø* *apa-ra-sin(a)-ᶜska*
already garment-3.POSS.ACC carry-REV-SUB-SEQ
'Then, having already taken off his garment…' (HA: 40)

(33) *-na* (LOC) + *-ᶜpi* (CFY)
taypi-n(a)-ᶜpi *uʎa-hata*
middle-LOC-CFY see-2.S.3.O.FUT
'… you will see him in the middle…' (HA: 37)

Combinations like the ones in (31-33) above are by far the most frequent contexts in which the phrase-final suffixes *-ᶜsa*, *-ᶜti*, *-ᶜpi*, *-ᶜska*, *-ᶜpiʎa*, and *-ᶜwa* delete the previous vowel. Indeed, when the same phrase-final suffixes follow other morphemes, they generally do not delete the previous vowel (even when those morphemes end in /na/), as in (34-36).

(34) *kuna-sa*
what-AD
'Something' (HA: 125)

(35) *č'ina-ska*
beginning-SEQ
'at the beginning' (HA: 101)

(36) *khiti-pi*
who-CFY
'so, who…?' (HA: 98)

The fact that the /na/-final morphemes listed in (34) and (35) do not lose their final vowels before the phrase-final suffixes in HA suggests that the deletion patterns described in this section are not merely a phonological matter affecting the syllable /na/, but rather the result of a more specific morphophonemic interaction between the suffixes listed in (29) and (30).

Curiously, Bertonio writes that phrase-final suffixes also delete the previous vowel when attached to nominal roots (for instance, he cites the example *ut(a)-pi*, house-CFY; 1603: 332), but this pattern is not borne out consistently in the *Vita Christi* corpus. The reason for this inconsistency is not yet clear.

There are a handful of other contexts in which phrase-final suffixes delete the previous vowel in HA, apart from those outlined in above. For instance, additive *-(c)sa* sometimes deletes the final vowel in *-(c)pa* '3rd person possessor', as occurs twice in (37):

(37) *chuyma-p(a)-Ø-ˌsa* *amawa-ña-p(a)-Ø-ˌsa* *ap(a)-ipana*
heart-3.POSS-ACC-AD want-ANMZ-3.POSS-ACC-ADD take-3.SUB
'… taking away her comprehension and her will…' (HA: 40)

Two other phrase-final suffixes appear to delete the preceding vowel, but are (so far) too sparsely attested in the HA corpus to be certain. These are interrogative *-sti* and topicalizer *-xa*, which both delete the previous vowel in the Oré Aymara corpus, as in (38) and (39). These data suggest that, in fact, all phrase-final suffixes may be specified, as a class, to delete the preceding vowel in the particular contexts outlined above. However, this hypothesis awaits further data before it can be verified.

(38) *-na + -sti*
uka-n(a)-ˌsti
that-LOC-INT
'… in there?' (HA-Oré: 105)

(39) *-na + -xa*
kanka-ña-pa-n(a)-ˌxa
be-ANMZ-3.POSS-LOC-TOP
'… in his being…' (HA-Oré: 106)

Before moving on to the discussion and conclusion of this paper, it is worth mentioning an interesting effect of vowel deletion in one monosyllabic root in HA. Monosyllabic roots are very rare in all Aymaran languages, but *sa-* 'to say' undergoes the deletion of its vowel when followed by suppressor inflectional suffixes (for instance, *-ˌtama* '3rd person subject, 2nd person object, simple tense' (40). Here, the resulting surface form /stama/ would include an initial consonant cluster, which is not allowed in Aymara. As a result, the construction instead appears as /histama/, with a prothetic /hi/ before the verb root:

(40) /histamawa/
hi-s(a)-ᶜtama-wa
E-say-3.S.2.O.SIM-DECL
'they called you…' (HA: 205)

Bertonio remarks on this in his *Vocabulario* (1612b: 138).

4. Discussion

In this contribution we presented the three kinds of vowel deletion attested in Aymara:

- Phonotactic: when two vowels become adjacent as a result of suffixation or compound formation one is deleted, according to the hierarchy *u*>*i*>*a*.
- Syntactic: when a NP modifier preceding a noun has more than two vowels, the final vowel of the modifier is deleted. Also, the final vowel of a phrase may be deleted in some contexts.
- Morphophonemic: certain suffixes are lexically pre-specified to delete the preceding vowel and/or to lose their own final vowel.

The first and third types of deletion are attested in both CA and HA. But syntactic vowel deletion, the process which deletes the final vowel of a NP modifier with more than two vowels, is not attested in HA. There is no variation in phonotactic vowel deletion patterns in CA or HA, and the same hierarchy exists for both varieties. There is, however, a great deal of variation when it comes to morphophonemic vowel deletion. CA and HA exhibit very different tendencies in nominal, verbal and phrase-final suffixes. Many suffixes which delete the preceding vowel in CA do not do so in HA and vice versa.

The morphophonemic vowel deletion system can be summarized as follows.

- Certain nominal case suffixes suppress the previous vowel in CA, but case suffixes never suppress the previous vowel in HA. Conversely, the first person inclusive possessor suffix -(c)sa and the third person possessor suffix -(c)pa sometimes suppress the previous vowel in HA, but never in CA.
- Certain verbal suffixes suppress the preceding vowel in both varieties, though there is substantial variation between those

varieties in the specific suffixes that have that property. Some suffixes suppress the preceding vowel in one or the other variety, and some do so in both varieties.

– In HA, phrase-final suffixes delete the previous vowel when they follow a particular set of person, tense, subordination, and case suffixes. Most of these suffixes end in the syllable /na/, though there are a few cases in which other syllables are affected too. This does not happen in CA.

To the best of our knowledge, the morphologically-conditioned vowel deletion system described above might be typologically unique. Although Amerindian languages like Aguaruna and Tlingit have both been claimed to also exemplify this process (see Leer 1991 for the latter), those systems seem to function somewhat differently. In both languages, the vowel deletion process is metrical. That is, for Aguaruna, the vowel deletion applies metrically to CV syllables, starting at the third mora and then every second mora from there, with certain lexical roots and affixes presenting lexically-marked exceptions to this process (Overall 2017). Likewise, research has revealed that vowel deletion in Tlingit is underlyingly metrical/phonological, even if a surface-based descriptive treatment could view it as morphological (Cable 2004). The Aymara system is thus apparently quite unlike anything else described in the literature.

5. Conclusion

This paper described vowel deletion processes in contemporary and historical varieties of Peruvian Aymara. We provided a detailed comparative overview of phonotactic, syntactic, and morphophonemic vowel deletion highlighting the extent to which morphophonemic vowel deletion is an idiosyncratic property of each suppressing suffix, with no apparent phonological or semantic conditioning which can account for it. This comparison between morphophonemic vowel deletion in CA and HA revealed a number of significant similarities and differences between the two varieties.

Given the typological rarity of morphophonemic vowel deletion (and disfixation in particular), we hope this description is of interest to typologists. Future research will address variation in morphophonemic vowel deletion across CA and HA Aymara varieties, including the sister language Jaqaru, which exhibits a related, but different, set of vowel deletion processes. A systematic comparison of these phenomena across

the entire Aymaran family – and, in particular, their reconstruction in Proto-Aymara (Kim 2016) – is sure to yield important insights regarding the development of Aymaran morphosyntax as well as the family's internal structure. Unfortunately, space prevents us from exploring that topic in depth here. Reconstructing the principles of Proto-Aymara vowel deletion is also important for our understanding of the prehistoric interaction between Quechua and Aymara in Central Peru some 2,000 or more years ago, since the phonology and phonotactics of Quechua may have been remodeled on Aymara at that point (Adelaar 2012; Emlen 2017a; Emlen & Adelaar 2017). Thus, in addition to its relevance to typological concerns, Aymara vowel deletion is also situated at the center of a number of important topics in Andean historical linguistics.

Abbreviations

1 = first person; 1INCL = first person inclusive; 2 = second person; 3 = third person; ABL = ablative case; ACC = accusative case; AD = additive; AG = agentive nominalizer; ALL = allative case; ANMZ = action nominalizer; BEN = benefactive; BFR = buffer; $_{\text{-c}}$ = suffix lexically specified to suppress the preceding vowel; $_{\text{-(c)}}$ = suffix lexically specified to suppress the preceding vowel in an inconsistent way; CA = Contemporary Aymara; SUCA = causative; CFY = confirmatory; DECL = declarative; DIST = distal past tense; DL = delimitative; FUT = future tense; GEN = genitive; H = hither (cislocative, translocative); HA = Historical Aymara; HA-Oré = Historical Aymara as attested in Oré (1607); IMP = imperative; INT = interrogative; LI = limitative; LOC = locative case; MOM = momentaneous; NCPL = non-completive; NEG = negative; O = object; OW = outward; POSS = possessive; REFL = reflexive; REV = reverser; S = subject; SEQ = sequential; SIM = simple tense; SUB = subordinator; TOP = topicalizer.

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Notes

[1] Districts are shaded by the percentage of the population that reported speaking Aymara as a first language on the most recent available census, i.e. 2017 in the case of Peru and 2012 in that of Bolivia. The Chilean census does not provide language information, so the estimated number of 24,250 Chilean Aymara speakers given in Crevels (2007: 112) was allocated in proportion to the percentage of ethnic Aymaras living in each *comuna*, according to the 2017 census. Peru census data is from the Instituto Nacional de Estadística e Informática (2017). Bolivia census data is from the Instituto Nacional de Estadística (2012). Chile census data is from Instituto Nacional de Estadísticas (2017). GIS data from the Dirección Meteorológica de Chile and <diva-gis.org>.

[2] As Bertonio (1603: 29) writes in the *Arte y Gramatica muy copiosa*, "aqui toda la conjugacion se pondra sin syncopas: porque alos principiantes no dexa de ser enfadoso el auer de syncopar el verbo a cada passo" ("here all of the conjugation will be put without syncopes [i.e. deletions]: because for beginners, it can be annoying to have to syncopate the verb at every step").

[3] The /na/ in some of the suffixes in (30) surely come from the same historical source. For instance, the 3rd different-subject subordinator *-ipana* and the 2nd person different-subject subordinator *-imana* appear to include the 3rd person marker *-(c)pa* and the 2nd person marker *-ma*, in addition to the same /na/. While it is not clear what purpose this /na/ might have served, the diachronic connection among these /na/-final suffixes might be relevant to their common behavior with respect to vowel deletion.

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