A Descriptive Account of Spanish Loanword Phonology in Kaqchikel

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Introduction[1,2,3]

This paper examines Spanish loanwords in Kaqchikel from both diachronic and synchronic perspectives. This paper is, to my knowledge, the first descriptive account of any length concerning Spanish loanword phonology in Kaqchikel. The section pertaining to a diachronic perspective of Spanish loanwords examines observable assimilatory processes by which Spanish words may have entered the Kaqchikel lexicon. Some historical developments of Spanish phonology are explored, relating them to potential explanations for contemporary forms of Kaqchikel borrowings. The section treating loanwords from a synchronic perspective examines contemporary speaker data. A number of recurrent phenomena observed in the data are discussed. One of the central observations is that Kaqchikel appears to utilize a number of structurally unrelated processes in order to resolve non-native stress patterns in Spanish loanwords. The phenomenon of vowel devoicing was observed, which, as far as the author is aware has not previously been described as a process occurring in Kaqchikel; furthermore, this phenomenon was consistent with the typology of voiceless vowels, in spite of the fact that this process does not manifest in other areas of the phonology. Following a brief consideration of how the data patterns relate to the discussion found in the diachronic perspective section, limitations of the present work, as well as implications for future direction are considered before entertaining some concluding thoughts.

1. Background

Kaqchikel is one of approximately thirty living Mayan languages, and one among many spoken in the highlands of Guatemala. Estimates place the current number of Kaqchikel speakers around five hundred thousand. In the nearly five centuries of contact between Spanish and Mayan languages, circumstances under which the two have interacted are various and complex. The arrival of the Spanish resulted in the introduction of a number of new plant and animal species as well as new technologies, but Spanish domination has also resulted in periods of slavery, forced resettlement, excessive taxation and extortion, forcible religious and cultural assimilation, and as

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[1] For all information pertaining to Kaqchikel, as well as all words found in Mayan languages appearing throughout the paper, the Mayan practical orthography developed by the Guatemalan Academy of Mayan Languages (ALMG) is used. It consists of 32 characters, presented in the following list, where IPA equivalents follow each character that does not correspond to its sound according to the IPA: a, ä (ɨ/ə), b' (ɓ), ch (tʃ), ch' (tʃ'), e, ë (ɛ), i, ï (ɪ), j (x), k, k', l, m, n, o, ö (ɔ), p, q, q', r, s, t, t', tz (ts), tz'(ts'), u, ü (ʊ), w, x (ʃ), y (j), and ' (ʔ). Source: Patal Majzul Lolmay (2007).

[2] Words and definitions discussed throughout the paper have been drawn from a variety of dictionaries. In order to conserve space, the specific sources of Kaqchikel words have been given in the appendix.

[3] I would like to express my gratitude to Emily Tummons of the University of Kansas for sharing with me the audio data upon which a portion of this paper is based, and while I have never met the speaker personally, I am also grateful to him and to his family for their correspondence and their willingness to share their knowledge of Kaqchikel.

recent as the latter half of the twentieth century, attempted genocide of indigenous peoples. The Mayan languages occupy a somewhat unique position among language groups that have been subjected to intensive language contact: in spite of almost five hundred years of marginalization under Spanish linguistic dominance, Mayan languages survive, and indigenous peoples today continue to represent a majority of Guatemala's population. As a result of Spanish contact, the lexicon of Kaqchikel has been greatly impacted; numerous lexical borrowings from Spanish have made their way into the contemporary speech of native speakers.

2. Spanish and Kaqchikel phonology

Before approaching the treatment of Spanish loanwords in Kaqchikel, some relevant differences between the two phonological systems should be pointed out. Spanish syllable structure is quite flexible, allowing open and closed syllables, as well as complex onsets and codas. In general, the syllable structure of Kaqchikel is less flexible than that of Spanish. Complex onsets and codas are rare in Kaqchikel. The majority of complex onsets occur in the concatenation of verbal aspectual and agreement prefixes, although there are a limited number of uninflected words with *CC* onsets, in which the second consonant is a glide. The stress systems of the two languages are also quite different. Spanish is a free-stress language; lexically contrastive stress can occur on any of the first four syllables of a word. Kaqchikel, on the other hand, has non-contrastive, fixed final stress. Voicing is contrastive in Spanish, but not in Kaqchikel. Kaqchikel consonants show allophonic variation in coda positions. All sonorants undergo devoicing, and voiceless stops are aspirated in coda positions. An important note on Kaqchikel borrowings is that they retain their original Spanish stress assignment when they enter the lexicon of Kaqchikel. The stress assignment in Spanish loanwords with non-final stress do not assimilate to Kaqchikel stress patterns. For this reason, except for only a few exceptions, all words in Kaqchikel with non-final stress are Spanish loans (García Matzar & Rodríguez Guaján, 1997).

3. Some preliminary issues concerning loanwords

3.1. Loanwords and borrowing

Before beginning an investigation into loanwords, it is important to consider what exactly is meant by the term. Also called lexical borrowings or simply loans, loanwords generally refer to lexical items that have been introduced into a recipient language's lexicon of as a result of borrowing (Haspelmath, 2009). Before coming to an explicit definition for the purposes of this exposition, a few considerations concerning lexical borrowing need to be taken into account.

The phenomenon of *borrowing,* of which loanwords are a type, first requires some explanation. Hickey (2010) defines borrowing as a process manifested in situations of contact between cultures wherein an item or structure is copied from one language to another without speakers shifting from the recipient language to the donor language. Winford (2010) distinguishes between *borrowing* and *imposition,* where the former refers to the transfer of linguistic elements as a result of the agency of speakers of the recipient language, and the latter to the transfer of elements through the agency of speakers of the source language.

Loanwords then, according to Winford (2010), are simply lexical items that have entered into a recipient language through the agency of native speakers. Winford says that the "hallmark" of

lexical borrowing is that loans are adapted to the morphological and phonological systems of the native language so that they eventually become indistinguishable from native words (2010: 173).

3.2. Loanwords versus codeswitching

A further distinction needs to be made between *loanwords* and *codeswitching*. Codeswitching is when bilinguals shift between two languages in the same discourse (Haspelmath, 2009). Winford (2010) explains that codeswitching consists of importing single-content morphemes or phrases from a source language into a recipient language without altering the morphosyntax of the latter. The primary distinction between loanwords and codeswitching is that loanwords are integrated into the lexicon of a non-native language, while in codeswitching, they are not. While lexical borrowing and codeswitching are generally differentiated, there is no universal agreement as to how to diagnose instances of one or the other. The main point of contention regarding this issue is the fact that codeswitches of single words behave essentially the same as lexical borrowings, and therefore the two are, in most cases, indistinguishable from one another.

Gardner-Chloros (2010: 195) says that there is "no failsafe method of distinguishing, at a *synchronic* level, between loans and codeswitches," going on to say that it can be reasonably assumed that every loanword begins as an instance of code-switching before making its way into conventional usage. Winford (2010) questions degree of integration as a useful criterion for distinguishing loans from codeswitches, since both phenomena can show adaptation to the linguistic systems of the recipient language. Winford concludes that loanwords and single-word codeswitches are distinct outward expressions of the same underlying process, and should both be considered to be forms of borrowing, as he defines it, via the agency of the native speaker.

Myers-Scotton's (2002) view is essentially in agreement with both Gardner-Chloros and Winford. She suggests that the distinction between borrowing and codeswitching is often unclear, and that both operate according to a similar mechanism, claiming that "both established borrowings and singly occurring codeswitching forms largely are integrated into the morphosyntactic frame of the recipient or Matrix language. With no evidence to the contrary, the same processes seem to be involved. (The only sense in which there is a serious difference between singly occurring codeswitching forms and established loans is in regard to their status in the mental lexicon)" (Myers-Scotton, 2002: 153).

3.3. Definition of loanword for the purposes of this paper

In light of the preceding discussion, it is now appropriate to clarify exactly what is, and what is not meant by loanword for the purposes of this paper. This is not really an issue as it pertains to the diachronic analysis, since all of the data in that section are derived from dictionaries, demonstrating that they are all established loans whose status is not in question. However, for the section treating loanwords from a synchronic perspective, a more liberal approach has been taken in the consideration of a word as a loan. Since there is no consensus on how to distinguish genuine loanwords from singly-occurring codeswitches, all single-word occurrences of lexical items in the data with manifest phonological and semantic relation to contemporary Spanish lexical items have been treated as loanwords.

4. Kaqchikel borrowings from a diachronic perspective

When lexical items enter into another language via borrowing, they often undergo phonological or morphological adaptations in order to conform to native sound patterns (*cf.* Haspelmath, 2009). This section examines some observable ways in which Spanish words may have been assimilated to the phonology of Kaqchikel in the process of entering the lexicon.

4.1. Assimilation to native phonemes

4.1.1. Spanish sibilants

Many of the cases of borrowings where the Kaqchikel pronunciations diverge from their Spanish precedents can be attributed to earlier Spanish pronunciations. One clear instance of this involves earlier pronunciations of Spanish sibilants. Historically, Spanish had a much more robust set of sibilants than it currently has. Old Spanish had seven distinct sibilant phonemes, /s̺/, /z̺/, /ʃ/, /ʒ/, /tˢ/, /dᶻ/ and /ʧ/ (*cf.* Penny, 2002; Canfield, 1952). In many cases, evidence for these contrasts has been maintained in Spanish orthography. The phoneme /s̺/ corresponded to *ss*, /z̺/ to *s*, /ʃ/ to *x*, /ʒ/ to *j* and *g*, /tˢ/ to *c* (or *ç*), and /dᶻ/ to *z*. According to Penny (2002), by the fifteenth century, /tˢ/ and /dᶻ/ had softened to become the apico-dental fricatives /s̪/ and /z̪/, and that sometime during the sixteenth century, the sibilant system of American Spanish had merged into just four phonemes, /s̺/, /z̺/, /ʃ/ and /ʒ/. Canfield (1952) also notes that the apico-alveolar /s̺/and /z̺/ were lost in the Americas early in the colonial period, although Hammond (2001) notes that this pronunciation is still found in isolated parts of the Americas. The voicing contrast was lost by the seventeenth century—although this process started occurring earlier—and /ʃ/ had become /x/ by 1650. We see the effect of the distinctions in the early Spanish pronunciations in a number of Kaqchikel borrowings, where some of the early Spanish sibilants were presumably assimilated to the phoneme /ʃ/.

(1) Examples of Spanish /ʒ/—orthographic *'j'* and *'g'*—assimilated to /ʃ/

anx<ajo 'garlic', *arwenxa<arveja* 'pea', *kax/kaxa<caja* 'box', *xab'on<jabon* 'soap', *xara<jarra* 'jar', *xinxibre<jingibre* 'ginger', *Xuan<Juan, aranx<aranja* 'orange'.

(2) Examples of Spanish /s̺/ and /z̺/—orthographic *'s'*—assimilated to /ʃ/

altamix<altamisa (a medicinal plant), *kakaxt<cacaste* 'garment', *kamixa'<camisa* 'shirt', *kaxlan <castellano* 'Spanish', *tyox<Dios* 'God', *xila<silla* 'chair'.

I have found relatively few examples in which Spanish *s* and *z* do not show this assimilation to /ʃ/: *apast<apaste* 'basin', *asaron<azadón* 'hoe', *asukar<azúcar* 'sugar', *tura's<durazno* 'peach'. At first glance, in light of the previous discussion of sibilant mergers, it could be inferred that these are examples of later borrowings. However, a close look at an early source suggests that this may not be the case. In an early seventeenth century Kaqchikel dictionary compiled by the Franciscan friar Thomás de Coto, listings for *azúcar* and *azadón* are given as *açúcar* and *açadón,* respectively (De Coto, 1983). As previously mentioned, othographic *ç* already corresponded to [s̺] by the fifteenth century. The earlier spellings of words with *ç* have since changed to *z,* which is also confirmed by Penny (2002).

A minor problem arises from this evidence, however, since the listings in de Coto's (1983) dictionary give native Kaqchikel forms for these definitions—*ti cabir* for *azúcar* and *xoca* for *azadón*.[4] This suggests, perhaps, that these loans were not widely used at the time, if at all. However, notice that the spelling de Coto gives for the native Kaqchikel word for *azadón* corroborates evidence for early borrowings based on Spanish sibilants. De Coto's entry *xoca* is parallel to the contemporary Kaqchikel word *xok*—[ʃok]—which has the same meaning as Kaqchikel *asaron* today. The use of *x* in de Coto's spelling is perfectly consistent with evidence already given that the Spanish *x* corresponded to /ʃ/ until the middle of the seventeenth century, and further motivates the analysis of early assimilatory processes.

Further evidence along these same lines also demonstrates that the assessment of Spanish sibilant assimilation is on the right track. De Coto's (1983) listings for *burro,* 'donkey', and *caballo,* 'horse', are *umul queh* lit. 'rabbit deer' and *mama queh,* lit. 'elder deer', respectively. The word used by de Coto, *queh,* corresponds to the contemporary word *kej*—[kex]— 'deer' (which has also come to have the contemporary meaning 'horse'). Notice that the spellings for the former utilize *h* where the corresponding sound found in the contemporary word is [x]. If, in de Coto's pronunciation (or that of an earlier author that his work was partly based on), *j* or *g* represented [x] as they do in contemporary Spanish, we would expect to find one of them utilized here, contrary to fact. This evidence, again, is fully in accord with the account we have been developing thus far.

4.1.2. Non-functional plural –s

A final observation pertaining to the early Spanish sibilant system is the possible influence on nouns which were borrowed from Spanish with an unanalyzed plural morpheme *–s,* in which cases *–s* was assimilated to /ʃ/. The idea for this comes from Wichman and Hull (2009), where examples from the related language Q'eqchi' are given which they analyze as originating with this non-functional plural morpheme. Many of their examples are similar to Kaqchikel borrowings, such as *wakx* (Q'eqchi' *wakax*). This analysis is quite plausible, given the fact that every example in which it occurs is a noun.

(3) Examples of plural /-s/ assimilated to /ʃ/

> *lawx<clavo* 'nail', *limonix<limón* 'lime', *palomax<paloma* 'pidgeon', *papx<papa* 'potato', *patx/patix<pato* 'duck', *wakx<vaca* 'cow'.

4.1.3. Palatal /ʎ/

Another example of a historical pronunciation that can potentially account for an apparent deviation from donor word pronunciation comes from the Spanish palatal lateral /ʎ/, which earlier in the history of Spanish was represented orthographically as *ll* (*cf.* Penny, 2002). Penny (2002) explains that the Old Spanish phoneme /ʎ/ merged with the palatal fricative /j/, which is indicative of its contemporary pronunciation in much of the Americas and elsewhere, although the contrast has been maintained in some areas in Peninsular Spanish. While Penny (2002) gives

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[4] The originally orthography used by de Coto has been preserved here, which, in the interest of space will not be discussed. The entries are clearly related to contemporary words, however: *kab'* is the adjectival form for 'sweet', and *xok* is synonymous with *asaron*.

evidence that this merger had begun prior to the conquest, Canfield (1981) gives a somewhat different account, claiming that the merger began in the middle of the seventeenth century, and reporting that /ʎ/ and /j/, at least at the time of his investigation, were still contrastive in large areas of the Americas, specifically in Bolivia, most of Peru, parts of Ecuador and Colombia, and northern Argentina.

In light of this information, it is probable that *ll* was being pronounced as /ʎ/ by many of the Spanish in America at the time of many loans, and evidence from Kaqchikel borrowings give credibility to this assumption. Every instance that I have found where *ll* is present in Spanish donor words has been assimilated to /l/ in Kaqchikel, which is acoustically much closer to the palatal lateral /ʎ/ than to the palatal fricative /j/. It is also noteworthy that two of these four instances also contain /ʃ/ in the place of *s,* which is consistent with the assumption that the assimilation of /ʎ/ to /l/ is indicative of an earlier borrowing.

(4) Examples of /ʎ/—orthographic *'ll'*—assimilated to /l/

   kaxlan<castellano 'Spanish', *kuchila<cuchillo* 'knife', *lawe/law<llave* 'key', *xila<silla* 'chair'.

4.1.4. Further types of assimilation

In addition to the types of assimilation described above, a number of other Spanish phonemes have been assimilated in a number of different ways, generally quite straightforwardly. Not surprisingly, since voicing is not contrastive in Kaqchikel, these mostly involve the Spanish voiced stops, which have often been assimilated to their voiceless Kaqchikel counterparts. Where this is not the case, as with Spanish /b/ assimilating to /w/ or /ɓ/, and /d/ assimilating to /r/, acoustic similarity is sufficient to explain the assimilation patterns. Why there is variation in the way that the voiced Spanish stops have assimilated could be due to a number of reasons, which will not be treated here. We simply provide examples of such assimilation:

(5) Further examples of assimilation

   /g/→/k/: *xerka<jerga* 'slang'.
   /d/→/t/: *alcalt<alcalde* 'mayor', *tyos<Dios* 'God', *tura's<durazno* 'peach'.
   /d/→/r/: *asaron<azadón* 'hoe', *ru'ra/rora<ruda* 'rue'.
   /b/→/p/: *putika<botica* 'pharmacy'.
   /b/→/w/: *arwenx<arveja* 'pea', *lawx<clavo* 'nail', *lawe/law<llave* 'knife', *wakx<vaca* 'cow'.
   /b/→/ɓ/: *b'ur<burro* 'donkey', *b'ak<vaca* 'cow', *xab'on<jabon* 'soap', *b'esino <vecino* 'neighbor'.

4.2 Final vowel deletion and devoicing

One of the ways that Kaqchikel appears to have assimilated non-native words into its lexicon is through the deletion of final vowels that do not carry stress. The deletion or devoicing of final vowels has been observed in other closely-related Mayan languages. Dayley (1985) explains that final vowels in Spanish loans are devoiced in the San Juan la Laguna dialect of Tzutujil, but gives little explanation other than a brief reference to native stress pattern. Wichman and Hull

(2009) posit that for Q'eqchi', final vowels are deleted in order to satisfy a preference for closed syllables. This pattern of deletion can also be observed in Kaqchikel, for example, *alkalt* from the Spanish *alcalde,* 'mayor.'

A brief glance at a few loans in Kaqchikel, however, shows that there is some variability in the deletion pattern, namely, that final vowels in Spanish loans don't always delete, and that often, some variants are reported manifesting deletion, while others do not. Cojtí, Chacach and Calí (1998) for example, report both *b'aka* and *b'ak* as variants for the loanword from the Spanish *vaca,* 'cow'. They also cite this as an apparent exception to the Kaqchikel rule of final stress, noting that the final vowel undergoes devoicing in words with non-final stress. Another example, a loan from Spanish *jarro* 'jar', is reported as *xar* by Patal Majzul (2007) and as *xara* by García Matzar and Rodríguez Guaján (1997), while both variants are noted in Ruyán Canú (1990). A number of examples of such words can be found in Kaqchikel, showing that the dropping of vowels is a productive pattern, albeit with some variance:

(6) Examples of loans with a dropped final vowel

  altamix<altamisa (a medicinal plant)*, apast<apaste* 'basin'*, b'ur<burro* 'donkey'*, kakaxt<cacaste* 'garment'*, kax<caja* 'box'*, kaxlan<castellano* 'Spanish'*, xar<jarra* 'jar'*, law<llave* 'key'*, machät<machete* 'machete'*, aranx<naranja* 'orange'*, b'ak<vaca* 'cow'.

(7) Examples of words retaining the final vowel

  anima<anima 'soul'*, putika<botica* 'pharmacy'*, kape<café* 'coffee'*, kamixa'<camisa* 'shirt'*, kaxa<caja* 'box'*, chicha<chicha* 'corn wine'*, kuchila<cuchillo* 'knife'*, armita<ermita* 'hermitage'*, xara<jarra* 'jar'*, xerka<jerga* 'slang'*, xinxibre<jingibre* 'ginger'*, lawe<llave* 'key'*, xila<silla* 'seat'*, b'aka<vaca* 'cow'*, b'esino<vecino* 'neighbor'.

Since open syllables are not strictly banned in Kaqchikel, the analysis that final vowels are dropped due to the conflict with native stress is the preferred one. The relevant observation for this set of loanword examples is that for every instance in which a final vowel has been dropped, the original Spanish stress coincided with its penultimate syllable, which is in conflict with native Kaqchikel stress.

It seems likely that final unstressed vowels are dropped in order to satisfy the native stress requirement. *Kape,* from Spanish *café,* is a good example of a word whose final vowel can be maintained without conflict with the native stress pattern. Nevertheless, the examples in which the final vowel is retained, in spite of non-adherence to native stress, pose a problem for this analysis, especially since many such words seem to be early loans. The tendency to drop final unstressed vowels seems to have been operating early on, yet many words have resisted vowel deletion, contrary to what might be expected. However, evidence from contemporary speaker data, which is addressed in a later section, may shed some light on this issue.

Further evidence for the analysis that final vowels are dropped due to the restriction on final stress comes from instances in which unstressed vowels in a final closed syllable have been dropped; the idea being that in spite of their occurrence in a closed syllable, the lack of stress in ultimate position still leads to vowel deletion, although there may be alternative explanations for these forms. This is simply one plausible scenario. There are a number of such examples, some of which also have variant pronunciations where the vowel has been retained:

(8) Examples of deleted vowels in closed syllables

    lawx<clavo 'nail', *papx<papa* 'potato', *patx/patix<pato* 'duck', *wakx<vaca* 'cow'.

4.3. Some further considerations

Thus far it has been taken for granted that Kaqchikel borrowings have come directly from Spanish, from which they have assimilated by various means to native phonology. It is tempting, given such an approach, to try to imagine some assimilatory process that can account for some of the forms that exhibit a more radical deviation from their Spanish counterparts than those that can generally be treated straightforwardly. Such an approach is naïve—it is probably wrong to assume that all, or even any earlier borrowings were transmitted directly from Spanish into Kaqchikel. Presumably, some loans were disseminated via other Mayan languages. One example is sufficient to show that this is the case.

    Borrowings from the Spanish word *ajo,* 'garlic', are found throughout the Mayan language family. In Kaqchikel, it deviates somewhat significantly from the Spanish original in that there has been an insertion of *n,* as in Kaqchikel *anx.* Given that the final vowel has been lost due to the native restriction on stress, and that the *x* comes from an earlier pronunciation of a Spanish sibilant, it is still difficult to account for the presence of the *n.* However, a closer look at other languages in the family reveals that this is probably a deviation from an earlier pronunciation that more closely resembled the original Spanish form. Similar forms appear throughout the Eastern Mayan branch, all containing an epenthetic *n*; however, in other branches, less deviant forms appear, as can be seen in *Table 1*, below:

Eastern Mayan			Other branches		
Kaqchikel	*anx*	(Patal Majzul Lolmay, 2007)	Chuj	*axux*	(Felipe Diego, 1998)
Q'eqchi'	*anx*	(Sam Juárez & Stewart, 1997)	Tzotzil	*axux*	(Hurley & Ruiz Sánchez, 1978)
Sipakapense	*aanx*	(Tuyuc Sucuc, 2001b)	Chontal	*axux*	(Keller & Plácido 1997)
K'ichee'	*anxux*	("Wokjalajoj choltzij," 2007)	Uspanteko	*axux*	(Vicente Méndez, 2007)
Poqomam	*anxux*	("Lok'ooj q'orik," 2007)	Ch'ol	*axux*	(Aulie & Aulie 1978)
Sakapulteko	*anxux*	(Tuyuc Sucuc, 2001c)	Q'anjob'al	*axux*	("Jit'il q'anej," 2003)
Mam	*anxix*	("Pujb'il yol," 2003)	Lacandon	*axux*	(Roeling, 2007)
Awakateko	*aanqs*	(Tuyuc Sucuc, 2001a)	Jakalteko	*axux*	(Méndez, 1997)
Teko	*anqs*	(Morales, 2007)	Tzeltal	*axux*	(Slocum, 1999)

Table 1: Forms of borrowings of *ajo* throughout the Mayan family

    Furthermore, there is a clear geographic correlation between these two groups, which are almost perfectly separated by *Alto Cuchamatanes*, the largest mountain in Guatemala, and the *Rio Chixoy*. All the languages of the group with less deviant forms of *ajo* are found in the area to the north of the mountain and west of the river, while the languages of the Eastern Mayan branch are all found to the south of the mountain and west of the river. Further corroboration of this geographic distinction comes from the fact that in Mopan—which is a member of the Yucatecan

branch, yet is geographically isolated wholly within the Q'eqchi' area—we find the word *aanjus,* which parallels the forms found in the Eastern Mayan languages.

For obvious reasons, it is unlikely that every individual language borrowed this word from Spanish, and that their distribution just happened to turn out this way. More likely is a scenario in which the word was introduced into one of the languages with a pronunciation closer to the original, and that from there it was disseminated into other languages, in which further deviations occurred. However, this is all speculation, and a more detailed examination of such examples would be necessary to draw any conclusions. One further point of interest is that this phenomenon can be observed outside the Mayan family as well. In Zoque, found in southern Mexico, for example, we find [aʃuʃ], borrowed from Spanish *ajo,* while in the closely related language Mixe, we find [an͡tʃus].[5] It is interesting that even outside of the Mayan family we find a distinction in which one of the words is homophonous with many of the Mayan borrowings that are closer to the original form of *ajo,* while a form showing an epenthetic *n* appears in a borrowing of its neighbor. As to where this epenthetic *n* comes from, it is unclear at this time. However, it is possible that a closer look at the phonological systems of the languages in which it is found may reveal some insight as to its origin.

The issue of tracing the historical roots and phonological developments of loanwords is obviously complex, but these observations demonstrate that for further work on the matter, a more thorough and holistic approach may be necessary. Exploring the cultural and historical contexts in which loans occurred, while examining evidence from across the Mayan family, and even among other languages, rather than simply approaching it from the standpoint of a single language, may give further insight into how and when loans have been disseminated among languages that have had lexical influence from Spanish.

5. Kaqchikel borrowings from a synchronic perspective

Approximately forty minutes of audio data, consisting of three stories told in Kaqchikel, was analyzed. The data were collected from a native speaker by Emily Tummons (University of Kansas) in San Juan Comalapa, Guatemala, in June of 2011. The speaker is a Kaqchikel-dominant bilingual who acquired basic use of Spanish in adolescence, but reports not being very comfortable speaking it. From this data, eighty-five tokens of forty distinct Spanish words were identified. Only single-word occurrences—that is, words not part of a larger Spanish phrase—were considered, for reasons which have already been discussed. This did not bear heavily on the analysis, however, since only two instances of a phrasal borrowing were observed. In all cases, data that have been considered adhere to the morphosyntactic framework of Kaqchikel. All of the identified lexical items were narrowly transcribed, and the transcriptions verified by waveform and spectrogram analysis using Praat phonetic analysis software.

5.1. Non-native stress resolution

One of the most salient observations of the data set is the tendency of the speaker to devoice or delete vowels in final position when they do not carry stress. These vowels were sometimes deleted, sometimes devoiced, and sometimes maintained with a following epenthetic glottal stop.

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[5] These loans are given in the IPA since the resources from which they come employ a different orthography. The sources for these words can be found in the appendix.

The key generalization is that a number of structurally unrelated processes all seem to function to resolve the problem of non-final stress.

5.1.1. Phrase-final stress resolution

When phrase final, the processes of resolution were almost entirely predictable. Vowel deletion occurred following a stop, vowel devoicing occurred when the final unstressed vowel followed a sonorant or a fricative, and glottal stop epenthesis occurred when the final vowel followed a glide, with the full quality of the vowel manifested. Selected data which are representative of the observed patterns are presented in *Table 2:*

Word	Vowel Context	Transcription
tiempo	p_#	[tʰ.'jempʰ]
banqueta	t_#	[pan.'kwetʰ]
gobierno	n_#	[go.'βjer.n̥o̥]
semana	n_#	[se.'ma.n̥ḁ]
princesa	s_#	[pɾɪn.'sɛ.sḁ]
oro	r_#	['ˀoɾo̥]
familia	j_#	[fa.'mil.jaˀ]
prueba	w_#	[pru.'we.waˀ]

Table 2: Phrase-final unstressed vowel occurrences

One of the more prolific examples of loans in the data set comes from the Spanish word *tiempo,* 'time'. Fifteen tokens of *tiempo* occurred in the speaker data. For nine of these occurrences, the word occurred within a phrase, and for the remaining six, it occurred phrase-finally. For every instance but one in which *tiempo* was phrase-final, the final vowel was completely dropped, and the final [p] was aspirated. The aspiration of [p] is consistent with the native allophonic realization of voiceless stops in codas, providing evidence which suggests that the vowel is truly deleted in such contexts. The deletion of final unstressed vowels at the end of a phrase also occurred in instances of *banqueta* and *fertilizante,* which were realized as [pan.'kwetʰ] and [feɾ.ti.li.'santʰ], respectively. Examples of phrase-final vowel devoicing include *princesa,* 'princess', realized as [pɾɪn.'sɛ.sḁ], *oro*, 'gold', realized as ['ˀoɾo̥], and *semana,* 'week', realized as [se.'ma.n̥ḁ]. Examples of glottal stop epenthesis include *familia,* 'family', realized as [fa.'mɪl.jaˀ], *domingo* 'Sunday', realized as [ðo.miŋ.weˀ], and *prueba,* 'test', realized as [pru.'we.waˀ].

5.1.2. Phrase-internal stress resolution

When a final unstressed vowel was at the end of a word within a phrase, only devoicing was observed, however, with more variability. Selected data which are representative of the observed patterns are presented in *Table 3:*

Word	Vowel Context	Transcription
principe	p_#r	['pɾɪn.si.pe]
principe	p_#ʃ	['pɾɪn.si.pɛ̥]
tiempo	p_#r	['tjem.po]
tiempo	p_#t͡ʃ	['tjem.po̥]
tanto	t_#w	['tan.to]
gobierno	n_#r	[go.βjer.no]
gobierno	n̥_#s	[go.βjer.n̥o̥]
familia	j_#q	[fa.'mɪl̥.jə̥]
miseria	j_#r	[mi.'seɾ.jə]
palacio	j_#r	[pa.'las.ju]

Table 3: Phrase-internal unstressed vowel occurrences

Alternations occurred in the voice feature of vowels in this environment, depending on the voicing features of the surrounding consonants. For example, *gobierno,* 'government', was realized as [go.βjer.no] when the following consonant was voiced, but as [go.βjer.n̥o̥] when the following segment was voiceless. Note also that devoicing occurred on the *n* preceding the vowel. This devoicing occurring on the preceding vowel also occurred phrase-finally in one token of *oro*, 'gold', realized as [ʔoɾo̥]. Likewise *principe,* 'prince', was realized as ['pɾɪn.si.pe] when followed by a voiced consonant, but as ['pɾɪn.si.pɛ̥] when between two voiceless consonants. This pattern was quite consistent. For every instance in which the final vowel was followed by a word beginning with a voiceless consonant, the vowel was devoiced; when the following consonant was voiced, the final vowel was also fully voiced. It is interesting that for instances in which this vowel undergoes devoicing, it is found between two phonetically voiceless consonants. Every instance where a sonorant was followed by a devoiced vowel, the sonorant also underwent devoicing, behaving as though it were in a coda position. Whether this sonorant devoicing is a result of the devoicing of the vowel or *vice versa* is unclear at this time, and will not be treated here, although it would be interesting to explore in future investigations.

5.1.3. Consistency with voiceless vowel typology

The fact that the data revealed allophonic vowel devoicing is interesting, due to the fact that this has not been previously observed for Kaqchikel, and to my knowledge, does not happen anywhere else in the phonological system other than in Spanish loans. Importantly, even though this process does not seem to occur elsewhere in the language, vowel devoicing was observed to be consistent with the typology of voiceless vowels. Phonologically contrastive voiceless vowels are unattested, however, phonetic voiceless vowels are somewhat common cross-linguistically (Gordon, 1998). Vowel devoicing, as a non-categorical phenomenon, is typically gradient (Gordon, 1998). Vowels most commonly devoice in final positions, with a stronger tendency to devoice in larger prosodic domains (e.g. phrase-finally); it seems that devoicing in a smaller prosodic domain (e.g. word-finally) implies devoicing in a larger domain (Gordon, 1998). The next most common position observed for vowel devoicing cross-linguistically is adjacent to voiceless consonants (Gordon, 1998).

The environments in which devoicing was observed are consistent with those in which it has been most commonly reported in other languages, that is, in final positions and when adjacent to voiceless consonants. Furthermore, in phrase-final position, devoicing following sonorants and fricatives seems to occur regardless of the voicing realization of the preceding segment, while alternations occur in word-final position phrase-internally. Acoustic evidence also revealed that this phenomenon was gradient; varying degrees of devoicing occurred on these vowels, ranging from partial to full devoicing. These facts situate vowel devoicing in Kaqchikel—although constrained to a limited segment of the phonology—entirely within the realm of what is expected for languages that demonstrate allophonic voiceless vowels.

5.2. Resyllabification to avoid complex onsets

One of the recurring patterns of assimilation in the speaker data is a tendency to resyllabify words across boundaries in conformity to native phonotactic constraints. Since Spanish allows complex onsets, while Kaqchikel generally does not, this pattern is not surprising. In Kaqchikel, since glides distribute like consonants, initial obstruent-glide sequences are rare, although they do occur in some words, such as *pwäq, 'money'* as well as in contexts of verbal affixation (García Matzar & Rodríguez Guaján, 1997). Spanish, on the other hand, is quite tolerant of such sequences. What is observed in the speaker data is that for instances in which complex onsets arise in Spanish loans, such as *tiempo,* there is a tendency to use resyllabification as a strategy to avoid a complex onset. Thus, while *tiempo* is realized as [ˈtjem.po] when following a consonant, in every example where it follows a vowel it is realized with a heavily aspirated [t], as in [tʰ.ˈjɛm.po]. Since Kaqchikel /p, t, k/ are only aspirated in codas, this is explicit evidence of resyllabification, where *CV.CCV → CVC.CV.* This effect was also occurred word-medially in one example, as in the word *patron,* 'patron', which was realized as [patʰ.ron].

5.3. Assimilation to native phonemes

There are a number of occurrences in the data in which Spanish phones have been assimilated to native Kaqchikel phonemes. In general, these correspond to Spanish voiced obstruents. Again, this is not surprising, since here we find the greatest point of departure from Kaqchikel's consonant inventory, and this is where assimilation has been observed historically, as was discussed earlier. While for the most part, voiced obstruents do not pose a large problem for the speaker, as they can be observed throughout the data set, a number of examples are worth mentioning. In two instances, Spanish /b/ has been assimilated to /p/, as in *tambor* 'drum', which surfaces as [tam.ˈpoṛ], and in *banqueta* 'banquet', which surfaces as [pan.ˈkwetʰ]. In at least two other instances, voiced obstruents are realized as a glide, as in *domingo,* which has already been discussed, as well as in *prueba* 'test', which is realized as [pru.ˈwe.waʔ].

5.4. Relevance to diachronic analysis

A return to the issue of the variability of lexical forms mentioned earlier is now appropriate. It was previously noted that some vowel-final words with non-final stress show variability in the realization of the final vowel. While the tendency to drop final vowels in this context seems to be productive—demonstrated by forms like *apast* from Spanish *apaste* 'basin', *machät* from Spanish *machete,* among others—just as many, if not more, have retained this final vowel, even

in seemingly early loans such as *xila* from Spanish *silla,* 'chair'. Furthermore, a large number of words show both variants with and without the final vowel, as in *anx/anxa,* 'garlic', *kax/kaxa,* 'box', *xar/xara,* 'jar', and many more.

Evidence from contemporary speaker data provides a nice explanation for this variability. The observation that unstressed final vowels only delete or devoice in phrase-final position, but often surface when followed by a consonant suggests that in spite of the pressure to drop the vowel to conform to the native stress pattern, there is also pressure to maintain its identity in some way. This proposal may also account for why when following a stop, vowels are deleted more freely, since the aspiration of the final consonant may be a perceptual cue that helps preserve the vowel's identity. Under this analysis, even though vowels do not always surface, their identity is never really lost. From this perspective, the fact that some words have retained this vowel over time, while some have lost it is not really surprising.

6. Conclusion

This paper has investigated the phenomenon of Spanish lexical borrowing in Kaqchikel from both diachronic and synchronic perspectives. While much progress has been made, there have been a number of limitations. First, from a synchronic perspective, data from only one speaker has been examined. The patterns manifested here may or may not be applicable in the speech of other Kaqchikel speakers. Furthermore, only a tentative analysis of contemporary speaker data has been attempted, with the intention of describing some preliminary observations.

From a diachronic perspective, much more work could be done to present a fuller picture of the history of borrowings in Kaqchikel. The sheer amount of information available could not be thoroughly treated within the scope of this work. A more thorough investigation of early dictionaries, as well as the historical and cultural contexts within which borrowings have occurred, would likely produce further relevant information. Moreover, time has not allowed for investigation into the phonological and historical details of related languages which could provide insight into problematic aspects within the data.

This first attempt to describe Spanish loanwords has covered a fair amount of ground. Given the shortcomings of the present work, significant—albeit preliminary—progress has been made which may serve as the foundation for future work in the area of lexical borrowing in Kaqchikel and other Mayan languages. A number of useful observations have been made which, to my knowledge, have not been previously pointed out. Vowel devoicing occurring in Kaqchikel borrowings has been observed to be consistent with the typology of voiceless vowels, and at least one explanation of a phenomenon manifested in historical loanwords has been provided as a result of observations found in contemporary speech. The findings of this paper suggest that any future work in the area of lexical borrowing will benefit from looking to the past—as well as the present—and that a holistic approach to the issue can yield valuable insights that might otherwise be overlooked. Future investigation into this issue should take these factors into account, collecting data from a broader sample of speakers, with more focus given to grammatical usage and sociolinguistic factors. A more thorough examination of early sources and cross-linguistic considerations should be carried out. Further investigation into the phonological systems of other Mayan languages could produce a better understanding of how and why many forms have come to be pronounced as they are, as well as offering a better understanding of the phenomenon of borrowing as a whole.

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Appendix: Dictionary Sources for Kaqchikel borrowings[6]

Cojti, N., Chacach Cutzal, M., & Calí, M. Armando. (1998). *Diccionario del idioma Kaqchikel.*
Antigua Guatemala: Proyecto Lingüístico Francisco Marroquín.

Kaqchikel	*Spanish*	*English*
alkalt	alcalde	mayor
altamix	altamisa	medicinal plant
anima	anima	soul
anxa	ajo	garlic
anxäx	ajo	garlic
aranx	naranja	orange
armita	ermita	hermitage
arwenxa	arveja	pea
asaron	azadon	hoe
asukär	azucar	sugar
b'ak	vaca	cow
b'aka	vaca	cow
b'esino	vecino	neighbor
b'ur	burro	donkey
chicha	chicha	corn wine
kakaxt	cacaste	garment
kamixa'	camisa	shirt
kape	café	coffee
kax	caja	box
kaxa	caja	box
kuchila	cuchillo	knife
law	llabe	key
lawx	clavo	nail
limonix	limon	lime
machät	machete	machete
palomax	paloma	pidgeon
paps	papa	potato
patx	pato	duck
putika	botica	pharmacy
rora	ruda	rue
ru'ra	ruda	rue
tyox	dios	God

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[6] Note that where examples have duplicate forms in other sources only one source listing is given.

wakx	vaca	cow
xar	jarra	jug
xara	jarra	jug
xerka	jerga	slang
xila	silla	chair
Xuan	Juan	John

Patal Majzul Lolmay, F. (2007). *Rusoltzij ri Kaqchikel: diccionario estándar bilingüe Kaqchikel Español.* Guatemala: Cholsamaj.

Kaqchikel	*Spanish*	*English*
Anx	ajo	garlic
Apast	apaste	basin
Kaxlan	castellano	Spanish
Lawe	llabe	key
Patix	pato	duck
Rajxoj	rayo	ray
tura's	durazno	peach
xab'on	jabon	soap
xinxibre	jingibre	ginger