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Zapotec

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Loanwords and contact-induced phonological change in Lachixío Zapotec¹

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0. LACHIXÍO ZAPOTEC is a dialect of the Solteco branch of the Zapotec language family. It is spoken by about 4000 people in two communities in the mountainous Sola de Vega district of Oaxaca, Mexico. Solteco is spoken by about 7500 people in Sola de Vega and Southwest Zimatlan, Oaxaca. Some communities have up to 20% monolingual Zapotec speakers with the rest of the population bilingual between Zapotec and Spanish. Other communities have nearly completely shifted to Spanish with a few bilingual elders remaining. The speech of all speakers contains a large number of Spanish loanwords that illustrate various degrees of assimilation and change to the Zapotec phonological system.

1. Issues in the comparative study of loanwords

When speakers of a language have had an extended history of social contact with speakers of another language, there are often loanwords in the borrowing speaker's lexicons which show several patterns of adaptation that lie between fully assimilated loanwords and fully unassimilated loanwords.

- (1)
- | | | | | |
|--------------------------|-------|-------------------------------|-------|----------------------------|
| assimilated
loanwords | _____ | less-assimilated
loanwords | _____ | unassimilated
loanwords |
|--------------------------|-------|-------------------------------|-------|----------------------------|

The differences between the extremes are most pronounced when the two languages have substantially different phonological systems. With assimilated loanwords the borrower substitutes with similar elements from his/her language. The loanword may differ from the source model in terms of syllable structure, stress, and segments. These words show low or no interference from the foreign patterns of the source language. Example (2) shows an assimilated loanword with a simplified liquid obstruent sequence. All the examples in this paper are ordered with the Lachixío orthography on the left, followed by the Lachixío phonetic form. The borrowing arrow (<b--) separates the Zapotec from the Spanish phonetic model and the gloss in Spanish and English. I use the borrowing arrow to avoid confusion with sound change arrows (>) and synchronic rule arrows (→).

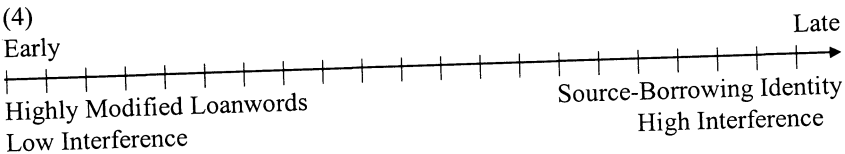
- (2) ka'lo ['ka'l:ó] <b-- ['kaldó] 'caldo // broth'

With unassimilated loanwords the borrower will adopt foreign features of the source phonological system along with the loan. Non-native phones, phonemes, or phone sequences can be utilized by the borrowing speaker. Borrowed phone sequences may conflict with the native phonology, which can be determined by analysis of native vocabulary. Stress on some loanwords may not follow from otherwise predictable rules. These words show high transfer of phonological patterns from the source language. Example (3) shows the preservation of a liquid-obstruent sequence, a syllable (and word) final nasal, and final syllable stress. All of these features violate the system of phonological constraints that were operational in the precontact Lachixío phonological system.

- (3) kolcho'n [kol'tʃoŋ] <b-- [kol'tʃoŋ] 'colchón // mattress'

1.1 Changing levels of bilingualism in a changing community

Several previous studies have classified loan strata chronologically (see Boas 1930, Law 1961, Berlin and Kaufman 1962ms, Kaufman 1988ms). These researchers place loans that show less interference (those which deviate greatest from the model and create the least disruption in the native phonological system) as earlier borrowings and words showing more interference as later.



The relative chronology is developed on the basis of a general assumption that in early contact the level of bilingualism in the borrowing community is so low as to prevent the adoption of foreign elements that would otherwise disrupt the phonological system of the borrowing language; the loanwords are modified in ways to make them fit with the pre-contact linguistic system (Thomason & Kaufman 1976). Later, as more speakers become familiar (actively and passively) with the phones, phonemes and phone sequences of the source language, words which contain non-native patterns are taken more easily with less modification. These assumptions are illustrated in (5).

- (5)
- High Interference = Higher Level of Bilingualism = More Intensive Contact
- No/Low Interference = Lower Level of Bilingualism = Less Intensive Contact

The relationships in (5) should not be assumed without independent verification. Although high levels of phonological interference in a borrowing system entails intensive contact and a higher general level of bilingualism in the borrowing community, low interference does not entail a lower level of bilingualism. Speaker attitudes and other cultural factors could prevent the adoption of phonological features from the source language. I modify (5) in (6) to represent this by replacing the equivalency symbol (=) with a symbol (\approx) that can be read "can correlate with".

(6)

High Interference = Higher Level of Bilingualism = More Intensive Contact

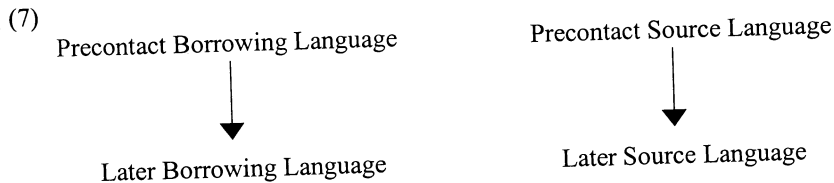
No/Low Interference \approx Lower Level of Bilingualism \approx Less Intensive Contact

Because there is no necessary relationship between low interference and the intensity of contact, it can not be assumed that loanwords can be chronologically stratified solely on the basis of the level of modification (the deviation from the source model). However, another measure is available when the history of sound change in the source language is documented or recoverable.

2. The relative and absolute dating of loanwords

When dates for the completion of sound changes are known from the source language, and these older pronunciations have served as model sounds for loanwords, several points of reference exist that allow for the absolute dating of these loans. Comparison with the replacement phones in the borrowing language will answer the question of whether more assimilated loans actually represent earlier borrowings. If this pattern is present the loans can be further stratified into relative chronologies within the periods defined by the absolute dates of the source language sound changes. Of the previously cited works that chronologically categorize loanwords, only Berlin and Kaufman (1962ms) appeal to the dating of loans by source language sound change.

Haugen (1950) states that loanwords are a problem to be analyzed diachronically. We do not find and identify loanwords by synchronic analysis but through identification of structural irregularities (229). His analysis of linguistic borrowing involves the comparison of the precontact linguistic systems when possible and the later states of each of the linguistic systems in a contact situation. Loanwords are identified and analyzed by a parallel comparison of all languages currently, or previously, in contact. The structural irregularities (exceptions and contradictions of more general phonological constraints) are signs of a changed and changing phonological system with a source in the particular sociocultural history of the communities in the multilingual situation. The parallel comparison can be represented as in (7) and is the approach that I take in analyzing the Zapotec data.



3. The changing source language: Spanish sound changes in colonial and post-colonial Mexico.

The model of Spanish I am assuming is based on Spaulding (1943) and Canfield (1981). In the history of the Spanish language since the conquest of Mexico, the phoneme represented in Spanish orthography as <j> before back vowels and <g> before front vowels changed from a voiced palatal fricative to merge with the voiceless palatal fricative written <x> by about 1600. The articulation of this phoneme then shifted back to become a velar by about 1750. The phoneme represented by orthographic <s> was slightly retracted [ʂ] before about 1650, when its merger with the dental fricative [s] was complete. This was also voiced before 1600, contrasting with the voiceless <ss>. There was a phoneme /h/ that dropped out of the system by the early 17th century. Orthographic <ll> was pronounced as a palatal lateral [ʎ] until just before the turn of the 18th century. These sound changes are represented in (8).

(8) Spanish Sound Changes during the Contact Period.

		1600		1750	
(a) <j>/<g>	[ʒ]	>	[ʃ]	>	[x]
(b) <x>	[ʃ]				
		1600		1650	
(c) <s>	[z]	>	[s]	>	[s]
(d) <ss>	[s]				
			1650		
(e) <h>	[h]	>	∅		
				1690	
(f) <ll>	[ʎ]	>			[j]

4. Diagnostic sounds

A subset of the sound changes of the source language may be useful in stratifying the loans of the borrowing language. For example, Lachixío neutralizes the distinction between voiced and voiceless obstruents in some

positions within the phonological word. In native words, only voiceless obstruents are permitted medially (after a stressed syllable) and only voiceless obstruents are permitted word-initially in monosyllables: CVTV and TV (*CVDV, *DV), where <T> represents any voiceless obstruent and <D> any voiced obstruent. Because voicing is neutralized, the voicing merger of the Spanish fricatives, (8a-d), are of no use in classifying Lachixío loans. There is only one Period defined before 1650 and not two, as the Spanish voicing merger would allow for a language which did not neutralize the distinction between voiced and voiceless fricatives.

5. The changing borrowing language

The Lachixío loanwords show two regular replacements for Spanish <s>. The first is a voiceless palatal fricative [ç]. This is seen in examples (a-c) of Table (9). The second replacement is a voiceless alveolar fricative [s], as seen in (d-f) of Table (9). I suggest that the replacements differ because the Spanish models differed in pronunciation; the palatal substitution corresponds with <s> [ç] before the sound change and the alveolar corresponds with <s> [s] after the merger was complete by about 1650.

(9) Diagnostic <s>

Lachixío		Spanish		Diagnostic
(a) xombetoh	[ʃo'mbet:ò]	[ʃam'peðro]	'San Pedro'	<s> = [ç]
(b) bexo	['veʃ:ò]	['peʃo]	'peso // meausre'	
(c) xombólo	[ʃo'mbol:ò]	[ʃom'brero]	'sombbrero // hat'	
				ca.1650
(d) serembiyo	[sere'mbi:yo]	[ʃaram'pyon]	'sarampion // measles'	<s> = [s]
(e) sobrino	[so'vriɲ:ò]	[ʃo'βrino]	'sobrino // nephew'	
(f) sonaja	[so'nax:a]	[so'naxa]	'sonaja // rattle'	

The Lachixío loanwords also show two regular replacements for Spanish <j>/<g>. The first is a voiceless palatal fricative [ç]. This is seen in examples (g-k) of Table (10). The second replacement is a voiceless velar fricative [x], as seen in (l-o). I suggest that the palatal substitution corresponds with <j> [ç] or [ç] before the articulation shift and that the velar corresponds with <j> [x] after the shift was complete by about 1750. The velar fricative is a new phoneme in the Lachixío phonological system.

(10) Diagnostic <j>/<g>

Lachixío		Spanish		Diagnostic
(g) laxo	['laʃ:ó]	[na'ranʒo]	'naranjo // orange tree'	<j> = [ʒ]
(h) xzoah	['ʒoá:]	['ʒoan]	'Juan // John'	
(i) lobísho	[lo'víʃ:ó]	[kla'βiʒa]	'clavija // peg'	
(j) téxa	['teʃ:a]	['teʒa]	'teja // tile'	
(k) menóxo	[me'noʃ:ó]	[ma'noʒo]	'manejo // handful'	
				ca.1750
(l) mejora	[me'xo:ra]	[me'xor]	'mejor // better'	<j> = [x]
(m) táje	['tax:é]	['traxe]	'traje // suit'	
(n) jémplo	['xémplo]	[e'xemplo]	'ejemplo // example'	
(o) jardín	[xar'ðiŋ]	[xar'ðiŋ]	'jardin // garden'	

In both Tables (9) and (10) the loans which show correspondences with later Spanish pronunciation also show less nativization, whereas the earlier loans show the greatest nativization. In the case of Lachixío Zapotec, the loans follow the common pattern, where greatly modified loans represent earlier borrowings and less modified loans represent later borrowings. We can then further stratify the loanwords of any given period into several sub-Periods on the basis of phonological interference.

6. Phonological interference as a basis for relative stratification.

Unambiguously early forms like (c) *xomboío* 'sombbrero // hat' show that obstruent-liquid clusters were simplified to be borrowed without the liquid. A form like (m) *táje* 'traje // suit' shows that this simplification continued beyond about 1750 (the completion of the velar shift in Spanish). Example word (e) *sobrino* 'sobrino // nephew' shows that obstruent-liquid clusters were finally accepted during this period. Forms which simplify the clusters are placed earlier within the post-1750 Period than those which preserve them, dividing the Period into two relative strata: one before the acceptance of the clusters and the other after.

Another modification found in loans containing early diagnostic sounds is the voicing of obstruents after nasals (see (a) and (d)). The Zapotec word *próndo* <b-- Spanish 'pronto' shows that at a time after obstruent-liquid clusters were accepted, obstruents continued to be voiced after nasals. Since obstruent-liquid clusters were still being simplified after 1750, I claim that the acceptance of voiceless obstruents after nasals began after obstruent-liquid clusters were already being

adopted by native Lachixío speakers. The relative ordering is worked out on the familiar basis of internal reconstruction. I can further divide the post-1750 Period into three relative strata. In example (11) I present a chronology of several of the loans discussed in this paper.

(11) Early Contact

↓ Late Contact	xomboío	[ʃo'mból:ó]	'sombrero // hat' (<1650)
	lobísho	[lo'ví:ʃ:ó]	'clavijo // peg' (< 1750)
	táje	['táx:é]	'traje // suit, outfit' (>1750a)
	próndo	[próndo]	'pronto // soon' (>1750b)
	jémplo	[xémplo]	'ejemplo // example' (>1750c)

The relative and absolute periods defined by diagnostic sounds of the source language and the nativization of the loans are summarized in the charts that follow. Periods defined by the absolute dates listed in the top bar are divided by double lines. Relative sub-Periods defined by the structural irregularities listed in the bottom bar are divided by dotted lines. Some loanwords in Lachixío show only the diagnostic sound, but the source did not contain any patterns that underwent modification at any time. These words cannot be assigned to any relative stratum but only to a Period. The numbers of these ambiguous loans are given within the charts.

The chart in (12) plots loanwords modeled on Spanish words written with <j> before back vowels and <g> before front vowels. Here we find a significant rise in the number of loans showing the post-1750 velar articulation. This corresponds with the ethnohistoric record from the region, which suggests an increase in the intensity of contact at this time. In the later half of the 18th century, Lachixío became the subject of correspondence between the resident friar and the Spanish Viceroyalty. The town's trade in a red dye produced from the cochineal insect had been escaping the Spanish system of tribute, and the Viceroyalty wanted figures on production and sales so the Indians could be taxed accordingly (Porrua 1963).

(12) Lachixío Zapotec: Words containing Spanish /j/

Period I	Period Ib < 1750	Period II >1750	Period IIb	Period IIc	
Palatal Artic.	Palatal Artic.	Velar Artic.	Velar Artic.	Velar Artic.	
					25
					24
					23
					22
					21
					20
					19
					18
					17
					16
					15
					14
					13
					12
					11
					10
					9
					8
					7
					6
					5
					4
					3
					2
					1
		(6 ambiguous)			
/j/ <b-- /x/	/x/ <b-- /x/	C <b-- CR	CR <b-- CR	NT <b-- NT	
			ND <b-- NT		

The following chart (13) plots the loanwords based on Spanish models written with <s>. There is a significant rise in loans after 1650. I divide the post-1650 period into four strata based on segmental replacement and phonotactical simplification. Where the data permit, these two charts can be synchronized, allowing for a more detailed stratification.

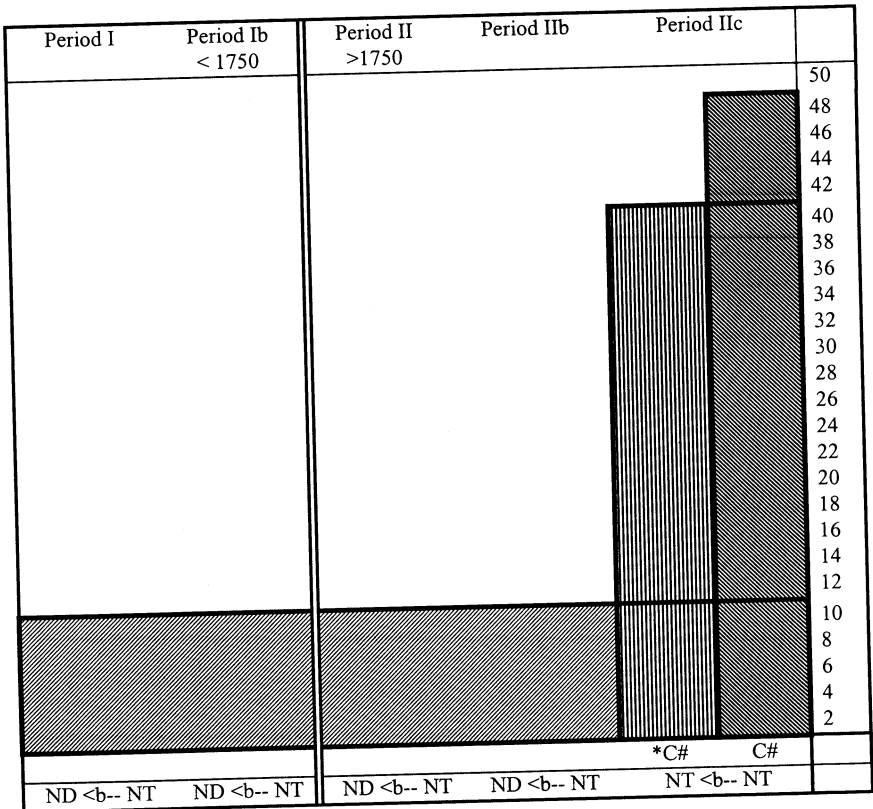
(13) Lachixío Zapotec: Words containing Spanish /s/

Period i < 1650	Period ii > 1650	Period iib	Period iic	Period iid	
Retracted <s>	Dental <s>	Dental <s>	Dental <s>	Dental <s>	
					60
					58
					56
					54
					52
					50
					48
					46
					44
					42
					40
					38
					36
					34
					32
					30
					28
					26
					24
					22
					20
					18
					16
					14
					12
					10
					8
					6
					4
					2
	13 ambiguous				
/b/ <b-- /p/	/p/ <b-- /p/	CR <b-- CR	CC <b-- CCC	CCC <b-- CCC	
C <b-- CR	/r/ <b-- /r/	ND <b-- NT	[iŋ] <b-- [iŋ]	[iŋ] <b-- [iŋ]	
/l/ <b-- /l/	C <b-- CR		NT <b-- NT	NT <b-- NT	
ND <b-- NT	ND <b-- NT				

The following chart (14) is the most significant. It plots a particular phonological interference feature: loans modeled on Spanish words containing a nasal-obstruent cluster. These words are plotted on the scale developed for chart (12), which shows that voiceless obstruents are permitted after nasals only in the most recent stratum. Most of the occurrences of words containing nasal-obstruent clusters follow the pattern [NT] rather than being modified to [ND]. This large

grouping of loans has been borrowed most recently. The significant increase seen at the right end of the chart suggests a rapid increase in sociocultural contact with Spanish speakers in the most recent sub-Period. This parallels the oral histories that I have recorded from speakers who place the entrance of roads, the logging industry, primary and secondary schools all in the latter half of the current century.

(14) Lachixío Zapotec: Words containing Spanish [NT] plotted on same chronological scale as words containing Spanish /j/.



7. Implications

This work utilizes methods of comparative historical linguistics and the interplay of language and culture to make statements about the intensity of social contact during the history of a multilingual contact situation. The application of such a study is historical. By first comparing the sound changes of the source language, loans containing diagnostic sounds can be dated to before or after a

particular sound change was complete. If the loans assigned to these Periods show patterns where greater modification indicates an earlier borrowing, many loans can be assigned to relative strata within Periods defined by absolute dates. With the establishment of a detailed chronology of the loanwords in a language, the content of the loans of a Period or sub-Period can be scrutinized to determine the range of semantic domains borrowed within a particular stratum and possibly characterize the changing functions of the interactions between the groups in contact. The results of such analysis can be compared to typologies of language borrowing, such as that forwarded by Thomason and Kaufman (1988) or with ethnohistoric or archaeological records. By casting the study of loanwords in a historical framework, a study of sociocultural change can have a linguistic foundation.

Notes

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