

A LEXICAL ANALYSIS OF THE [č] - [š] ALTERNATION IN LUISEÑO

Tanya Lebar

In attempting to analyze the phonology of a language within a standard generative framework, it is sometimes difficult to choose among competing analyses. New approaches to phonology sometimes offer possible solutions to such dilemmas. In this paper, I provide an analysis of a longstanding problem in Luiseño,¹ a Uto-Aztecan language spoken in California. The analysis is presented within the framework of Lexical Phonology. It will be shown that the Lexical approach enables us to resolve an issue which defies a straightforward analysis in the traditional generative framework.

The [č] to [š] alternation occurs whenever underlying /č/, as a result of vowel syncope, is positioned next to either a [-continuant] segment² or a [+lateral] segment. Consider the following data:³

- | | | | |
|-----|-----------|------------|------------------------------|
| (1) | čoḱaáyḷaš | nošḱaáyḷa | 'walking stick' |
| | čoróʔʔiḷš | nošróʔʔiḷa | 'measuring instrument' |
| | čulúppi | pošlúppila | 'entrance' |
| | čapáʔniš | nošpáʔna | 'mending of several objects' |
| | čoriípiš | nošriípi | 'wood to be cut' |

The affixation of the vowel-final possessive prefixes *no-* (1st person sing.) and *po-* (3rd person sing.) results in vowel syncope in stems with second syllable stress. This process may be represented by the following rule.

- (2) Syncope: $V \rightarrow \emptyset / V + C __ CV(V)$

The environment for the alternation of [č] to [š] is thus present in such forms, as shown in the rule below:

[-continuant] segment, an environment where we would expect to see the [č] to [ʃ] alternation. This is shown in (7).

(7)	něči	'to pay'	něčkixa	causative
	kiíčo	'to build house'	kiíčkixa	causative
	měči	'to chew'	měčkawut	'chewer'
	miíči	'to choke someone'	miíčkawut	'one who chokes another'

As we can see, the addition of the suffixes -kixa (causative) and -kawut (verb to noun; propensitive) results in the deletion of the stem-final vowel, thus positioning [č] before the [-continuant] segment 'k'. Yet the alternation we would expect does not occur.

These data can be accounted for by positing a rule of vowel deletion which is ordered after the Frication Rule. Notationally, this rule is as follows.

- (8) V-Deletion: V --> Ø/C ____ + C
[-stress]

The following derivation shows the interaction of these rules.

(9)	UR	# miíči + kawut #
	Frication	-----
	V-Deletion	miíč + kawut
	PR	[miíčkawut]

An alternative analysis, however, presents itself if we view the data within the framework of Lexical Phonology. In a theory of Lexical Phonology such as that proposed in Mohanan (1982), the output of the syntactic component does not form the input to the phonological component. Rather, morphological operations and the phonological rules associated with them (called lexical phonological rules) are grouped together and executed on successive levels or strata. A given phonological rule may occur on one or more strata. When all morphological rules and associated lexical phonological rules have applied, a level of representation called the lexical level has been reached. Phonological rules, usually of an exception-free nature, then operate on the lexical representation to produce the phonetic form. Brackets mark the internal structure of forms and may form part of the environment of lexical phonological rules. At the end of each stratum, internal brackets are erased. In Lexical Phonology derivation usually precedes inflection.

The data presented thus far suggest that the forms which are subject to the Frication Rule are all inflected forms, while the

'exceptions' to this rule are all derived forms. I thus submit that the [č] to [š] alternation only occurs in inflected forms; that is, the Frication Rule operates only on the level of inflection (Level 2 in my analysis), and not on the level of derivation (Level 1).

We would expect to find the alternation only in inflected forms and never in derived forms. The available data do indeed seem to support this analysis. As well as the lack of alternation in forms like pěčkixa 'to pay' (causative), we see no frication in other verbs with derivational affixes, nor in some types of verb reduplication (shown in (17) below) -- all instances where [č] is in the environment for the change to [š] (that is, before a [-continuant] or [+lateral] segment). Conversely, the alternation does occur in inflected forms: the prefixed forms expressing possession, for example, as well as verb reduplication which expresses past punctual tense (shown in (19) below).

The following derivations of pěčkixa 'to pay' (causative) and poškaayla 'my walking stick' will illustrate the difference between derived and inflected forms in terms of the environment for the [č] to [š] alternation. In the lexical framework the Syncope, Frication and V-Deletion rules are rewritten as follows.

(10) Syncope: $V \rightarrow \emptyset / [C \text{ ____ } CV(V)]$

(11) Frication: $C \rightarrow [+cont] / \left[\begin{array}{c} \text{---} \\ \left[\begin{array}{c} -ant \\ +cor \\ +hi \\ -cont \end{array} \right] \end{array} \right\} \begin{array}{c} C \\ \{-cont\} \\ \{[+lat]\} \end{array}$

(12) V-Deletion: $V \rightarrow \emptyset / [C \text{ ____ }] C$

(13)

LEVEL 1	[<u>ṇéč</u> i]	[čokaáy _ɭ la]
Derivation		
Morphology	[[<u>ṇéč</u> i] _v kixa] _v	-----
Phonology		
V-Deletion	[[<u>ṇéč</u>] kixa]	-----
LEVEL 2	[<u>ṇéč</u> kixa]	
Inflection		
Morphology	-----	[<u>ṇo</u> [čokaáy _ɭ la] _N] POSS
Phonology		
Syncope	-----	[<u>ṇo</u> [čkaáy _ɭ la]]
Frication	-----	[<u>ṇo</u> [škaáy _ɭ la]]
LEXICAL		
REPRESENTATION	/ṇéčkixa/	/ṇoškaáy _ɭ la/

The derivation above shows why there is no alternation in the derived form ṇéčkixa (where we would expect a change from [č] to [š] because of the position of [č] next to [k], the environment stipulated in the Frication Rule); namely, because the new rule stipulates an environment not present in this form. Since the brackets are erased after each level in Lexical Phonology, the environment for the Frication Rule is not present. Conversely, the change does occur in the inflected form ṇoškaáy_ɭla precisely because this environment is present. This lexical analysis offers an advantage over the previous analysis in that it precludes the need to extrinsically order the Frication Rule before the V-Deletion Rule, for such forms as ṇéčkixa are simply not subject to the Frication Rule.

The assumption here is that forms such as ṇéčkixa 'to pay' (causative) are derived while forms such as ṇoškaáy_ɭla 'my walking stick' are inflected. To determine the validity of this assumption, one must understand the difference between derivational and inflectional affixes. According to Kenstowicz and Kisseberth (1979:410), derivational affixes are typically associated with such categories as causative, benefactive, reciprocal, as well as marking the derivation of one part of speech to another, whereas inflectional affixes tend to mark such categories as person, number, case, and tense. Although the affixes -kixa (causative) and ṇo- (possessive) conform to this (general) definition, further evidence is needed to confirm their respective status as derivational and inflectional.

One way to obtain such evidence is to see how these affixes combine with various root forms, since roots can generally be

combined with all inflectional affixes of a particular type to form a paradigm, but it is normally not possible to group derivational affixes into sets all members of which can combine with a root. Derivational affixes, then, have a 'limited distribution'. In Luiseño, the causative suffix -kixa combines only with verbs of Conjugations 1 and 2.⁴ Further, this suffix may not be combined with all the verbs in these conjugations, but only a subset of them. Other causative suffixes also exist and it is not predictable which suffix is affixed to which stem. In fact, the causative suffix -xami only occurs with the verbs néci 'to pay' and páči 'to wash'.

The possessive prefixes, on the other hand, can be affixed to all noun forms (derived or otherwise) without exception, and all such stems can be combined with all the possessive prefixes.⁵ Thus we see paradigms such as that in (14).

(14)	piḱát	'stone knife'
	ṇopḱáki	'my stone knife'
	opḱáki	'thy stone knife'
	popḱáki	'his/her/its stone knife'
	čampikáki	'our stone knife'
	ompiḱáki	'your stone knife'
	pompikáki	'their stone knife'
	apḱáki	indefinite

(-t on the stem is an absolutive suffix. The suffix -ki here means possession acquired, not inherent.)

Having established that the forms néčkixa and poškaáyla are respectively derivational and inflectional (that is, that causative suffixes are derivational and possessive prefixes inflectional), let us look at some further evidence for the assumption made in the analysis proposed that the [č] to [š] alternation only occurs on Level 2, that of inflection.

Consider the following forms.

(15)	miščkawut	'one who chokes another'
		<mišči 'to choke someone'
	mečkawut	'chewer' <meči 'to chew'

(where -kawut changes verb to noun; propensitive, and is thus a derivational suffix). Again we see [č] positioned before a [-continuant] segment, an environment in which, under the previous analysis, we would expect to see a change to [š]. In the lexical analysis, however, with its revision of the Frication

Rule, we see that the environment is not present, and therefore no alternation occurs, as shown in the following derivations.

(16)

LEVEL 1	[mič̌i]	[méč̌i]
Derivation		
Morphology	[[mič̌i] _v ɣawut] _{prop.}	[[méč̌i] _v ɣawut] _{prop.}
Phonology		
V-Deletion	[[mič̌] ɣawut]	[[méč̌] ɣawut]
LEVEL 2	[mič̌ɣawut]	[méč̌ɣawut]
Inflection		
Morphology	-----	-----
Phonology		
Frication	-----	-----
LEXICAL		
REPRESENTATION	/mič̌ɣawut/	/méč̌ɣawut/

The lexical analysis proposed again precludes the need to mark such forms as exceptions to the [č̌] to [š̌] alternation rule, for the Level 2 rule will not apply. And indeed, we do not expect to see the alternation in derived forms.

Further, there is a process of verb reduplication⁶ in Luiseño in which [č̌] is positioned next to a [-continuant] segment, the environment we would expect to 'trigger' the alternation to [š̌]. Yet no change occurs because this type of reduplication marks a change from one part of speech to another (verb to adjective or verb to noun) and is therefore a derivational process.

The processes which occur here may be verbally stated as follows.

- (a) reduplication of the entire stem;
- (b) shift of stress from third syllable (originally first syllable of stem) to second syllable of reduplicated form;
- (c) vowel syncope of third syllable (now unstressed);

that is, (c) V --> β/ [´]V [C ____

The following forms exemplify the three processes just outlined.

(17)	xalaxlaš	'loose'	xáli	'to loosen'
	koŋóknoš	'green'	kóŋo	'to become green'
	ličiľčiš	'slippery'	liči	'to slide'
	čawačwas	'uncombed, tousled, having spare foliage'		
		<čáwa	'to be unproductive (of plants)'	
	čuḡáčḡaš	'limping'	čoča	'to limp'
	čaḡúčḡuš	'crest, topknot'	čaču ⁷	
	čaŋíčŋiš	'having supernatural power'		
		<čáŋi ⁷		
	čuḡáčḡaš	'grave, serious'	čuḡa ⁷	

(The final [š] in these forms marks verb to adjective or verb to noun.) It is the latter four forms which interest us here, for we see the position of [č] next to the [-continuant] segments [k] and [ŋ]. Although this is the environment in which we might expect a change to [š], no frication occurs. I submit that the reason for this is the fact that the [č] to [š] rule only operates on Level 2, that of inflection; and since these are derived forms, they are not subject to the rule. The following derivations exemplify this.

(18)

LEVEL 1	[čáku]	[čúqa]
Derivation		
Morphology	[[čaku [čáku] _v] š] _N	[[čuqá [čúqa] _v] š]
Phonology		
Stress Shift	[[čakú [čaku]] š]	[[čuqá [čuqa]] š]
Third Syllable V-Deletion	[[čakú [čku]] š]	[[čuqá [čqa]] š]
LEVEL 2	[čakúčkuš]	[čuqáčqaš]
Inflection		
Morphology	----	----
Phonology		
Frication	----	----
LEXICAL		
REPRESENTATION	/čakúčkuš/	/čuqáčqaš/

On Level 1, we can see that the environment for [č] to become [š] is present as stated in the revised Frication Rule (11). Because the brackets are erased after each level, the environment is not present in these forms in Level 2; that is, the level in which the rule operates. Therefore, the frication process does not occur. Thus, under this analysis, such forms are not exceptions to the Frication Rule, as they would have been marked in the previous analysis, and again, because this is a derived form we do not expect to see the [č] to [š] alternation.

Conversely, we do expect to see the change of [č] to [š] in inflected forms; recall the alternations in the forms with possessive prefixes. Although these forms are all prefixed nouns, we see a syllable reduplication process and vowel syncope occurring in another type of verb reduplication, which expresses past punctual tense. Consider the data in (19).

(19)	kołáw	kołáw	'to gather firewood'
	qeɣvé?	qevé?	'to be inside'
	soɣwó?	sowó?	'to be afraid'
	člšluúy	člšluúy	'to speak Spanish'

The processes involved here are reduplication of the first syllable, followed by vowel syncope. In the last form in (19) this results in the position of [č] next to a [+lateral] segment, the environment stipulated in the Frication Rule as 'triggering'

the change to [š]; and indeed, we see that the alternation occurs in this form. The following derivation illustrates.

(20)

LEVEL 1	[č̣i_luúy]
Derivation	
Morphology	----
Phonology	----
LEVEL 2	[č̣i_luúy]
Inflection	
Morphology	[č̣i [č̣i_luúy] _v] Past Punctual
Phonology	
Syncope	[č̣i [č̣luúy]]
Frication	[č̣i [ṣ̌luúy]]
LEXICAL	
REPRESENTATION	/č̣iṣ̌luúy/

The data reveals, however, some apparent exceptions to the Frication Rule as proposed in the lexical analysis presented thus far. We see, for example, the form wašpiš 'seed beater' <wač̣i 'to beat seeds from plants' (where -pi indicates change from verb to noun and is therefore derivational, and final -š marks the absolutive case and is therefore inflectional). Although the rule as originally stated would not mark this as an exception, it does pose a problem for the revised rule which generates an incorrect phonetic form, as is seen in (21).

(21)

LEVEL 1	[wáčɪ]
Derivation	
Morphology	[[wáčɪ] _V pi] _N
Phonology	
V-Deletion	[[wáč] pi]
LEVEL 2	[wáčpi]
Inflection	
Morphology	[[wáčpi] _N š] _{Abs}
Phonology	
Frication	----
LEXICAL REPRESENTATION	*/wáčpiš/

There are two possible ways to account for this form. First, this may be a process of assimilation, whereby the [č] assimilates (at a distance) to the absolutive suffix -š via a post-lexical rule. This rule would apply to the lexical form wáčpiš to generate the form wáčpiš which is indeed the correct phonetic form. If this rule in fact represents the process occurring here, we would expect to see no instances of [č] in a word with a [š] in the final position. There are, however, many forms such as the following.

- (22) ṭamuučěš 'the hard part of acorns which is not easily ground'
- haṭwáciš 'the hurrying' haṭwáci 'to hurry'
- púluučíš 'calculation' púluučí 'to calculate'

In these forms we would expect to see an assimilation of [č] to [š], since the final segment [š] presumably conditions the change. To see if this is indeed the case, we would need to see the form wáčpiš in the construct, as opposed to the absolute, form, which does not contain the suffix -š.⁸ Unfortunately, the data does not reveal the word wáčpiš 'seed beater' in any other form but the absolutive, so the assumption that [š] as final segment conditions the alternation of the preceding [č] in this form is purely speculation. Indeed, in the face of such forms as those given in (22), I maintain that the final [š] does not condition this change.

An alternative analysis here is that the underlying segment in the root form wáci is /š/, which becomes [č] before a vowel (recall the Affrication Rule in (5)). The underlying /š/ does

not become [č] in wášpiš because the environment that would trigger the change is bled off at Level 1. The derivation of this form under this analysis is as follows.

(23)

LEVEL 1	[wáš]
Derivation	
Morphology	[[wáš] _V pi] _N
Phonology	
V-Deletion	[[wáš] pi]
LEVEL 2	[wášpi]
Inflection	
Morphology	[[wášpi] _N s] _{Abs}
Phonology	
Frication	----
LEXICAL	
REPRESENTATION	/wášpiš/

As we can see, the correct phonetic form is generated in this analysis, allowing us to maintain the rules as presented in the lexical analysis so far.

The postulation of underlying /š/ in other forms that would otherwise be marked as exceptions lends support to this analysis. We see, for example, forms such as mošk^vapiš 'granary basket' formed from moči 'to put on a belt; to weave (twined baskets or mats)'; and k^vapi.⁹ Final -š here marks the change from verb to noun.

Clearly, this is a derived form, since the resulting word mošk^vapiš is a noun derived from a verb. As such, it belongs to Level 1, that of derivation, where the [č] to [š] alternation does not apply. Yet we see here [š] before a [-continuant] segment, suggesting that an alternation has occurred. The position, however, that /š/ is underlying here will preclude the need to mark this form as an exception. Compare the following derivations.

(24)

LEVEL 1	[móči]	[móši]
Derivation		
Morphology	[[[móči] _V kʷaɲi] š] _N	[[[móši] _V kʷaɲi] š] _N
Phonology		
V-Deletion	[[[móč] kʷaɲi] š]	[[[móš] kʷaɲi] š]
LEVEL 2	[móčkʷaɲiš]	[móščkʷaɲiš]
Inflection		
Morphology	-----	-----
Phonology		
Frication	-----	-----
LEXICAL		
REPRESENTATION	*/móčkʷaɲiš/	/móščkʷaɲiš/

We can see here that the postulation of underlying /š/ in the verb móši (which subsequently becomes [č] before a vowel as shown in the Affrication Rule (5)), will generate the correct output while allowing us to maintain the general analysis.

The position that /š/ is the underlying segment in forms which would otherwise need to be marked exceptions is not entirely an *ad hoc* solution. Although [č] and [š] are in near complementary distribution, the assertion that [č] is always the underlying segment claims that all instances of [š] are derived from underlying /č/. But recall that both segments are found before [+continuant] consonants in forms like pečvaš 'left hand' and tukšišval 'mica'. These are both absolutive nouns (indicated by the suffixes -š and -l), and thus inflected forms. The environment, however, for the [č] to [š] alternation is not present in either form, for the following segment is not a [-continuant] consonant. Thus, if /č/ were the underlying segment here, we could not account for the change to [š] in the second form and not in the first. Conversely, postulation of underlying /š/ would not account for the change to [č] in pečvaš, and the lack of alternation in tukšišval, for the environments are virtually the same. I thus maintain that /č/ and /š/ are separate phonemes in the language, and therefore that both the Affrication and the Frication Rules are necessary to account for the data present here.

The question of the status of the [š] to [č] alternation rule (Affrication) as a lexical or a post-lexical rule arises. To determine this, we must examine the domain of applicability of the rule in terms of the criteria for lexical and post-lexical rules. It is certainly exceptionless -- one of the criteria for

the latter -- in that the alternation from [š] to [č] always occurs before a vowel, as shown in (25).

- (25) yaáš 'man'
 yaáčĭ 'man' (obj)
 paápaviš 'thirsty'
 paápavičum plural
- waxaámkawiš partitive of waxaám 'yesterday'
 waxaámkawičumpum 'they are of yesterday'
- (where -kawiš marks change from noun
 to adjective, 'of, belonging to')
- tarátraš 'stiff, hard to bend'
 tarátřič-up nókkuṭapi póŋeemiław 'my bow is hard
 to bend'
 (where -up is enclitic)
- hákmawiš 'hungry'
 hákmawič-up om 'you are hungry'

The alternations in these forms occurs in inflected forms (the first two forms), in derivational forms (the third form, where -kawiš marks the change of noun to adjective), and between words and syntactic enclitics. The rule, then, is obviously not limited to certain strata as are lexical rules; and on the basis of such forms as those above and the fact that [š] becomes [č] before a vowel, I submit that the Affrication Rule (5) is indeed a post-lexical rule.¹⁰

Via this rule, the verbs presented in this data exhibit a process of neutralization, whereby two different underlying segments (here /č/ and /š/) always appear as the same segment in the phonetic form in a particular environment (that is, as [č] before a vowel). In forms like peči 'to pay' and wači 'to beat seeds from plants', the underlying segment may only be determined by examining the behaviour of such forms through derivations in the Lexical Phonology framework presented here. That is, the lexical forms generated by the rules in this analysis may help us to determine which segment is underlying in which form. The following derivations illustrate this.

(26)

LEVEL 1	[<u>n</u> ěči]	[wáši]
Derivation		
Morphology	[[<u>n</u> ěči] _V kixa] _{Caus}	[[wáši] _V pi] _N
Phonology		
V-Deletion	[[<u>n</u> ěč] kixa]	[[wáš] pi]
LEVEL 2	[<u>n</u> ěčkixa]	[wášpi]
Inflection		
Morphology	----	[[wášpi] _N š] _{Abs}
Phonology		
Frication	----	----
LEXICAL		
REPRESENTATION	/ <u>n</u> ěčkixa/	/wášpiš/

We see here that the postulation of underlying /č/ and underlying /š/ respectively in the forms on the left and right allows us to maintain the present lexical analysis while generating the correct output. If, however, we assume underlying /č/ in wáči, we could not explain the lexical form wášpiš, for the environment for the alternation is not present in this form, and therefore, no alternation should occur. I thus maintain that /š/ is indeed underlying in wáči, a conclusion reached on the basis of the generated form wášpiš.

There is one form which presents a problem for the lexical analysis proposed here; namely, čošíř, past-punctual tense of čoríř 'to cut much wood'. Recall that the process involved here is reduplication of the first syllable followed by vowel syncope of the second syllable vowel. The following derivation illustrates.

(27)

LEVEL 1	[čorií]
Derivation	
Morphology	---
Phonology	---
LEVEL 2	[čorií]
Inflection	
Morphology	[čo [čorií] _v] Past-Punctual
Phonology	
Syncope	[čo [črif]]
Frication	[čo [šrif]]
LEXICAL REPRESENTATION	/čošrif/

The vowel syncope here results in the position of [č] next to a [-continuant] segment, the environment for the alternation to [š]; and indeed, this is what we see in the lexical form.

This form, however, is also pronounced as čočrif, where the alternation does not occur. I suggest that in this second form the [r] may actually be a [+continuant] segment, for the flapped [r] of Luiseño ([-continuant]) is in free variation with a retroflex [r] ([+continuant]) intervocalically. If for some speakers the [r] in čočrif is retroflex, then the [č] to [š] alternation will not occur in čočrif because the environment in this instance is not present. That is, the vowel syncope which occurs in the process of this type of reduplication positions the [č] next to a [+continuant] consonant for such speakers. Since [č] becomes [š] only before [-continuant] or [+lateral] segments, no alternation takes place.

This form is the only one recorded in the data which exhibits both the segments [č] and [š] in this environment. To determine the validity of the assumption made above, we would need to see if other forms with [r] in this position (that is, after a [č]) also have alternant pronunciations, where [č] does not become [š]. In the data available, however, čošrif/čočrif is the only form with alternate forms, and thus we may only speculate on the possibility of [r] behaving as [+continuant] for some speakers here, and as [-continuant] for others.

In summary, the Lexical Phonology analysis I have proposed here with the two levels and the morphological and phonological rules which operate on each one is as follows.

(28) LEVEL 1 - Derivation

Morphology - suffixation of derivational affixes
(causative, propensitive, verb to
adjective, verb to noun)

- Type 4 verb reduplication

Phonology - stress shift:

V --> [+stress]/ ____ [C[́]V

V --> [-stress]/ V[́] [C ____

- Third Syllable Syncope

- V-Deletion

LEVEL 2 - Inflection

Morphology - prefixation of possessive markers

- suffixation of case and plural
markers

- reduplication (past-punctual
tense)

Phonology - Syncope

- Frication

LEXICAL REPRESENTATION

POST-LEXICAL PHONOLOGY - Affrication

FOOTNOTES

¹ Although the major portion of this paper is based on the work of Kroeber and Grace (1960), supplementary data was obtained from Hyde (1971), Bright (1968) and Davis (1976).

² I consider both the nasals and the [r] (phonetically flapped) to be [-continuant] because of their patterning in the language.

³ All forms given in this paper are surface forms unless otherwise indicated.

⁴ Luiseño verbs are classed into four conjugation types based on the phonological structure of the stem. Verbs of conjugations 1 and 2 are CVCV, with the final vowel being either [i] or [a].

⁵ Although these prefixes are similar in form to the independent pronouns of Luiseño, shown in (i) below, Kroeber and Grace (1960:97) distinguish the two on the basis of the fact that the pronouns and possessive prefixes differ in their behaviour: the pronouns occur independently, the possessives only before noun forms; the pronouns are declined with a series of case endings, the possessives are not; and pronouns carry normal stress, whereas the possessives do not.

(i) 1st sg	nó
2nd sg	ó(m)
3rd sg	pó
1st pl	čaám
2nd pl	omóm
3rd pl	pomóm

As well, the fact that the affixation of the possessive prefixes results in vowel syncope of the first vowel of a noun when the stress falls on its second syllable "again suggests that they are prefixes, that is, part of the same word as the noun stem" (Kroeber and Grace 1960:44). Regarding this final point, however, the authors make no mention of the possibility of rapid speech affecting sequences of pronoun-noun in that the syncope rule may apply between words as well as between morphemes in this situation, thereby constituting a post-lexical rule as well as a lexical rule. But on the basis of differing behaviour of pronouns and possessive prefixes, I maintain that the latter are indeed prefixes and are inflectional.

⁶ Kroeber and Grace (1960) distinguish between four types of verb reduplication (although there are in fact more), all expressing intensity of duration of an action, or plurality. The type described here is Type 4 in their classification; however, since it is the only type relevant to the argument at this point, I shall not present the processes occurring in the other types.

There is one other type of reduplication not classified into one of these four types which I shall discuss below.

⁷Although there is no known stem from which these reduplicated forms are derived, I maintain that they do indeed belong to this class of forms, for Kroeber and Grace (1960:164) note other forms

showing the present type of syncopated duplication that are without visible relation to a determined verb stem... We must therefore assume a class of...stems that occur only in the duplicated form (with the nominal suffix -š) of the present stress-shifting, vowel-dropping type.

The original stems may have become obsolete during historical development; but on the basis of the visible processes in the other reduplicated forms, I assume reconstructed stems for the latter three forms: respectively, čáku, čáqi, čúqa (following Kroeber and Grace 1960 for similar forms).

⁸This form is used when the stem enters into any combination other than with the objective -a and plural -um suffixes, whereas the absolutive suffix is used when the noun is isolated from context (that is, nominative) or when it is the subject of a sentence. The latter does combine with the aforementioned suffixes.

⁹This form was listed neither in Kroeber and Grace (1960) nor in Bright (1968), and thus I could not discern a meaning.

¹⁰Frication, on the other hand, is strictly a lexical rule, for it is certainly not exceptionless. That is, we see many instances of [č] next to a [-continuant] or [+lateral] segment (namely all the derived forms presented thus far), which never become [š] via a post-lexical rule. I maintain, therefore, that the [č] to [š] alternation applies only on Level 2.

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