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CHAWCHILA YOKUTS METATHESIS: EVIDENCE, ARGUMENTATION AND GENERALISATIONS?[1]

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1. Arguments and evidence: The problems

This article will be concerned with the reasoning used to reach certain conclusions regarding what has been termed 'Chawchila metathesis'. There are few examples of metathesis available in Chawchila, and the question is then what counts as sufficient evidence of a generalisation, or even probable evidence of a generalisation.

Stonham (1990) devotes a section to the phenomenon of Chawchila metathesis, as described in Newman (1944). These facts have been incorporated in the 'Metathesis in Language Database', maintained by Beth Hume (I refer here to the 2000 version of the database). This phenomenon is Chawchila's chief claim to fame among phonologists.

The arguments used to support various statements (generalisations) about Chawchila metathesis are based on rather insubstantial evidence. In what follows I attempt to identify some problems of argumentation associated with various claims and suggestions made in connection with metathesis (and non-metathesis), and subject them to critical analysis.

1.1. Metathesis operates under two conditions – are these related?

The two phonological cases of metathesis observed involve underlying /l̀ẏ/ (of which the surface result is [ẏl]) and /ln/ (of which the surface result is [nl]). A methodological problem here is that there is no way to generalise over these two cases alone without widening our net to include cases for which there is no evidence in Newman (1944), e.g. /l̀n/ or /ly/. The question is whether this is necessarily bad, of course. There is neither evidence for their existence *nor* for their non-existence – of course there is no evidence for the non-existence of white crows either.

1.2. There are only three known cases of morphemes that metathesise.

Metathesis is only known from two languages which Newman did not have much opportunity to study. His was the only adequate study of either language in modern

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[1] In some ways this attempt at a reanalysis reminds me of my debate with Wim in the early 70s on the topic of D-deletion in Dutch.

linguistic terms, as they apparently died out without another fieldworker doing accurate linguistic work on them.

In Chawchila two grammatical suffixes and one lexical stem are involved. In Gashowu the cognate lexical stem to that in Chawchila also displays metathesis under the same conditions as Chawchila, but (unfortunately) Gashowu does not possess either of the particular grammatical morphemes that display metathesis in Chawchila. Gashowu and Chawchila were spoken about thrty miles from each other. The intervening tribes are little known linguistically, although they are supposed to belong to the same language as Chawchila (Kroeber 1907: 360).

1.3. A single exception to /ln/-metathesis.
Stonham (1990, 1994) observes that in one case, metathesis does not take where it should. And here a morpheme boundary intervenes between the two segments concerned, unlike in the other three cases mentioned. How are we to interpret this? Single cases loom larger the less data there is. It would seem to be impossible to ignore this form. We can hardly speak of a single 'exception', when the regular cases number only two or three.

Stonham identifies the exceptionality as involving a morpheme boundary. It is not quite clear, however, whether he regards the morpheme boundary as the reason for the non-occurrence of metathesis here.

In fact, it would seem likely that metathesising consonants across morpheme boundaries would lead to severe parsing problems in a suffix-rich language like Chawchila, and therefore would most likely be avoided.

1.4. Another probable case of the restriction to intra-morphemic metathesis.
Stonham's 'exception' was to the /ln/ case. I will point out a possible case in Chawchila of non-metathesis involving /ly/. This would also have the advantage of closing the apparent gap between the /ly/ and /ln/ cases.

1.5. Hume's explanations in term of Perceptual Optimisation.
These explanations are different in the two cases of metathesis. But since most cases of sonorant clusters in Chawchila and Gashowu do not exhibit metathesis, we might expect the reason *for* these two cases of metathesis to be the same.

1.6. Summing-up.
I will deal with these interpretations and pieces of evidence in greater detail in sections three and four. Firstly, I will treat the subject of the classification of Yokuts(an) languages.

2. The Yokutsan languages
As most phonological readers will not have heard of Chawchila or Gashowu although they will probably be familiar with the name Yawelmani (Yokuts),[2] I will give a brief account of the Yokutsan[3] language family in this section.

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[2] More correctly Yawlamni.
[3] I will refer to this family as the Yokuts languages.

The Yokuts language family consisted aboriginally of about 80 tribal dialects (Milliken 2009), grouped into 9 or so different languages. These dialects were spoken in the larger portion of the greater San Joaquin Valley (including the Tulare Lake and the Buena Vista Lake basins), roughly between Stockton and Bakersfield, in California.

It is true that there is a great parallellism of morphological and phonological structure among the Yokuts languages. On the other hand, native testimony from speakers of these 'dialects' clearly indicates that language differences did exist. In what follows I will refer to the various Yokuts varieties as 'lects' in cases where neither 'dialect' nor 'language' appears to be a suitable term.

A possible classification of these languages might be as follows. At least the first two levels of classification represent distinct languages.

1.   Valley Yokuts
     a.   Nuclear Valley Yokuts
          i.   Northern Hill Yokuts   e.g. Chukchansi, Dumna
          ii.   Northern Valley   e.g. *Chawchila*, Nopthrinthre
                Yokuts
          iii. Southern Valley   e.g. Yawlamni, Tachi
                Yokuts
     b.   Delta Yokuts   e.g. Yachikamni
2.   King's River Yokuts
     a.   Nuclear King's River Yokuts   e.g. Choynimni, Kocheyali
     b.   Gashowu   i.e. *Gashowu*
3.   Tule-Kaweah Yokuts   e.g. Yawdanchi, Wikchamni
4.   Poso Creek Yokuts   e.g. Palewyami
5.   Buena Vista Yokuts   e.g. Tulamni, Tashehach

     Table 1. The Yokutsan family

3. The Metathesis facts in Newman and Stonham
The basic description of the relevant facts is contained in Newman (1944: 32), and is stated as follows:

(1)   "§5:15. Another rare consonantal process, occurring primarily in Chawchila, is that of metathesis. Two noun suffixes of Chawchila, -haliẏ/, Consequent Adjunctive, and –ilin/, a form of the Intensive Possessor, appear with the l̇ or l metathesised in the oblique stem where the last vowel is zeroed,[4] as -haẏl- and –inl- (§20:35, 25:12). The same process takes place within the unanalyzable noun theme, Gashowu šu'lin/ and Chawchila šɔ'lin/, "pine bur," whose oblique stem is šu'inl- and šɔ'inl-."

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[4] By this term Newman (and Stonham) is referring to a context better analysed as the non-insertion of an epenthetic vowel (Archangeli (1983, 1984), Noske (1985)).

As the total number of morphemes illustrating metathesis is restricted to three, we have to be very careful in our argumentation if we are to be capable of making any remotely valid generalisations. It also has to be pointed out the suffix /-haliẏ ~ -haẏl-/ does not occur outwith NVY as far as is known. Note also the presence of metathesis in Gashowu, which is clearly a different language from Chawchila.

3.1. /lẏ/-metathesis in Stonham
Stonham (1990: 181) describes the first case of metathesis as a phonotactic restriction, in the following words:

(2)   "a. There are no consonant clusters in the [Chawchila] language whose first
        element is /l/ or /l̓/ and whose second element is /y/ or /ẏ/. Metathesis occurs
        to yield the acceptable string /yl/ or /ẏl/ when such impermissible consonant
        clusters result from morphological concatenation."

He gives the examples in (3) and (4) from Newman (1944: 165), which I have supplied with IMTs (partly from Hubers 2008):

(3)   a. *toyne-w*   **xayaa-haliẏ**   *ʔama-ʔ*   *haċaame-ʔ tawtr-a-ʔ*
            centre-LOC place-CNS.ADJ   3-SUBJ   new-SUBJ   die-CNS.AG-SUBJ
            'the one who is placed in the center (is) that young dead woman'

        b. *ʔamaʔ   ʔamʔa-k̓   yoʔ*   **taawin-haliẏ**   *wooʔuy-ʔay*
            and   3-DU.SUBJ again become.dawn-CNS.ADJ sleep-NARR.AOR
            'and at dawn they (dual) fell asleep again'

(4)   a. **xamit-haẏl-a**   *max-k̓a*
            mow-CNS.AG-OBJ   fetch-IMP
            'fetch the scythe!'

        b. *wayax-ʔan   ʔamʔa-n   xotr̓oy*   **yukl̓(u)[5]-wš(aa)-haẏl(a)-w**
            dig-DUR.PRES 3-PL.SUBJ ground   bury-REC-CNS.ADJ-LOC
            'they are digging the ground in the cemetery'

When the Consequent Adjunctive (CNS.ADJ) suffix appears word-finally, with a zero subjective suffix in this case, we may assume that an underlying form /-hal̓ẏ/ is subject to vowel epenthesis between its last two consonants, as in (3). When it appears before a vowel-initial suffix, epenthesis is not required, but metathesis takes place, as in (4).[6]
    In fact, I know of no examples of metathesis of non-glottalised /ly/ to /yl/, but as it seems unlikely that glottalisation has any effect on metathesis, I agree with

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[5] The bracketed vowels are non-underlying segments.
[6] Glottalisation of sonorants is subject to the following restrictions in Yokutsan: It may not occur word-initially; and it may not occur in onset position following a coda consonant. This explains the surface de-glottalisation of the liquid in /ẏl/.

Stonham that the above extension of his statement may well be justified. Another reason for supporting this putative generalisation is the fact that the sequence /ly/ is exceedingly rare in all recorded Yokuts dialects. Negative evidence, certainly.

The question which I will now examine is whether Stonham is correct in his qualification of Chawchila metathesis as a *purely phonological* phenomenon. He is certainly correct in his assertion that metathesis as such is not any kind of *morphological* process in Chawchila.

Although Newman (1944) does not provides us with any sequences /ly/ from Chawchila, Kroeber (1963) does, in the form of the form *yelyal*.[7] This is a noun meaning 'earthquake', but could be regarded as a fossilised form similar to Newton's full-zero reduplicated stem used for the nominalisation of reduplicated verbs with a repetitive meaning (Newman 1944: 64). Obviously, an earthquake involves repeated shaking.

There is a difference, however, in that such nominalised verbs normally have a short /a/ in their second syllable, whereas /yelyaal-/, recorded by Newman (1944: 36, §6: 13) for Yawlamni, has an underlying long /aa/, at least in that lect.

(5) | Base form | | Full redup.: V | Full-zero: VN | |
|---|---|---|---|---|
| giẏ- | 'to touch' | giẏ-giẏ- | giẏ-gaẏ- | 'touch repeatedly' |
| meek- | 'to swallow' | me[e]k-mik-[8] | me[e]k-mak- | 'swallow repeatedly' |
| ʔilee- | 'to fan' | ʔil-ʔil- | ʔil-ʔal- | 'fan repeatedly' |

(6)   ye[e]l-yaal- 'earthquake'

So, if we could recognise a morpheme boundary here, in what Newman himself qualifies as a reduplication, we could save Stonham's generalisation, by excepting cases where a morpheme boundary intervenes between the /l/ and the /y/. In other words, the sequences of liquid and glide would only be forbidden morpheme-internally. Note that this case could certainly be related semantically to what Newman refers to as Repetitive Reduplication, whereas all the other reduplicated words which never appear in a simple form refer to the names of animals or plants, with one possible exception.

Let us first examine the other case of metathesis.

3.2. /ln/-metathesis in Stonham

Stonham next (1990: 185) examines the Chawchila metathesis of /ln/ to /nl/ in the Intensity Possessor morpheme /-il(i)n/, where the second occurrence of /i/ can be interpreted once again as epenthetic . He points out that there is a set of allomorphs described by Newman (1944) as 'irrational' (1944: 218), by which he means irregular, as well as others where the first consonant of the suffix is assimilated to the last consonant of the stem. In fact, if we examine the suffix-variant /-il(i)n/ in

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[7] I give all sub-optimal Yokuts transcriptions in Italics.

[8] In the Yokuts languages a long vowel is generally forbidden before a consonant-cluster or a final consonant. The transcription used here - /e[e]/ - is a modification of Newton's practice, indicating that an underlying long vowel has been shortened.

Yokuts-wide terms we can see that a form /-iy(i)n/ is actually more frequent, illustrated in Newman (1944: 218-219) from five languages, including Chawchila itself.

This can be interpreted in the light of an irregular alternation /l~y/ which can be seen in various Yokuts languages, as exemplified in (7). I refer to it as irregular because we cannot define even approximately the regions in which /l/ and /y/ occur.

(7) <u>/y/</u>,   <u>/l/</u>,
    yuk̓l-   Chawchila   **l**uk̓l-   Yawlamni   'to bury'
    yuk̓l-   Chukchansi (Co)   *lucul*-   Noptrintri   'to bury'
    tree**y**(i)y- Yawlamni   *tèli*[9]   Chawchila (K)   'tooth'
    *tè**i***[10]   Gashowu (K)   tree**l**(i)y- Chukchansi   'tooth'
    -i**y**(i)n- Yawlamni   -i**l**(i)n~-i**y**(i)n Chawchila   INT.POSS

In Chawchila the /-il(i)n/ variant allows a non-metathetic form to appear only if the /l/ and the /n/ are separated by an epenthetic vowel.

(8)   a. *čawaa-ʔan*   *pattr-**inl**-i*
          shout-DUR.PRES   body_louse-INT.POSS-OBJ
          'he shouted at the one with many body-lice' (N: 219)

     b. *tihtr-i**lin***
          head_louse-INT.POSS
          'one with many head-lice' (N: 219)

The /-iy(i)n/ variant is however never subject to metathesis.

Newman (1944: 32) points out in his extremely brief section on metathesis, that /ln/--metathesis also takes place in a single lexical item occurring in Chawchila and Gashowu. The restriction to a single lexical item is probably a result of the lesser degree of attention that Newman was able to devote to these two languages:

(9)

	Base form	Pre-final	Pre-vocalic	Gloss
Chawchila	šoʔln-	šoʔ**l**(i)**n**#	šoʔ(i)**nl**-V	pine-burr
Gashowu	šuʔln-	šuʔ**l**(i)**n**#	šuʔ(i)**nl**-V	pine-burr

These two morphemes, the one grammatical and the other lexical are the only examples from Chawchila containing an intramorphemic sequence /ln/. Such a sequence does occur intramorphemically in other Yokuts lects without causing metathesis. Compare the following data:

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[9] For /treel(i)y-/.
[10] For /treey(i)y-/.

(10)

	Base form	Pre-final	Pre-vocalic	Gloss
Yawlamni	pa**ln**-	pa**l**(i)**n**#		slate-rock
Choynimni	pa**ln**-		pa**ln**(a)-w	in the slate-rock
Yawlamni	ċeelalun-		ċeela**ln**(u)-w	to the bridge

Stonham (1990: 185) says of the sequence /ln/ in Chawchila:

(11)   "I found only a single Chawchila form containing the sequence /ln/, the word yukulnut, which has the root yukul and the final suffix -nut[11], where the point of convergence coincides with a morpheme boundary, unlike the case with the single morpheme /-ilin-/. The phonemic sequence /inl/, on the other hand, is found in such common forms as the word for 'five' which is yitsinil in the regular form and yitsinl in the oblique stem and the word for 'quail', /humunlun/.[12]"

Once again, however, we can explain the case of /yuk(u)l-nutr/ by reason of a more general principal forbidding metathesis across morpheme boundaries. So while Stonham is correct in his statement that metathesis is not a morphological *process* as such in Yawlamni, as we have stated above, there appear to be *restrictions* of a morphological nature on metathesis, i.e. that consonantal metathesis cannot take place across morpheme boundaries.

4. Hume's explanations in terms of Perceptual Optimisation
Now I turn to Hume (2000 Metathesis website). First I give each morpheme with its repective allomorphs, and the relevant processes involved in their derivation, and then proceed to Hume's accounts in terms of Perceptual Optimisation (Hume, 1997, 1998).

4.1. /ly̓/-metathesis in Hume
Here the two allomorphs are:

(12)   -hal̓y̓#   >   -hal̓iy̓#   (epenthesis)
         -hal̓y̓-V   >   -hay̓lV   (metathesis)

Hume's explanation in Perceptual Optimisation terms is as follows:

(13)   "The consonant [y'] is reported by Newman to be somewhat whispered in word-final position and preceding a consonant, while no breathiness is perceived in prevocalic position (Newman 1944). Thus, in the alternant [-hay'l-], positioning [y'] before a consonant [l] by metathesis may serve to enhance the perceptibility of the consonant [y']."

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[11] Actually /-nutr/ in Chawchila (with vowel harmony).
[12] This is the possessive form /humunl-un/ of the absolutive (and suffixless) /humnul/.

The point is, however, that both /l̓/ and /y̓/ are underlyingly glottalised, as can be seen from the epenthesised case in (12) - -haliẏ#.
Newman describes the whispering of sonorants as follows (1944: 16):

(14)   "§1: 9. The dialects also agree in partially whispering l, w, and y in final position: Wikchamni yakaw, "stone," might be written phonetically as yakaw^hw. In Chawchila final m and n are similarly whispered. The glottalized consonants, w̓, y̓, l̓, m̓, n̓, and ŋ̓, when they occur finally in a word or in a closed syllable, are heard as w̓^hw or even as - ˀhw, etc. But this final whispering has no phonemic significance; in order to preserve an accurate phonemic transcription, this phonetic peculiarity of final whispering will not be indicated."

Any cluster of two glottalised sonorants will have the second de-glottalised. So, a non-metathesised result would have been [-hal'y-]. As Newman says in §1: 9, "The glottalised consonants, w̓, y̓, l̓, m̓, n̓, and ŋ̓, when they occur finally in a word or in a closed syllable, are heard as w̓^hw or even as - ˀhw, etc."
So the choice is between metathesised [y̓^hyl], [ˀhyl] or non-metathesised [l̓^hly], [ˀhly]. This would seem to be a moot choice from the point of view of perception. Why should /y̓/ have its perceptibility favoured over that of /l̓/? It would seem that we have to seek the answer in the phonology rather than the phonetics in this case.

4.2. /ln /-metathesis in Hume
The two allomorphs are:

(15)   -iln#   >   -ilin#   (epenthesis)
          -iln-V   >   -inl-V   (metathesis)

Hume (2000) states:

(16)   "While the linear ordering of the consonants change by metathesis, the prosodic position of a given consonant is invariant. In both allomorphs, [n] is invariably in postvocalic position, while [l] always occurs in prevocalic position."

It is true that the /n/ is always in postvocalic position, but as can be seen from Newman (1944, §1: 9), quoted above as (14), Chawchila is different from the other lects recorded by Newman in that final /n/ is whispered in addition to final /l/. In other words the prosodic effects are not entirely the same phonetically. So, the phonetics of the two allomorphs are approximately:

(17)   -ilin#   [...ilin^hn]
          -inl-V   [...inlV...]

In many amateur recordings of other northern Yokuts lects, whether Northern Valley Yokuts, or Delta Yokuts, final nasals are often not recorded at all, suggesting that

they were similar to Chawchila in having final whispered nasal allophones (Smith 2005), which went unnoted in the less than ideal recording conditions. The recorders were not phonetically trained, and the recordings did not take place under ideal conditions. However, at least we know that the two syllable-final allophones in (17) were fairly distinct in phonetic terms. Once again, it seems that the basis for metathesis might be phonological rather than phonetic.

Hume's explanation in Perceptual Optimisation terms is as follows:

(18)   "The presence of stress may provide insight into the occurrence of the nasal in postvocalic position. Newman states that stress is clearly marked in the language, falling on the penultimate syllable. Thus, in the sequence [VnlV], [n], which has less robust internal cues than the liquid, occurs as coda of the penultimate and, therefore, the most prominent syllable of the word. Given that the relevant parameter distinguishing /n/ and /l/ is one of manner of articulation, an additional factor favors the occurrence of the nasal in postvocalic position: anticipatory coarticulation in the form of vowel nasalization on a preceding vowel provides strong cues to the nasal manner."

We have no way now of knowing how strong or weak vocalic nasalisation in the run-up to a stressed syllable-final nasal in Chawchila was. No recordings of Chawchila are known to this author, although it is not impossible that such exist as according to Manlove (2012), it was only in the late 60s that Chawchila Yokuts died out. Newman was a good and experienced fieldworker however, and it is unlikely that he would not have mentioned vowel nasalisation if this had been present to any degree.

5. Sonorant clusters recorded by Newman, Kroeber and Gamble

It is instructive to look at the possible surface consonant clusters consisting of two sonorants. Then it will be apparent just how rare metathesis is. The following two tables illustrate the surface sonorant clusters found in the six lects described by Newman (1944),[13] with Yawdanchi forms added from Kroeber (1907), and Wikchamni examples added from Gamble (1978). The first table is primarily organised in terms of Manner and the second primarily organised in terms of Place.

The grey cells indicate that /l, l̀/ cannot occur in Wikchamni or Yawdanchi[14], as they appear there as /d/. /ŋ, ŋ̀/ only occur in Wikchamni or

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[13] Gamble's chart of consonant clusters is not helpful in this connection, as all /*l, l̀/ in Wikchamni are largely changed to /d/.

[14] There are a few words in Wikchamni and Yawdanchi with /l/. These are possibly loans from Yawlamni.

Yawdanchi.[15] The two cells marked as **M** contain cases in Chawchila and Gashowu which would be present were it not for metathesis.[16]

C2 / C1	l	w	y	m	n	ŋ
l	ll	lw	ly	lm	ln / **M**	
l̇	l̇l	l̇w	**M**	l̇m	-	
w	wl	ww	wy		wn	wŋ
ẇ	ẇl	ẇw		ẇm	ẇn	
y	yl	yw	yy	ym	yn	yŋ
ẏ	ẏl	ẏw		ẏm	ẏn	
m	ml	mw	my	mm	mn	mŋ
ṁ	ṁl	ṁw			ṁn	
n	nl	nw	ny	nm	nn	nŋ
ṅ	ṅl	ṅw	ṅy	ṅm		
ŋ		ŋw	ŋy		ŋn	
ŋ̇			ŋ̇y			

Table 2. Occurring surface sonorant clusters (organised by Manner)

Place	Place C1 / C2	Labial		**Coronal**			Dorsal
		w	m	y	n	l	ŋ
Labial	w	ww		wy	wn	wl	wŋ
	ẇ	ẇw	ẇm		ẇn	ẇl	
	m	mw	mm	my	mn	ml	mŋ
	ṁ	ṁw			ṁn	ṁl	
Coronal	y	yw	ym	yy	yn	yl	yŋ
	ẏ	ẏw	ẏm		ẏn	ẏl	
	n	nw	nm	ny	nn	nl	nŋ
	ṅ	ṅw	ṅm	ṅy		ṅl	
	l	lw	lm	ly	ln / **M**	ll	
	l̇	l̇w	l̇m	**M**	-	l̇l	
Dorsal	ŋ	ŋw		ŋy	ŋn		
	ŋ̇			ŋ̇y			

Table 3. Occurring surface sonorant clusters (organised by Place)

Clearly Table 3 gives us a more organised and informative picture.

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[15] The Poso Creek and Buena Vista languages are not considered here, for lack of sufficient data. These possess both laterals and velar nasals.

[16] As described above the two cases in this cell differ according to their morphemic structure.

If we now look at the metathesis cases, we observe that they would have been located in the section defined as C1: Coronal, C2: Coronal. They are marked as non-occurring (**M**) – they have been removed by the choice for metathesis. The only surviving cases are those for which a case may be made for a morpheme boundary between the two sonorants. Note that the *ly* case is supplied by Kroeber's *yelyal* mentioned above which I claim has a putative morpheme boundary, as a reduplicated form. Stonham's 'exception' *yukul-nutr* clearly consists of two morphemes.

6. Conclusion

My tentative conclusions are the following. Firstly, metathesis is restricted to intra-morphemic contexts in Chawchila, and presumably also in Gashowu. Secondly, metathesis only takes place when the lateral coronal sonorants /l, l̇/ are followed directly by other coronal sonorants /y, ẏ, n, n̊/. And thirdly, in inter-morphemic contexts metathesis does not take place. This could be disfavoured by a constraint against segments of morpheme *x* following segments of morpheme *x+1*. In a potentially highly synthetic language like those in the Yokuts family metathesising consonants across morpheme boundaries would likely create parsing problems.

Despite the meagre amount of evidence available, these conclusions would appear to be reasonably justified. Metathesis is a neither a morphological process nor a purely phonological process but a morphophonological process.

Abbreviations

CNS.ADJ	consequent adjunctive
CNS.AG	consequent agentive
Co	Collord (1968)
DU	dual
DUR.PRES	durative present
IMP	imperative
INT.POSS	intensive possessor
K	Kroeber (1907)
LOC	locative
N	Newman (1944)
NARR.AOR	narrative aorist
OBJ	object
PL	plural
SUBJ	subject
REC	reciprocal

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