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ON THE INTERACTION OF PHONOLOGY AND MORPHOLOGY: A CHI-MWI:NI EXAMPLE

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In the present note we discuss a problem in linguistic description located at the interface between morphology and morphophonemics. Some possible descriptions of the data are presented, and their relative merits briefly analyzed. The data appear to us to be sufficiently interesting to warrant examination, even though at the present time the proper description of the data remains open to question.

The focus of our concern is the passive verb in Chi-Mwi:ni, a Bantu language spoken in and around the city of Brava in Somalia.[1] In particular, we will be concerned with the shape that a perfective verbal stem assumes when it is passivized.[2] We shall refer to these verbal forms as passive perfects. Opposed to the passive perfects are, on the one hand, all other passive verbal forms (passive non-perfects), and on the other hand, all active perfect verbal forms (active perfects).

Passive non-perfects are in all cases marked overtly by the presence of a suffix -o:w-, this suffix being located immediately before the "final vowel" that obligatorily terminates verbs in Chi-Mwi:ni as in other Bantu languages.[3] Some examples of the -o:w- suffix:

(1) ku-łum-o:w-a 'to be bitten' (-łum- 'bite')
na-kimb-il-o:w-a 'she is being sung to' (-imb- 'sing', -imb-ił- 'sing to')
n-p-o:w-e 'that you pl. be given (it)' (-p- 'give')
ha-'ambil-o:w-i 'he isn't told' (-ambił- 'tell')

The phonological problems posed by the suffixation of -o:w- in passive non-perfects are minimal. This morpheme participates regularly in one very general morphophonemic processes in the language: this process shortens all but the last long vowel in a word or phrase.[4] The -o:w- suffix will thus induce the shortening of any preceding long vowel and will itself shorten if it is followed by another long vowel. Examples:

(2) ku-da:r-a 'to touch' ku-dar-o:w-a 'to be touched'
x-so:m-a 'to read' x-som-o:w-a 'to be read'

x-fa:ñ-a 'to do' x-fañ-o:w-a 'to be done'

x-pe:nd-a 'to like' x-pend-o:w-a 'to be liked'

ta-x-tukul-ow-a:-yi? 'how will he be carried?' (-tukuɬ- 'carry')

ta-k-ambil-ow-a:-yi? 'how will he be told?' (-ambiɬ- 'tell')

na-k-udish-ow-a: nt^ho 'he is being annoyed very much?' (-udish- 'annoy')

ta-x-p-ow-a chibu:ku 'he will be given a book' (-p- 'give')

The passive suffix -o:w- conditions one other change: an immediately preceding ɬ is converted to l.[5] Since this change is of considerable relevance to the ensuing discussion, we document it rather fully here.

(3) Root ɬ changes to l immediately before -o:w-.

ku-ya:ɬ-a 'to sow' ku-yal-o:w-a 'to be sown'

ku-mo:ɬ-a 'to shave' ku-mol-o:w-a 'to be shaven'

x-pe:ɬ-a 'to sweep' x-pel-o:w-a 'to be swept'

ku-bo:ɬ-a 'to steal' ku-bol-o:w-a 'to be stolen'

k-i:ŋgiɬ-a 'to enter' k-iŋgil-o:w-a 'to be entered'

k-a:mbiɬ-a 'to tell' k-ambil-o:w-a 'to be told'

Suffixal ɬ changes to l immediately before -o:w-.

k-andik-iɬ-a 'to write to' k-andik-il-o:w-a 'to be written to'

k-i:mb-iɬ-a 'to sing to' k-imb-il-o:w-a 'to be sung to'

x-pik-iɬ-a 'to cook for' x-pik-il-o:w-a ' to be cooked for'

x-fu:ŋg-uɬ-a 'to open' x-fuŋg-ul-o:w-a 'to be opened'

k-a:mb-uɬ-a 'to peel off' k-amb-ul-o:w-a 'to be peeled off'

x-tu:mb-uɬ-a 'to pierce, perforate' x-tumb-ul-o:w-a 'to be pierced, perforated'

It should be observed that it is only ɬ immediately before the -o:w- suffix that changes to l. Thus in ku-ɬum-o:w-a 'to be bitten', the root-initial ɬ is unaffected. Similarly, in ku-bar-sh-iɬiz-o:w-a 'to be trained for', the "applied" suffix -iɬiz-[6] is unaffected since its ɬ is not immediately followed by the -o:w- suffix.

We can now turn to a consideration of the one context where the construction of a passive verbal form is not quite so obvious: namely,

the case of passive perfects. The perfective construction is, in general, a rather complicated affair in Chi-Mwi:ni, and a full discussion is not possible here. (Cf. Kisseberth and Abasheikh (1974,b) for some discussion of major aspects of the problem.) For our present purposes, however, we need only note that there are two essential methods of forming a perfective stem: Suffixation and Ablaut. Suffixed perfectives involve the addition of a suffix whose basic form is -i:ɬ- (this suffix has a number of surface alternants and also triggers a number of changes in preceding stem-final consonants). Ablaut perfectives involve a lengthening of the last vowel of the verb stem, with a change in vowel quality in some cases.

Let us consider Suffixed perfectives first. Below we give a number of examples of verb stems, showing first their active perfect shape and then their passive perfect shape.

(4)	-mo:ɬ- 'shave'	mo:z-eɬ-e 'he shaved'	mo:z-el-a	'he was shaved'
	-ɬum- 'bite'	ɬum-i:ɬ-e 'he bit'	ɬum-i:l-a	'he was bitten'
	-pe:nd-'like'	pe:nz-eɬ-e 'he liked'	pe:nz-el-a	'he was liked'
	-big- 'hit'	bish-iɬ-e 'he hit'	bish-il-a	'he was hit'
	-barsh- 'train'	barsh-i:z-e 'he trained'	barsh-i:z-a	'he was trained'
	-bu:s- 'kiss'	bus-i:z-e 'he kissed'	bus-i:z-a	'he was kissed'

One essential aspect of the passive perfect is that the final vowel is -a, even though the final vowel of the active perfect is regularly -e.[7] Second, there is no overt occurrence of the passive suffix -o:w-. Third, the passive perfect stem is exactly identical to the active perfect stem, EXCEPT that if the active perfect stem ends in ɬ that consonant is changed to l. Thus whereas the perfect stem of -barsh- 'train' is barsh-i:z- in both the active and the passive, the perfect stem of -ɬum- 'bite' is ɬum-iɬ- in the active but ɬum-il- in the passive.

Consider now the Ablaut perfectives, illustrated in (5) below:

(5)	-won- 'see'	we:n-e 'he saw'	we:n-a	'he was seen'
	-pat- 'find, get'	pe:t-e 'he found'	pe:t-a	'he was found'
	-taɬ- 'take'	te:t-e 'he took'	te:t-a	'he was taken'
	-tafun- 'to chew'	tafi:n-e 'he chewed'	i-tafi:n-a	'it was chewed'
	-ɬekez- 'direct, instruct'	ɬeke:z-e 'he instructed'	ɬeke:z-a	'he was instructed'

-fu:ŋguł- 'open' fuŋgi:ł-e 'he opened' i-fuŋgi:l-a 'it was opened
-ambuł- 'peel off' ambi:łe 'he peeled off' i-ambi:ł-a 'it was peeled off'
-łe:łez- 'loosen' łełe:z-e 'he loosened' i-łełe:z-a 'it was loosened'

Once again we see the same pattern as with the Suffixed Perfectives: the final vowel of the passive perfect is -a, whereas it is -e for the active perfects; there is no overt occurrence of the passive suffix -o:w-, and if the active perfect stem ends in ł, that ł changes to l. It should be noted that in the case of passives of Suffixed Perfectives, such as łum-i:l-a, the ł that changes to l is part of the perfective suffix -i:ł-; in the case of passives of Ablaut Perfectives, such as i-fuŋg-i:l-a, the ł that changes is part either of the verbal root or of a derivational affix.

Let us turn now to a consideration of how the above observations might be formulated in an explicit generative description. That the final vowel of passive perfects is -a whereas the final vowel of active perfects is -e must (apparently) be treated as simply an ad hoc morphological statement, parallel to a number of other such statements that must be made about the final vowel (e.g., although -e is normally the final vowel of an active perfect form, -o occurs instead if the verb is the main verb of a relative clause; on the other hand, the -a of passive perfects and the -i of negative habitual forms are retained even when the verb is the main verb of a relative clause). The absence of the -o:w- suffix in the passive perfect could be accounted for in two ways. First, one could say that the "spelling" rule for the passive is as in (6):

(6) PASSIVE $\longrightarrow$ $\begin{cases} \text{o:w} & \text{in non-perfect verbal forms} \\ \text{Ø} & \text{in perfect verbal forms} \end{cases}$

In this view, a passive perfect never has associated with it the phonological material -o:w-. Alternatively, one could say that passive perfect verbs are assigned the phonological material -o:w- just like active perfects, but that there is a rule that deletes -o:w- just in case the verb is a perfective form. These two alternatives will be examined in further detail below when we take up the question of the change of ł to l. In the absence of a general theory of morphology, the choice between the above two descriptions is problematical.

The former analysis avoids claiming that the phonological material -o:w- is part of the derivation of a word such as łum-i:l-a at any point in its derivation. If one were to assume an underlying structure such as łum-i:ł-o:w-a, then it would be necessary to delete the -o:w- suffix early enough in the derivation so that the long vowel in -o:w- would not induce a shortening of the preceding long vowel. In other words, it would be necessary to delete the -o:w- before its specific phonological shape could have an effect on neighboring elements. That this ordering of the rules would be required weakens the claim that -o:w- is part of the underlying structure of łum-i:l-a since in a case where this phonological material would produce a certain effect, it has to be deleted in order to avoid that effect. Since, however, the deletion of -o:w- is a morphological rule, one might argue that it is entirely natural that it should be applied before the essentially phonological rule that shortens all but the last long vowel in a phrase.

At this point we can turn our attention to what is the most tantalizing problem associated with the passive perfect construction: namely, the change of an ł at the end of the perfect stem to l. This change is of particular interest because it would seem to be not unrelated to an observation made near the beginning of this paper: in passive non-perfects an ł occurring immediately before the -o:w- suffix is changed to l. How is the change of ł to l in passive perfects to be hooked up to the same change of ł to l in passive non-perfects?

One analysis would go as follows. The language has a morphophonemic rule of the form given in (7):

(7) ł $\longrightarrow$ l / _____+o:w

In addition, the underlying structure of łum-i:l-a is /łum-i:ł-o:w-a/, and the rule that deletes -o:w- is ordered to apply after (7). The derivation of ku-mol-o:w-a and łum-i:l-a would be in this analysis as in (8):

(8)	ku-mo:ł-o:w-a	łum-i:ł-o:w-a	
	ku-mo:l-o:w-a	łum-i:l-o:w-a	ł to l
	inapplicable	łum-i:l-a	o:w- deletion

This description accounts for the data neatly. The change of ł to l in łum-i:l-a is treated as being due to exactly the same principle as operates in ku-mol-o:w-a.

The above analysis is problematical on two accounts. One, it requires that -o:w- be in the underlying representation of passive perfects (see above for discussion of the merits of this position). Two, rule (7) is questionable. It is formulated so that the change of ɬ to l is induced by the phonological material -o:w-, but there is no evidence that the phonological shape of the passive suffix is relevant at all (synchronically[8]). Rule (7) could just as well be formulated as in (9):

(9) ɬ ⟶ l / _____ + {PASSIVE}

(9) says simply that an ɬ immediately before the passive suffix is changed to l. The phonological shape of that suffix is irrelevant. If (9) were accepted, then the underlying structure of łum-i:l-a could be /łum-i:ɬ-Ø -a/, whereas ku-mol-o:w-a would be /ku-mo:ɬ-o:w - a /. Rule (9) PASS PASS would apply to both representations to convert the ɬ immediately before the passive morpheme to l. This approach assumes that łum-i:l-a never has associated with it the phonological material -o:w-; rather, it assumes that in the underlying structure a passive morpheme occurs, with Ø as its phonological shape, between the perfect stem and the final vowel. The occurrence of this morpheme in this position is absolutely crucial to the correct application of (9), since this rule is formulated so as to change ɬ to l just in case it immediately precedes the passive morpheme.

At this point one might ask: do we really need to say that there is a passive morpheme located between the perfect stem and the final vowel? Could we not alter rule (9) so that it reads as in (10):

(10) ɬ ⟶ l in a "passive" verbal form

In this sort of analysis, łum-i:l-a would not contain a passive morpheme located in a particular linear order; rather, the fact that it is passive would be given either by a feature associated with the entire verbal form or by an examination of its syntactic derivation (depending upon one's preference for syntactic features or for global rules).

As stated, rule (10) will not work. (10) predicts that one will not find ɬ in a passive verbal form, which is incorrect: cf. łum-i:l-a, łeke:z-a, i-łełe:z-a. (10) would have to be modified to affect an ɬ at just certain locations in passive verbal forms: namely, in passive

non-perfects an ɬ immediately before -o:w- and in passive perfects an ɬ immediately before the final vowel. Thus (10) would have to be altered to read as in (11):

(11) ɬ ⟶ l / _____+ow (a)
_____+V# (b) in "passive" verbs

Rule (11) will work in the sense that it will correctly predict when ɬ changes to l. It misses one fundamental point however. The location of the passive suffix -o:w- is always immediately before the final vowel. Thus if the shape of the passive suffix in passive perfects is Ø, (11b) can be seen to represent just a special case of (11a) - namely, the case where the passive morpheme is not overtly realized and thus the ɬ in question is superficially immediately before the final vowel. There is, then, a generalization that (9) captures which (11) does not. If this generalization is one that should be captured, then we have reason for preferring (9) to (11), even though the consequence of this is that (9), a morphophonemic rule converting ɬ to l in a particular morphological context, must be applied to a structure containing a morpheme with Ø shape located at a particular place in the linear form of the word.

Both rule (7), and an underlying structure /ɬum-i:ɬ-o:w-a/, and rule (9), and an underlying structure /ɬum-i:ɬ- Ø -a/, provide a unified, general
PASS
treatment of the change of ɬ to l in passive forms. Both analyses would require that a morphophonemic rule, the change of ɬ to l, apply at a fairly deep level of structure. The first analysis would require the morphophonemic rule to apply before the morphological rule that deletes -o:w-. The second analysis would require that the morphophonemic rule apply at a point where morphemes with Ø shape are actually present in the structure. Whichever solution is to be preferred - and we have no strong motivation at present for preferring one over the other - requires a rather interesting interplay between morphophonemics and morphology.

Footnotes

[1]Previous to our own work, the only published descriptions of Chi-Mwi:ni were Whiteley (1965) and Goodman (1967). Whiteley's article is a brief, general description of the phonology and morphology, based on a very short period of contact with the language. Goodman's article is a more detailed account of vowel length and accent; much additional work, however, remains to be done on these topics. Our own work on the language is still in progress, but some preliminary results are provided in Kisseberth and Abasheikh (1974 a,b,c).

[2]For a detailed description of the construction of "suffixed" active perfect stems, see Kisseberth and Abasheikh (1974c).

[3]This vowel is -e in active perfect forms and (most) subjunctive forms, -i in negative habitual forms, -o in (many) relative verbal forms, and -a in all other cases.

[4]See Goodman (1965) and Kisseberth and Abasheikh (1947a) for a fairly detailed account of vowel length in Chi-Mwi:ni.

[5]Preliminary instrumental investigation suggests the following differences between ɬ and l: in the articulation of ɬ the tongue tip strikes lightly against a small area to the front of the alveolar ridge, without lateral contact, whereas in the articulation of l there is a wider area of contact, including lateral contact. The duration of l is considerably greater than that of ɬ.

[6]The applied suffix is regularly -iɬ- (-eɬ- by virtue of a vowel harmony process), but assumes the shape -iɬiz- (-eɬez-) in certain phonological environments. For a full description of the phonology of the applied stem, see Kisseberth and Abasheikh (1974b).

[7]The final vowel -e is not an invariable characteristic of active perfects, however. If an active perfect stem is functioning as the main verb of a relative clause, its final vowel will be -o rather than -e. Passive perfect stems, however, retain -a as their final vowel even when functioning as the main verb of a relative clause. Thus the contrast between active and passive forms like barsh-i:z-e/barsh-i:z-a is retained in relative forms as barsh-i:z-o/barsh-i:z-a.

[8]We are not certain of the diachronic explanation of the change of ɬ to l in passive forms. It should be pointed out that there is evidence that ɬ is converted to l in pre-consonantal position generally in the language. If the passive suffix was at some point -w- (as it is synchronically in many Bantu languages), rather than -o:w-, then the shift of ɬ to l might be a reflex of that pre-consonantal environment.

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