

Disambiguation of Morphological Homophony  
by Rule Application: A Case in Lakhotā

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0. Introduction In this paper we will examine the morpho-phonological properties of three homophonous prefixes in Lakhotā. We will see that these prefixes are distinct with respect to several rules, including the Stress Rule and several vowel deletion and merger rules. It will be argued that the different behavior of the prefixes serves an important function - it allows speakers to distinguish the otherwise homophonous prefixes by reducing ambiguity for many sentence types. In our account of the phenomena two distinct questions will arise. Several rules of deletion and merger interact with the Stress Rule and a certain ordering is necessary. We will discuss several different approaches invoking the notions of ranked boundaries, ordered rules of affixation and rule features. We will argue that an analysis using rule features is preferred over the others; the use of diacritics, rather than being ad-hoc, captures the fact that these prefixes are distinguished by various rules, in a straight-forward and intuitively satisfying way. For one of the prefixes, the question of whether a morpheme must have one constant semantic/syntactic function will arise. For both questions it will be noted that the traditional division between inflectional and derivational rules makes no interesting predictions with respect to the Lakhotā data.

In the following section a brief outline of the prefixes and their position with respect to the verb stem is given. In section 2 each of the prefixes under discussion is presented in turn, first by outlining their phonological properties and then by considering the possible analyses to account for them. Finally in section 3 we discuss the implications of the conclusions reached in section 2.

1. The typical verb in Lakhotā consists of a stem (compounded or single) and a number of prefixes. These prefixes have several functions; they may be, for example, instrumental and locative markers (of varying opacity), nominalizers and person and role markers. Let us consider some examples as way of illustration.

- |      |                       |              |                                      |
|------|-----------------------|--------------|--------------------------------------|
| (1a) | a+ <u>w</u> ícha+phe. | <u>a</u>     | class 4 locative "surface"           |
|      | 'he hit them'         | <u>wícha</u> | class 7 animate object "them"        |
|      |                       | <u>phe</u>   | stem 'to hit'                        |
| (1b) | na+má+ya+t'e.         | <u>na</u>    | class 6 "with the foot" instrumental |
|      | 'you kicked me        | <u>ma</u>    | class 8 stative 1st person sing.     |
|      | unconscious'          | <u>ya</u>    | class 9 active 2nd person            |
|      |                       | <u>t'a</u>   | stem 'to die, be unconscious'        |
| (1c) | waṛíwaču.             | <u>wa</u>    | class 1 indefn. object marker        |
|      | 'I take things'       | <u>i</u>     | class 4 locative                     |
|      |                       | <u>wa</u>    | class 8 active 1st person sing.      |
|      |                       | <u>ču</u>    | stem 'to take'                       |

The following table gives the positions of the twelve prefix slots as outlined by R. Carter (1974).<sup>1</sup>

1	2	2	4	5	6	7	8	9	10	11	12	+STEM
<u>wa</u>	<u>o</u>	<u>ũ</u>	<u>o</u>	<u>k'i</u>	<u>wa</u>	<u>wičha</u>	<u>wa</u>	<u>ya</u>	<u>ki<sub>1</sub></u>	<u>ič'i</u>	<u>ka, ya</u>	
	<u>i</u>		<u>i</u>		<u>na</u>		<u>ma</u>	<u>ni</u>	<u>ki<sub>2</sub></u>	<u>kiči</u>	<u>pa, yu</u>	
			<u>a</u>		<u>wo</u>		<u>u</u>					

1. indefinite object marker
2. nominalizers
3. 1st person plural
4. locative (often opaque)
- 5.-6. instrumentals
7. 3rd person object marker
8. 1st person markers- active and stative
8. 2nd person markers- active and stative
- 10.-11. benefactive, reciprocal, reflexive and possessive
12. instrumentals -cannot co-occur with class 6

In general, these prefixes occupy a fixed position with respect to each other. (Class 4 locatives may co-occur with one another and show scope distinctions.) Some are clearly the result of a syntactic copying rule (eg., prefix no. 7, the plural object marker given table 1 above).

There is a phonological determined rule of metathesis which will flip ũ from its class 8 position to slot no. 3. We may note that with the removal of class 3, several superclasses of prefixes based on semantic function emerge. Slots 1-2 are nominalizers, slots 4-6 are derivational locative and instrumental prefixes and classes 7-11 are inflectional person markers. Slot 12 is a second class of instrumentals with stem-like properties, as we shall see in the following section. These superclasses are given in table 2 below.

NOMINALIZERS		LOC./INSTRUM.		PERSON ROLES	
1-2	+	4-6	+	8-11	+(12)+ STEM
<u>wa, i, o</u>		<u>o, i, a</u>		<u>ũ, wa, ya, ki<sub>1</sub></u>	<u>yu</u>
		<u>ki, wa, wo, na</u>		<u>ma, ni, ki<sub>2</sub></u>	<u>ya</u>
				<u>kiči, ič'i</u>	<u>pa, ka</u>

TABLE 2

Each superclass (except 12, if it is a superclass) contains a prefix with the phonological shape of [wa]. In this paper, I will discuss, in turn, the prefix wa in slot no. 1 (commonly referred to in Siouan literature as the indefinite object marker), the wa in slot no. 6 - an instrumental prefix with the meaning of 'with a cutting edge, sharp instrument' and the wa in slot no. 8, which is the 1st person singular active subject marker.



2.1 Let us first consider the 1st person singular active subject marker wa of slot no. 8. In (2a) wa is immediately followed by the stem, in (2b) wa is interfixd between a locative and the stem and in (2c) wa is interfixd between two stems (ie., a verb which is probably the result of an old rule of compounding).

(2a) wačh<sup>h</sup> 'I want (it)'  
čh 'to help'

(2b) owakiye. 'I help (it)'  
okiya 'to help'

(2c) wastewalake. 'I like (it)'  
wastelaka 'to like'  
waste 'to be good'  
la 'to consider'

However, if the next morpheme to the right of wa begins with a y (which is either ya or yu of class 12 or an active verb stem) we have a different conjugation. This is also the case with active 2nd person ya. We have included its conjugation as well.

(3a) bla 'I go'  
la 'you go'  
ya 'to go'

(3b) bluhá 'I have (it)'  
luhá 'you have (it)'  
yuhá 'to have'

(3c) blaska 'I bit (it) off'  
laska 'you bit (it) off'  
yaska 'to bite off'  
ska 'to sever'  
ya 'with the mouth'

(3d) blut'e 'I strangled (it)'  
lut'e 'you strangled (it)'  
yut'a 'to strangle'  
t'a 'to die, be unconscious'  
yu 'with the hands'

Carter (1974) has argued for a synchronic analysis whereby the underlying representation of the verbal complex contains wa. In order to account for the 1st person form bla from wa+ya he posits a rule of a-Deletion and Lateralization to turn the [y] into [l] and Glide Assimilation to turn the [w] into [b]. The rule of a-Deletion must be limited to the person markers wa and ya of class 8 and 9, respectively.

There are several possible alternatives to effect this. We could mark the morpheme with a rule feature that would trigger the rule, eg. [+ a-Deletion], [+ Lateralization]. As a feature, it must not be equated with segmental features specified for the vowel [a]. Rather it is a feature of the morpheme. This option raises the issue of what information an underlying representation should contain. With a rule fea-

ture we are able to encode the phonological manifestation of the morphological trigger (viz., that is is the 1st and 2nd person markers and they alone that undergo these rules).

On the other hand, one could write a phonological rule of a-Deletion using the notion of "ranked" boundaries. Carter uses this approach. To block the rule from applying to prefixes to the left of class 8, he posits a boundary "\*\*\*". (A quick glance through table 1 should satisfy the reader that there are no prefixes containing [a] to the right of class 8, thus ensuring the proper outcome for his phonological rule.<sup>2)</sup> Note that as a-Deletion feeds the Lateralization rule and the Glide Assimilation rule, no ranking statement need be made for these rules.

The notion of ranking (cf. Stanley (1973)) critically makes predictions about the relative strength of different rules. A rule is said to be ranked by another if its domain of application is more restricted. A rule with a more restricted domain is considered "weaker". Let us illustrate this relationship with a hypothetical case. Suppose in Language A, we find a rule of vowel harmony that is restricted to vowels in stems or roots.

(4a)  $V \rightarrow [+high] / \begin{smallmatrix} \% V \\ [+high] \end{smallmatrix} X \underline{\hspace{1cm}},$

condition: rule is ranked by stem boundary %

Suppose further, that there is also a rule of palatalization that ignores stem boundaries and, in fact, applies to any consonant of a word.

$$(4b) \quad C \rightarrow C^Y / \text{---} \begin{matrix} V \\ [+high] \end{matrix}$$

By this definition, the rule of Vowel Harmony is outranked by the rule of Palatalization. Let me make three general comments at this point. First, although I have given an example where one rule feeds the other, one can see that this is not relevant to the definition. Second, I have used a boundary type (stem) that has been motivated for some languages (cf. Langdon 1975). However, hypothetically the boundary could be between any prefix slot and, in a language such as Lakhota which has twelve prefix slots, we might expect to find a ranking boundary between slot no. 8 and no. 9, ie., between the 1st and 2nd person markers. Finally, although both rules in our examples are phonologically conditioned, we can see that, given that a boundary is a mark of morphological (and possibly, syntactic) significance, that a morpheme may become the most relevant environment for the rule. Thus, ranking provides a mechanism for a rule which was previously phonological (though ranked) to become purely morphological. Indeed, the notion of ranking expresses an appealing psychological claim which was discussed by Stanley. According to him, the weaker the boundaries and therefore the less general the phonological process, the less apt a child will be to construct the necessary rules. Instead,



when he reaches a certain point, he might find it easier to simply memorize certain paradigms of morpheme combinations than to incorporate rules of still lower rank.

Stanley 1971: pp. 29-30

Thus, we predict that there is a connection between the rank of a rule (ie., its generality) and its order of application with respect to the other rules. A rule could be so restricted, come so early in the derivation that distinguishing it from an underlying form would become a moot issue. Let us turn back to the Lakhota data and compare the rule of a-Deletion to another rule involving the person marker wa and then evaluate an analysis which makes critical use of ranked boundaries.

Wa and ya provide the appropriate environment for a rule of k-Deletion in verbs with possessive forms. That is, a sequence wa+ki becomes wa+i. This resulting sequence of vowels is then merged into e by a rule of Synersis. The rule of k-Deletion is restricted to the possessive ki marker. A homophonous ki (also of class 10) which marks benefactives does not undergo this rule. Compare the following paradigms.

- (5a) 

wekte.	'I killed mine'	( wa+ki+kte )
yekte.	'you killed yours'	( ya+ki+kte )
kikte.	'he killed his'	( $\emptyset$ +ki+kte )

- (5b) 

wakikte.	'I killed it for him'
yakikte.	'you killed it for him'
kikte.	'he killed it for him'

As this rule occurs only between class 8 and class 10 prefixes and not across the stem boundary, as the rule of a-Deletion does, we may assign the rule a weaker boundary. This allows us to formulate the rule phonologically without specifically mentioning morphological information. But is this in fact a satisfactory solution? One objection to this approach for Lakhota is that these rules are not phonological processes at all. By this I mean that the rules of deletion do not have the typical environments one expects, ie., those stated in terms of syllable structure and functioning to maintain preferred syllable types. Likewise, the rule of Synersis does not apply to phonetically defined segments. Their formulation as such crucially depends on the fact that no other phonetically similar morphemes occur within the domain defined by the boundary. Further, one would predict that the rule of k-Deletion and Synersis as a more restricted set of rules would be "earlier" in the derivation of the word from its underlying representation. But note that these two sets of rules interact differently with the stress rule which I motivated in an earlier paper.

Polysyllabic words contain one primary stress which typically falls on the second syllable counting from the left. Monosyllabic words also receive stress.



- (6) k'u' 'to give'  
 oyate 'people'  
 k'it'ala 'frequently'

The rule may be formalized as the following.

- (7)  $V \rightarrow [+stress] / \# (CV): C \underline{\quad}$

This rule must follow all affixing of the prefixes (leaving aside the question of how they are affixed, ie., derivationally, inflectionally, etc.)

A very small number of vowel merger rules follow the Stress Rule, the effect of which is typically a word with initial stress. The synersis rule is one such rule. Note the stress patterns in examples (5a) and (5b). Compare this to the behavior of a-Deletion. A-Deletion must precede the stress rule, otherwise stress would be incorrectly assigned to the first (surface) syllable in words like bluha. The stress patterns are accounted for if we assume the following order of rules:

- (8) Affixation > a-Deletion > Stress Rule > k-Deletion

The notion of ranking and a corollary of derivational history are falsified by these facts. On the other hand if the rules of k-Deletion and a-Deletion, etc. are treated as independent morphological rules we would not expect a necessary interaction between them.

1.12 The idea of derivational history is akin to an analysis of D. Siegel's for some English affixes. An internal word (#) boundary was proposed in Sound Patterns of English to account for the fact that stress is unaffected by the attachment of the suffix #al to a word, eg., construe, construal. Siegal suggests that the blocking strength of # is, instead, evidence that the affixation rule comes after the application of the stress rule in the derivation of the word. Can we use this notion of order of affixation to account for the Lakhota data? To rephrase the question: could we juggle the order of affixation with the rules to account for the restrictedness of k-Deletion?

The person markers of class 8 and 9 would have to be inserted or "interfixed" early in order for a-Deletion to apply. The class 12 instrumentals would have to be interfixed even earlier since they are part of the triggering environment for a-Deletion, in fact they would have to be interfixed before any rules, thus arguing perhaps that they are part of the stem. A-Deletion, etc. would apply and then Stress.<sup>3</sup> We would expect that possessive ki on the other hand would not be interfixed until later since the rules which apply to it follow the Stress Rule. But note, we would have to know if the benefactive/possessive, etc. markers of classes 10-11 were going to be affixed because their presence mediating between the wa and a y-stem verb changes the environment and thus blocks the application of a-Deletion.

We have just shown that the instrumental prefixes, person markers and the possessive/benefactive markers must be present before the first

rule (a-Deletion) can apply, i.e., all prefixes must be affixed before the application of any rules takes place. It would seem impossible to maintain an argument that the ordering of the morphological rules in Lakhota given in (6) can be accounted for by the ordering of the affixation of the prefixes.

2.2 Throughout this discussion I have simply stated without proof that the rules of a-Deletion and Syneresis apply only to wa in prefix slot no. 8 (and ya in no. 9). Let us now turn to the behavior of wa of class no. 6 to see that this is so. The instrumental wa is morphologically inert. It does not undergo any morphological rules (this is typical of all the instrumentals in class 6). The following are examples containing this wa.

- |      |         |                          |
|------|---------|--------------------------|
| (9a) | wasla   | 'to scrape with a knife' |
| (9b) | waksa   | 'to cut, to saw in two'  |
| (9c) | wapsaka | 'to cut string in two'   |
| (9d) | wasleca | 'to split with a knife'  |

Sometimes the stems are independent verbs; sometimes they combine with other instrumentals to derive other verbs. Compare (9b) and (d) with the following verbs which contain the same stems.

- |       |         |   |
|-------|---------|---|
| (10a) | woska   | 'to break off by shooting' (cf. 9(b))     |
| (10b) | yusleca | 'to tear apart with the hands' (cf. (9d)) |

The verb ksa means 'to sever, break off'. Thus the word waksa is ambiguous. The wa may be the instrumental 'with a sharp-edged instrument' in which case waksa means 'he cut it in two'. The wa may also be the 1st person marker in which case waksa means 'I cut it'.

Instrumentals of class 6 do not co-occur with instrumentals of class 12 (or any y-initial stems that I can think of, for purely semantic reasons) so one cannot produce a minimal pair between the two wa's and the rule of a-Deletion. However, possessive ki may follow instrumental wa in the 3rd person paradigm but k-Deletion does not apply, cf. (11) below. (12a) and (12b) and (13a) and (13b) are disambiguated by the application of k-Deletion and subsequent Syneresis.

- |       |              |   |
|-------|--------------|---|
| (11)  | wakiksa.     | 'he cut his with a sharp instrument'        |
|       | wa+ki+ksa    | instrumental+possessive+stem                |
|       |              | also 'he cut it for him with a sharp knife' |
|       |              | instrumental+benefactive+stem               |
| (12a) | waksa        | 'I cut mine'                                |
|       | wa+ki+ksa    | 1st person+possessive+stem                  |
| (12b) | wakiksa      | 'I cut it for him'                          |
|       | wa+ki+ksa    | 1st person+benefactive+stem                 |
| (13a) | wawaksa      | 'I cut mine with a sharp instrument'        |
|       | wa+wa+ki+ksa | instrum.+1st person+poss.+stem              |
| (13b) | wawakiksa    | 'I cut it for him w/ a sharp instrument'    |
|       | wa+wa+ki+ksa | instrum.+1st person+benefactive+stem        |



Thus we see that the rule of a-Deletion, etc. and Synersis is limited to the inflectional 1st person marker and never to the instrumental wa. The absolute morphological inertness of the instrumental wa may be accounted for in various fashions. We might suggest that it be interfixed at some very late, late point in the derivation. However, it must be inserted before the Stress Rule applies, and thus before various vowel merger rules, even though it itself never undergoes any of these rules. Thus we cannot distinguish the instrumental wa from the person marker wa by the order of affixation. We might bind the prefix with a pair of strong boundaries that are not too strong for the stress rule. But again, these analyses are ad-hoc. The boundaries have no independent motivation. Their only function would be to prevent rules which apply to the active person markers from applying to the instrumental markers. In fact, we seem to have more evidence that these rules are morphologically determined and that even the absence of rules affecting the instrumentals serves a more general function, i.e., they function to distinguish otherwise homophonous prefixes.

2.3 The final case of wa that we must discuss is the indefinite object marker. This wa precedes all other prefixes. We shall see in the following discussion that this wa has four different functions. This multiple use raises the question of whether we have one morpheme for, in general, one expects that the affixation of a morpheme will be isomorphic with a single semantic function. Furthermore, it is not clear that there is even a single type of affix rule for these four functions, i.e., I will argue that one rule is syntactic in spite of the other three being derivational. Consideration of a second morphophonemic rule of merger requires us to distinguish between two instances of a functionally defined rule of wa-affixation.

When wa is prefixed to a transitive verb, it acts as an indefinite direct object and depending on the verb will mean 'something', 'things' or 'people'. Less frequently it will be an indefinite indirect object marker. We may now add yet another set of readings for examples (11), (12b) and (13b). Like the instrumental wa, the indefinite object wa does not provide the appropriate environment for k-Deletion. Thus, the wa in these examples may also have the following meanings.

- |        |                         |  |
|--------|-------------------------|--|
| (11')  | wak <sup>h</sup> ksa    | 'he cut something for him'                   |
|        | wa+ki+ksa               | indefn. obj.+benefactive+stem                |
| (13b') | waw <sup>h</sup> akiksa | 'he cut something for him w/ sharp instrum.' |
|        | wa+wa+ki+ksa            | indefn. obj.+instrum.+benef.+stem            |
|        |                         | also 'I cut something for him'               |
|        |                         | indefn. obj.+1st person+benef+stem           |
| (14)   | waw <sup>h</sup> awaksa | 'I cut something w/ a sharp instrument'      |
|        | wa+wa+wa+ksa            | indefn. obj.+instrum.+1st person+stem        |

We can also have sentences with all three wa's, as shown in (14) above.

Compare the following sentence pairs. In the (a) sentences we give an active sentence with a lexically specified object; in the (b)



sentences, wa is prefixed to the verb.

(15a) Wičhíčala ki wówapi éya yawá pi.  
girl DEFN book some read PL  
'the girls are reading some books'

(15b) Wičhíčala ki wayáwa pi.  
girl DEFN read PL  
'the girls are reading'

(16a) Mary Robert slolyé.  
M R know  
'Mary knows Robert'

(16b) Mary waslólye.  
M know  
'Mary knows things' = 'Mary is educated'  
'Mary knows people' = 'Mary has connections'

(17a) Wasná úyúta pi.  
pemican we-eat PL  
'we eat pemican'

(17b) Wa?úyuta pi.  
we-eat PL  
'we ate'

This prefixing corresponds to the rule of Indefinite Object Deletion in English but it more productive. Like English, the meaning of the derived intransitive is not always simply the meaning of 'to VERB something'. The verb yatka 'to drink', for example, with wa prefixed (wayatka) strongly implies that the drinking is of alcohol. (Notice also the extended meanings of (16).) The fact that some of these verbs have habitual meanings is enough for some (cf. Dowty) to make this wa-affixation rule a rule in the lexicon. But this criterion of semantic ideosyncrasy should be examined more closely. Are these "specialized" meanings "core" meanings of the verbs or possible (pragmatic?) inferences arising from a semantically vague syntactic construction? Particularly when these expressions are used in the present tense and are open to a habitual reading, we can expect the meanings of these prefixed verbs to have extended senses. When the verbs refer to past events, the more ordinary meanings are inferred. We might suggest that the not-so-completely-transparent meanings (there are more truly opaque cases that I will discuss at a later point) are listed in the lexicon but that these meanings are not the product of a lexical rule distinct from the general rule of wa-affixation.

It might be argued that the wa-affix rule must be a derivational rule on the grounds that it is not inflectionally attached. Wa is clearly not inflectional as there is certainly no sense in which one can invoke the notion of paradigm. But one cannot assume that inflectional markings exhaust the limits of syntax for morphology. D. Perlmutter (in class) introduced the notion of "registration", i.e., that the application of certain syntactic rules might have some invariant morphological marker reflex. If wa is affixed syntactically, it would be a case

of registration.

Can one invoke other criteria to help resolve the issue of whether wa-affixation is syntactic or lexical? Wasow (1977) claims that lexical rules change lexical categories. Now since wa does not change the verbal status of the verb it is prefixed to, it would then follow from Wasow's criterion that wa-affixation is syntactic. Aronoff has criticized this view, claiming that it is too strong. He gives examples where the prefixing of certain derivational affixes in English (eg. dis-, un-, re-, etc.) changes the strict subcategorization frames of the verbs and therefore must be lexical rules. Wa can be thought of as a "detransitivizing" prefix, ie., it changes the strict-subcategorization frame of the verb, and as such, it qualifies as a lexical rule. But this analysis assumes exactly what is at issue. Is the affixing of wa syntactic or is it in the lexicon?

Let us look at some additional functions of wa before we return to this issue. When wa is prefixed to intransitive verbs, it nominalizes them. With stative verbs, the meaning is usually 'the thing which is VERB'. With active intransitives (and these are much less common) the meaning is 'the person/thing which VERBs'. Some examples follow.

- (18a) statives: wasna 'something greasy' = 'pemican'  
                   watho 'something green' = 'grass'  
           actives: wamanika 'one who walks' = 'travelling salesman'  
                   wakiya 'thing that flies' = 'thunder bird'

Finally, we may note that wa may be prefixed to "passive" verbs (ie., where the active subject is 3rd person plural and marked by pi) to create nouns.

- (19) "passives": waksupi 'beadwork'  
                   wa+ksu+pi 'they adorn/decorate things'  
                   wowapi 'letter, flag or book'  
                   wa+owa+pi 'they mark it on container'

Are these nominalizing rules using different morphemes or are (18) and (19) different instances of the same wa? Functionally, they are clearly related in that they all reduce the number of arguments of the verb by one, ie. transitive verbs become intransitive, intransitive verbs (the "passives" being a special case) become nouns. One would want to claim that there is just one morpheme. It might then be argued that we must abandon this generalization if we insist on a syntactic rule for the affixation in the transitive verb cases (assuming, of course that the nominalization represented in (18) and (19) is not syntactically done). This also strikes me as an unwarranted assumption. There is no reason to believe that a rule of syntax and a rule of the lexicon cannot both involve the same morpheme in different parts of the grammar. In fact, this is precisely the case of the the English passive. If one accepts Wasow's analysis of passives, then there is a lexical rule which creates



adjectives out of transitive verbs by suffixing the -en participle. These adjectives can then undergo un-affixing. There is also a syntactic rule of passive which, among other things, will attach ("register") -en to the transitive verb.

Let us consider some morphophonemic evidence. In another paper (Williamson 1977) I described a vowel contraction rule<sup>4</sup> which applies within compounds and between wa and a following vowel (necessarily of class 2 or 4). The contraction is obligatory if the word is a noun and optional if a verb. It follows the Stress Rule.

(20)	wika	'rope'
	<u>wa</u> +ika	something+tying strings"
	wówašte	'benefit'
	<u>wa</u> +owašte	something+goodness
	wíyatke	'cup'
	<u>wa</u> +iyatka	something+to drink with

De-transitivized verbs with less than transparent meanings undergo contraction also. There is always a corresponding verb with a transparent meaning which has not undergone contraction.

(21a)	wíhpeya	'to give away after death' (< <u>wa</u> +íhpeya)
(21b)	waʔíhpeya	'to discard things'
(21c)	wóčhĩ	'to be a beggar' (< <u>wa</u> +óčhĩ)
(21d)	waʔóčhĩ	'to beg for things'

This suggests that we should distinguish two indefinite object marker wa's. The derivational wa would join the other "nominalizer" wa's and undergo the rule of Vowel Contraction (as do other derivational rules of compounding<sup>5</sup>). The syntactic wa would not. In order to insure that the derivational wa undergo contraction we would mark it with a rule feature. At this point, it may seem unnecessary, but let us quickly look at analyses invoking boundaries or affixation ordering.

Note that both the derivational and the syntactic wa must be affixed before the Stress Rule applies but that only the latter remains unaffected by the rule of Vowel Contraction, which applies subsequent to the Stress Rule. Thus we cannot distinguish these two wa's in terms of order of affixation.

One might be tempted to look at the Vowel Contraction phenomena as a case of boundary weakening. One would thus attribute the greater opacity in the meaning of these words to a loss of the affixal status of the word. Such a restructuring of the internal boundaries would predict a phonological re-analysis where these words undergo regular stress (ie., on the second syllable) but this does not happen. Also, under this analysis there is a paradox in that the words with lesser transparency (eg. (20), (21a) and (21c)) are treated like other compounds with a complex derivational history. However, if we use rule features to trigger Vowel Contraction for the derivational wa's, we can account



for the facts. With this analysis whereby homophonous morphemes are distinguished by the different rules they undergo (or in the case of the indefinite object marker, the different derivational histories are distinguished). the fact that one indefinite argument marker wa undergoes Vowel Contraction and another wa does not, is by now, what we have come to expect in Lakhota.

3.0 There has been considerable interest in derivational rules again, both of a compounding and affixal nature. One must exercise caution in deciding whether a rule is lexical or syntactic. One should expect these rules to be of a similar nature, particularly if viewed from an historical perspective whereby frozen syntactic constructions are re-interpreted as lexical items. In fact, the case of the derivational wa could be viewed as an example of an inflectional morpheme becoming lexical over time.

It is remarkable that the lexicalized verbs behave exactly like the nominals. If we claim that there is one word formation rule at work here, the function of which is to reduce the number of arguments of a verb by one, we can account for this fact. This analysis is possible given a view of language which assumes that the categories of noun and verb are not complementary, at least for the purposes of the lexicon, but, rather a step-like progression from incomplete (verbs with no arguments) to complete (nouns). Recent work on morphology within the framework of Extended Standard Theory assumes the theory of  $\bar{X}$  notation, in which it is explicitly proposed that nouns and verbs are discrete categories. Aronoff has proposed that all word formation rules operate on words in major (open class) lexical categories to create words in a second lexical category. If our analysis that there is just one derivational rule of wa-affixation is correct, then this position must be abandoned. Word formation rules must also be defined so as to operate as functions themselves, eg., reduce the number of arguments of a verb given in its strict-subcategorization frame by one.

Other proposed criteria for "lexicalness" based on lexical exceptions, limited productivity and lexically-governed properties (cf. Bresnan, Dowty Wasow) are neither sufficient nor necessary. Roper and Siegal 1978 argue for a productive lexical rule which is neither ideosyncratically restricted nor "structurepreserving". If one moves all lexically-governed rules into the lexicon (particularly into a component characterized by the permissible "exceptionalness"), one weakens the theory considerably. We have seen, eg., that although a syntactic rule of indefinite object wa-affixation is fully productive, we did not want to subsume this process under a second derivational rule which affixes wa and triggers the Vowel Contraction Rule. This generalization would be lost in a theory which does not allow lexically-governed rules.

Ultimately, I feel that the criteria for deciding the lexicalness of rules must rest on their interaction with clearly syntactic and (morpho-)phonological rules. In the particular case of wa we have argued that words formed with wa by one derivational rule of compounding undergo a phonological rule of contraction. The sensitivity of these



words to this rule provides a criterion for determining the lexical status of these derived nouns and verbs. An investigation of syntactic properties of the de-transitivized verbs could be revealing, but is beyond the scope of this paper.

In this paper, I have examined one set of homophonous prefixes in Lakhota. In poly-synthetic languages such as Lakhota, we saw that the phonologically-defined word (eg., for the purposes of the Word Stress Rule) must first allow both inflectional (ie., person markers, indefinite object marker, etc.) and derivational (ie., locative, instrumentals, etc.) affixing before the application of stress. Theories involving claims of ordering of affixation rules cannot account for these facts. It was shown that the selectivity of the morpho-phonemic rules had a general function of reducing possible ambiguity in potentially highly ambiguous verbal complexes. This function follows from a theory allowing morphological rule features and is merely accidental in a theory which accounts for the restrictedness or selectivity with ranked boundaries. Finally, I have documented a rather productive word formation rule, the function of which may be stated in terms of strict sub-categorization. Thus all word formation rules cannot be defined so simply as a function mapping a word of one category into another. The affixation of the indefinite argument wa is better thought of as a function mapping a word onto a function, the result being a set of lexical categories.

#### Footnotes

1. The data given in this paper is primarily taken from three sources: Boas and Deloria 1941, Carter 1974 and Rood and Taylor 1976. I have done some field work of my own to corroborate the discussion of syntactic vagueness (p. 13) presented here. I would like to thank Mrs. Charlotte Ortiz and Mrs. Shirley Murphy, both of Pine Ridge, S.D. for sharing their native intuitions of Lakhota with me.
2. Note that class 12 morphemes are excluded because they cannot co-occur with ya and yu since they are members of the same class.
3. Thus we have a situation where these inflectional prefixes are attached before the derivational prefixes of class 1-6 (which we have not yet discussed), which is counter to the spirit that inflectional markers are provided by the syntax and thus follow the derivational affixing.
4. The rule of Vowel Contraction was formulated with a feature hierarchy which preserves secondary features such as nasality and stress and the height of the higher vowel.
5. In my earlier paper, I justified this point in a broader context, taking into consideration data involving other compounds. The pervasiveness of the phenomena is impressive.

### References

- Aronoff, M. 1976. Word Formation in Generative Grammar, Linguistic Inquiry # 1. MIT Press, Cambridge, Mass.
- Boas, F and E. Deloria. 1941. Dakota Grammar, Memoirs of the National Academy of Sciences. 23:1-183.
- Bresnan, J. 1977. "A realistic transformational grammar" in M. Halle, J. Bresnan and B. Miller, eds., Linguistic Theory and Psychological Reality, MIT Press, Cambridge, Mass.
- Carter, R. 1974. Teton Dakota Phonology. dissertation University of New Mexico, distributed by University Microfilms, Ann Arbor, Mich.
- Dowty, D. 1978. "Applying Montague's views on linguistic metatheory to the structure of the lexicon" in the Parasession on the Lexicon, GLS 1978. Chicago. Ill.
- Langdon, M. 1975. "Boundaries and lenition in Yuman languages" in IJAL vol. 41 no. 3, pp. 218-33.
- Rood, D. and A. Taylor 1976. Beginning Lakhota. preliminary version. University of Colorado Lakhota Project.
- Roper, T. and M. Siegel 1978. "A lexical transformation for verbal compounds" in LI 9, no. 2 (Spring 78). Cambridge, Mass.
- Stanley, R. 1971. "Boundaries in Phonology", Bloomington: Indiana University Linguistic Club.
- Wasow, T. 1977. "Transformations and the lexicon" in P. Culicover, A. Akmajian and T. Wasow, eds. Formal Syntax. New York: Academic Press.
- Williamson, J. 1977. "Stress and contraction in Lakhota: a compounded conspiracy", unpublished paper. U.C.S.D.