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THE LIMIT OF STRUCTURE PRESERVATION
IN DAKOTA LEXICAL PHONOLOGY

John Kyle
University of Kansas

Abstract: Some of the earliest papers on Lexical Phonology claim that structure preservation applies throughout a Lexical derivation and may only be shut off by exiting the Lexicon. Work by Kellogg (1991) in Lakhota attempts to uphold this relationship between Lexical Phonology and Structure Preservation but recent work in Lexical Phonology and some older work in Dakota refute this claim. After a minimal discussion of Dakota phonology, morphology and how they relate to each other in Lexical Phonology, I will take up the problem of syllable structure within the Lexicon and show that Structure Preservation seems to be shut off early in the Lexical derivation.

Introduction

The sources for this paper are the works on Dakota by Boas & Deloria (1941), Shaw (1980, 1985) and on Lakota by Rood & Taylor (1976), Kellogg (1991). Although my sources come from both Lakhota and Dakota, I will only use the term Dakota unless referring to a specific text or rule. One reason for making this choice is that one of the most complete theoretical works was written by Pat Shaw (1980) on Dakota. She uses an SPE framework to develop Underlying Representations (UR) of many Dakota words and since Lexical Phonology makes use of URs, it is only natural to use her book as a source.

Due to limited space and the large topic that I've chosen, I can't go into every aspect of the theories of Lexical Phonology, Prosodic Morphology/Phonology, or other Non-linear Phonological theories. Two excellent sources for more information are Autosegmental & Metrical Phonology by John A. Goldsmith (1990) and Morphological Theory by Andrew Spencer (1991).

Dakota is a dialect of Dakota (or Dakota), which is a member of the Upper Mississippi River sub-family of the Siouan family. There are three dialects of Dakota: Dak'ota (the dialect), Lak'ota (1- dialect), and Nak'ota (3- dialect). The Lak'ota dialect is generally associated with the reservations west of the Missouri River in South Dakota: Pine Ridge, Rosebud, Lower Brule, etc. Dak'ota is east of the Missouri in South Dakota and Minnesota. Nak'ota is associated with the northern Sioux in Canada and North Dakota. Of the three dialects, Lak'ota has the most speakers and since most of the major pedagogical texts are in Lak'ota its use seems to be spreading.
Dak'tota Phonemes

Table I is a compilation of the phonemes described by both Boas & Deloria (1941) and Shaw (1980). The (d) and (l) are shown in parenthesis since Dak'tota uses /dl/ where Lak'tota uses /l/. When a /p/ or /k/ comes before an /m/ or /n/ it is realized phonetically as /b/ or /g/ respectively. Thus /b/ is an allophone of /p/ and /g/ is an allophone of /k/. Following Shaw (1980), I will not use them. /b/ also occurs phonetically in first person singular forms of a group of verbs which have a stem initial yu- or ya- such as yuha 'to have.' The first person singular form would be (phonetically) [bla:ha] in Lak'tota and [bhuha] in Dak'tota. There is a possibility that this occurrence of /b/ is the result of a sound change brought on by the first person pronounal prefix wa- and the initial /y/ of the verb stem. In any case, the voiced stops usually occur in unpredictable environments so I will not treat them as phonemes. The /b/ is shown only because Shaw (1980) mentions several words where it occurs outside the predictable environment.

<table>
<thead>
<tr>
<th>v-less</th>
<th>labial</th>
<th>dental</th>
<th>palatal</th>
<th>velar</th>
<th>glottal</th>
<th>laryngeal</th>
</tr>
</thead>
<tbody>
<tr>
<td>p</td>
<td>t</td>
<td>c</td>
<td>k</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>vless asp</td>
<td>pʰ</td>
<td>tʰ</td>
<td>cʰ</td>
<td>kʰ</td>
<td></td>
<td></td>
</tr>
<tr>
<td>v-less eject</td>
<td>p'</td>
<td>t'</td>
<td>c'</td>
<td>k'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>voiced</td>
<td>(b)</td>
<td>(d)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>vless fric</td>
<td>s</td>
<td>ṭ</td>
<td>ḥ</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>eject fric</td>
<td>s'</td>
<td>ṭ'</td>
<td>ḥ'</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>voiced fric</td>
<td>z</td>
<td>ṭ</td>
<td>ḥ</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>nasals</td>
<td>m</td>
<td>n</td>
<td>y</td>
<td></td>
<td>?</td>
<td>h</td>
</tr>
<tr>
<td>glides</td>
<td>(l)</td>
<td>y</td>
<td>w</td>
<td></td>
<td></td>
<td>h</td>
</tr>
</tbody>
</table>

TABLE I: (from Shaw (1980)) Dak'tota Consonants

Table II shows the vowels for Dak'tota, there are eight phonemic vowels in Dak'tota: five oral and three nasal.
TABLE II: (from Shaw (1980)) Dakota Vowels

Lexical Phonology

The theory of Lexical Phonology arose out of the SPE theory of phonology in an effort to explain problems with interaction of morphology and phonology. According to the SPE theory, morphological rules apply before phonological rules. In order to allow phonological rules to apply within a concatenated word, different classes of morphemes were given boundary markers (i.e. $i$, $u$, $o$ etc). A phonological rule could then be given a domain of application which would specify where the rule could apply. Lexical Phonology does away with the strict separation of morphology and phonology by allowing phonological rules to apply 'inbetween' morphological rules. The early papers on Lexical Phonology (Kiparsky, 1982, *inter alia*) viewed it as a multi-level system in which a lexical item goes through derivations, reflections and sound changes. Each level consists of a morphological component followed by a phonological component thus enabling morphology and phonology to interact.

Each of the levels in this model is roughly equivalent in function to the boundaries used in SPE and each level is distinct from the other levels. The boundaries used in SPE are no longer needed since the phonological rules don’t have to wait for all the morphological rules to apply. Also, processes from an earlier level and the morpheme boundaries it contained are not accessible to later levels. The convention used to ensure this inaccessibility is that of Bracket Erasure.

BRACKET ERASURE

Internal brackets are erased at the end of each level.

One problem that I’ve encountered in Lexical Phonology is the use of square brackets, [], to contain lexical material. Lexical representations are underlying or theoretical forms in contrast to phonetic representations which are surface forms. Yet phonetic forms are written with square brackets also. To avoid any confusion, all phonetic forms will specifically mentioned as such; any other use of square brackets will be for lexical material.

In the tradition of generative phonology, Shaw (1980) lists four types of
boundaries for Dak'ota:

| Morpheme boundary | + | weak
| Lexical derivational boundary | % | |
| Enclitic boundary | - | |
| Word boundary | # | strong

Each of the first three boundaries is roughly equivalent in function to one of the levels in Shaw's (1986) Lexical Phonology model (see Table III).

Although the early versions of the theory viewed each level as being distinct and disallowed access to morphological information from an earlier level, the more recent versions have softened this stance. In the introduction to Kiparsky (1985), he goes so far as to refer to the levels as 'quasi-autonomous'. Mohanan (1986) refers to 'the loop' which permits the output from Level III to feed back into Level II. In English, this allows a compound (compounding is a Level III process) to acquire a Level II ending:

[half-hearted] → [[half-hearted][nose]].

Mohanan considers 'the loop' to be universal. There are other aspects of Mohanan's version which make it stronger than Kiparsky's early version. Whereas Kiparsky can classify phonological rules as being lexical and post-lexical, Mohanan claims that it is the phonological rule's application which can be classified this way. Instead of two different sets of phonological rules, Mohanan has one set. Each rule is given a domain in which it applies. Rules may apply in the lexical module, the postlexical module, or in both. There are no 'lexical rules' but rather rules that apply within the lexicon. Rules are stated only once in the grammar but included are specifications regarding their relative ordering and domain of application. However, cyclicity is a property of the stratum not the rule. A rule may apply cyclically in a cyclic stratum and noncyclically in a noncyclic stratum. This contrasts with Kiparsky's claim of cyclic phonological rules.

Dak'ota Lexical Phonology

The first work published on Dak'ota Lexical Phonology was by Shaw (1985) and I would direct the reader to it and the other articles in Phonology Yearbook 2 which deal solely with Lexical Phonology (albeit slightly out of date now). Table III is taken from Shaw's paper and is her model for Dak'ota Lexical Phonology. The Underlying Representation goes through three levels of morphology and phonology before exiting the Lexicon and entering the Post-lexical Phonology. It is in the Post-lexical Phonology that the derived word becomes phonetically realized. In Dak'ota, the voicing of stops occurs in the Post-lexical Phonology. Processes of assimilation, dissimilation, lenition and
fortition generally occur post-lexically.

Lexical Phonology deals with distinctive features or phonemes. Post-lexical Phonology deals with allophones. In English, the difference between aspirated and unaspirated voiceless stops is taken care of post-lexically since these are not distinctive features in English. Likewise, the devoicing of /w/ after a voiceless stop occurs postlexically as in the word /play/.

**TABLE III: (from Shaw (1985:175) Model for Dakota Lexical Phonology**

**DAKOTA MORPHOLOGICAL PROCESSES**

The basic underlying element in Dakota Morphology is the root. The root
can go through several different word-formation (morphological) processes. Attached to the root can be prefixes, which includes instrumental and locative markers, nominalizers, and personal pronoun agreement affixes; and suffixes or enclitics, which can express temporal aspects, plurality, negation, gender of the speaker, or the type of speech act. Usually, the locative prefixes are ordered before the instrumental prefixes. Pronominal affixes are usually next to the verb root but the position can vary depending on how closely the other prefixes are associated with the verbal meaning. Enclitics have a fairly rigid ordering which is described in Rood & Taylor (1976).

Nearly all prefixes take the (+) boundary which means they are added at Level 1 (the two noted examples are the nominalizer wa- and the third person plural animate pronoun wiŋpre which are added at Level II). Pronominal affixes come before the verbal root although their placement with respect to instrumental and locative affixes may vary. The first person singular and second person affixes are different for active and stative verbs. There is no third person marker except for the collective plural form. Plural forms are generally marked by the enclitic =pi although third person animate plural subjects are marked by the reduplication of the verb root.

(1) **STATIC**

<table>
<thead>
<tr>
<th>Form</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>mauwaite</td>
<td>I am good</td>
</tr>
<tr>
<td>niwawaite</td>
<td>you are good</td>
</tr>
<tr>
<td>waite</td>
<td>he/she is good</td>
</tr>
<tr>
<td>yawaite</td>
<td>you and I are good</td>
</tr>
<tr>
<td>yawaitepi</td>
<td>we are good</td>
</tr>
<tr>
<td>niwaitep</td>
<td>you(pl)are good</td>
</tr>
<tr>
<td>waitep</td>
<td>they(anim,distr) are good</td>
</tr>
<tr>
<td>wiŋyawaite</td>
<td>they(anim, coll) are good</td>
</tr>
<tr>
<td>waitepi</td>
<td>they(anim, coll) are good</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Form</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>/olułata/</td>
<td>to be sweltering (to feel hot and sweaty)</td>
</tr>
<tr>
<td>ongulułata</td>
<td>I'm sweltering</td>
</tr>
<tr>
<td>ongulułata</td>
<td>you are sweltering</td>
</tr>
<tr>
<td>olulułata</td>
<td>he/she/it is sweltering</td>
</tr>
<tr>
<td>ukulułata</td>
<td>you and I are sweltering</td>
</tr>
<tr>
<td>ongulułutapi</td>
<td>we are sweltering</td>
</tr>
<tr>
<td>ongulułutapi</td>
<td>you(pl) are sweltering</td>
</tr>
<tr>
<td>olulułutapi</td>
<td>they(anim,distr) are sweltering</td>
</tr>
<tr>
<td>ongiweluulułata</td>
<td>they(anim, coll) are sweltering</td>
</tr>
</tbody>
</table>
(2) **ACTIVE**

/ikicu/ to take

**iwacu** I took (it)

**iyacu** you took (it)

**içi** he/she took (it)

**akicu** you and I took (it)

**akcupi** we took (it)

**iyacupi** you(pl) took (it)

**ičiçi** they took (it)

/iniyapi/ to have as a mother

**inawaye**  I have her as a mother

**inyaye**  you have her as a mother

**inyaye** he/she has her as a mother

**inawaye** you and I have her as a mother

**inyapi** we have her as a mother

**inyapi** you(pl) have her as a mother

**inyapi** they have her as a mother

The pronominal affixes given above for the active verbs can be viewed as agentive affixes while the pronominal affixes given in the stative paradigm are patient affixes. In the two active verb conjugations given above the patient has been the third person singular which is unmarked in Dakota. When the patient is not the third person singular the appropriate patient affix is used and precedes the agent prefix except in the case of the second person patient(singular and plural). The prefix **ći** is used for the forms which are equivalent to the English I (verb) **you**, and the first person plural agent precedes the second person patient form (singular and plural).

Additional Morphological rules include reduplication, and two types of compounding: lexical and syntactic. Reduplication of verbal roots serves several functions in Dakota. It can mark the plurality of an inanimate subject, a repetitive action, intensification, and a distributive action. The actual process of reduplication consists of the copying of the final syllable of the root. It is important to note here that, underlyingly, there are two types of consonant final (C#) and vowel final (V#). Although they each will surface as vowel final due to what Shaw (1986) calls the rule of a Epenthesis (she calls it Stem Formation in Shaw (1980)). This rule adds a final vowel to the C# roots but only after reduplication has taken place. The forms of the possible underlying roots are shown here:
(3) \[ V\# \]
\[ (C\#)V\#C\;V \]

/iya/→ miya  he breathes
/kte/→ kte  he kills (it)
/p'á/→ p'á  it barks
/maxá/→ maxá  he hides (it)
/pahá/→ pahá  hill
/yuyá/→ yuyá  he opens (it)

(4) \[ C'\# \]
\[ C'/VC \]
/cáy/→ cáy  it freezes
/káy/→ káy  he makes it
/tóp/→ tóp  it is four
/sáp/→ sáp  it is black
/sáp/→ sáp  it is dirty
/sáka/→ sáka  dog

It should also be noted that the stress falls on the first syllable for \( C'\# \)
roots and on the second syllable for \( V\# \) roots of more than one syllable. This is
accounted for by having a stress rule apply before the \( a\)-epenthesis rule. The
Dakota Stress Rule (Shaw (1985)) places the stress on the second syllable of a
word. If there is only one syllable, it is stressed.

(5) Dakota Stress Rule (DSR):
\[ V \rightarrow V / (C\#V)C_{\#} \]

Thus a monosyllabic word will be stressed and a word of two or more
syllables will have stress on the second syllable. The DSR needs to apply after
prefixation takes place since the prefixes can be stressed if they occupy the second
syllable.

(6)

ksá  he cut it
wáksá  he cut it (\( wá\)-Absolutive)
wáksíká  he cut his own
wáksíká  he cut it for him
wayéká  you cut it for him
wamíyééká  you cut it for me
wawé*yééká  you cut it for them
wawé*yééká  you cut s.t. for them

We should note that Prefixation comes before the DSR which comes before
\( a\)-Epenthesis: Prefixation > DSR > \( a\)-Epenthesis. This fact is accounted for in
Shaw's (1985) Lexical Phonology model. She places Prefixation at Level I (as a morphological rule) and the DSR precedes a-Epenthesis at Level II (as phonological rules). She also places Reduplication at Level I since it appears to happen before the DSR. The relative ordering of Prefixation and Reduplication in Level I doesn't seem to matter since only the final syllable is reduplicated.

(7) Reduplication of V# and C# roots

V#
/pəkə/ → pəkə + pəkə 'are sharp'
/iću/ → iću + iću 'pick up'
/wəcə/ → wəcə + cə 'to dance'
/yəmmi/ → yəmmi + mmi 'three'
/häiska/ → häiska + ska 'are tall'

C#
/xap/ → xap + xapa 'to rustle'
/nup/ → nup + mupa 'two'
/sap/ → sap + sapa 'be black'
/kay/ → kay + kaya 'to make'
/nak/ → nak + maka 'to twitch'

There are several things to take note of from the preceding examples. I have shown the underlying root (in slashed lines //) and the reduplicated form as it would appear after all Lexical processes (i.e. DSR, and a-Epenthesis for C# roots). The form /häiska/ is written with the accent in the underlying form since the stress is always on the first /a/. Kiparsky (1982) considers a lexical entry to be a type of rule. His Elsewhere Condition states that a more specific rule will apply before a general rule and in effect block the general rule. Since /häiska/ is already marked for stress, it will block the DSR.

Below is a derivation of a C# root (the syllable created by the reduplication process is shown in italic):

(8)

Underlying form: /sap/ 'to be black'

Level I
Reduplication [[sap][sap]]

Level II
DSR [sapsáp]
a-Epenthesis [[sapsáp][a]]

Surface form: sapsáp

The derivation of a V# root would appear as follows:
The next type of morphological process we need to look at is compounding. As we see by Shaw's model, there are two types of compounds: Lexical compounds at Level I and Syntactic compounds at Level III. As can be predicted, the differences between the two types of compounds will be seen in the stress patterns and also the presence or absence of the epenthetic -a. Lexical compounds which contain a C# root will lack the epenthetic -a. Also, since Lexical compounds are formed before the DSR, they will have only one stressed syllable while the Syntactic Compounds will have two. The Syntactic Compounds will have the epenthetic -a. An excellent example of the differences between Lexical and Syntactic Compounds are the words c'e'xzi ('brass kettle') and c'e'ya'zi ('yellow kettle'). The Lexical Compound (c'e'xzi) has only one stressed syllable while the Syntactic Compound has two. The second stressed syllable has secondary stress. The example is composed of the morphemes [c'e'x] which means 'kettle' and [zi] which means 'yellow.' The following diagram shows their derivations:

<table>
<thead>
<tr>
<th>Underlying form:</th>
<th>Lexical</th>
<th>Syntactic</th>
</tr>
</thead>
<tbody>
<tr>
<td>/c'e'x/ /zi/</td>
<td>/c'e'x/ /zi/</td>
<td></td>
</tr>
<tr>
<td>Level I</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level II</td>
<td></td>
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<tr>
<td>Lex. Compnd</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DSR</td>
<td></td>
<td></td>
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<tr>
<td>a-Epen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voicing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level III</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Synt. Compnd</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surface form:</td>
<td>c'e'xzi</td>
<td>c'e'ya'zi</td>
</tr>
</tbody>
</table>

**SYLLABLE STRUCTURE**

A recent proposal by Kellogg (1991) attempts to simplify Shaw's (1986)
phonological analysis by employing a prosodic theory of syllable structure. According to Kellogg, by using certain universal principles of syllable structure, one can do away with some of the rules from Shaw's analysis. I will first give a brief overview of the syllable theory, then I will show how Kellogg applies it to Lak'ota and the rules it should replace, and finally I will show how the method falls short of achieving its simplification.

According to Kellogg, within the lexicon, the Lak'ota syllable is open. The concept of Structure Preservation is upheld within the lexicon. Structure Preservation does not apply post-lexically meaning that syllable codas can (and do) exist there. Any Lak'ota syllable in the lexicon will adhere to the syllabic template: C\(_2\)V. A word final consonant will be regarded as extraprosodic (ex). Extraprosodic material can only exist word-finally. If an extraprosodic unit which ends up in word-internal position due to some morphological process (such as reduplication) it must either associate with the onset of the following syllable or be erased by the process of Stray Erasure. There are two things that can happen to the word final extraprosodic material: i) it will either form the onset of a new syllable or ii) if it occurs at the last level of the lexicon it may become a coda post-lexically.


a) Morafy all sonorous segments that are [-cons].

\[ \mu \]

  \[ a) \ V \rightarrow V \]

b) Project a syllable node over each mora.

\[ \sigma \]

  \[ b) \ \mu \rightarrow \mu \]

c) Associate all licensable onsets to syllable nodes.

\[ \sigma \]

  \[ c) \ C \rightarrow C \]
d) Assign extraprosodicity to all word-final consonants.

\[
\text{[ex]}
\]

\[
d) \text{ C}_1 \to \Theta / \_ + \text{C}_i
\]

Below are some of the phonological rules given by Shaw (1980, 1985) which Kellogg claims we can replace by Prosodic Theory:

(12)

a. Degemination:

\[
\text{C}_i \to \Theta / \_ + \text{C}_i
\]

/k'ak/ k'ak-k'ak \(\rightarrow\) [k'ak'ak]  
"to rattle"

/kux/ kux-xux \(\rightarrow\) [kuxi'ya]
"to thunder"

b. Cluster Simplification:

\[
\text{C} \to \Theta / \_ \text{CC}
\]

/xpec/ xpec-xpec \(\rightarrow\) [xpecpeca]
"lifeless"

/lsap/ lsap-ksap \(\rightarrow\) [ksaksapa]
"be wise"

(lex-compd) \[p'et-smis\] fire to fade-\[p'esniza\]
"embers"

c. Dissimilation:

\[
\text{[cont} / + \text{cor} \rightarrow \text{cor} / \_ + \text{cor}
\]

/sic/ sic-sic \(\rightarrow\) [si[k'ka]
"be bad"

d. Epenthesis:

\[
\Theta \to a / \text{C}
\]

/cap/ cap-
"beaver"
Stray Erasure of the outermost potential onset which cannot associate with the following syllable due to well-formedness conditions of the onsets. The set of possible onsets in Dakóta is given in Table IV below. In the example above for ḷk’ak’, the final k cannot associate to the onset of the next syllable for the cluster kl is not permissible so it is deleted.

\[
\text{(13)} \quad \sigma \sigma \sigma \quad \sigma \sigma \sigma \text{Ex} \quad k’ak’ak \rightarrow k’ak’ak
\]

The final extraprosodic k in k’ak’ak becomes the onset for a new syllable with the addition of a -a. This accounts for the rule of a-Epenthesis.

\[
\text{(14)} \quad \sigma \sigma \text{Ex} \quad \sigma \sigma \sigma \quad \k’ak’ak \rightarrow \k’ak’aka \quad (\text{DSR}) \quad k’ak’aka
\]

Only word-final consonants can be extra-prosodically licensed, thus non-word-final consonants are deleted by Stray Erasure. Given the proposed open syllable structure, all consonants must be syllabified as onsets, with the exception of those occurring word-finally (Kellogg (1991:35)).

<table>
<thead>
<tr>
<th></th>
<th>p</th>
<th>t</th>
<th>k</th>
<th>s</th>
<th>ŋ</th>
<th>c</th>
<th>l</th>
<th>n</th>
<th>m</th>
<th>w</th>
</tr>
</thead>
<tbody>
<tr>
<td>p</td>
<td>pt</td>
<td></td>
<td>phonemes</td>
<td></td>
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</tr>
<tr>
<td>k</td>
<td>kp</td>
<td>kt</td>
<td>ks</td>
<td>kš</td>
<td>kc</td>
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<td>kn</td>
<td>km</td>
<td>kw</td>
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</tr>
<tr>
<td>s</td>
<td>sp</td>
<td>st</td>
<td>sk</td>
<td></td>
<td>sc</td>
<td>sl</td>
<td>sn</td>
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<td>sw</td>
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<td>ŋ</td>
<td>sp</td>
<td>st</td>
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<td>sc?</td>
<td>šl</td>
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<td>šm</td>
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<td>x</td>
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<td>xt</td>
<td>xc</td>
<td>xl</td>
<td>xn</td>
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</table>

**TABLE IV** (from Shaw (1989:7)) Possible Syllable Onsets

Using Kellogg’s syllable analysis, the reduplicative template consists of the
final syllable of the root plus any extra prosodic consonant (a C# root has an extraprosodic consonant) copied to the right of the root. For V# roots this means that the final syllable is repeated. For C# roots the final syllable plus the extraprosodic final consonant are copied. The original final consonant can no longer be viewed as extraprosodic (since only 'word' final consonants can be licensed as such) and must either associate to the onset of the duplicate syllable or be deleted by the process of Stray Erasure.

(15)  
Process /ksap/ 'be wise'  
---

a. affixation of the reduplicating template:  
sap  sap  

b. copy melody:  
\[ /\text{a} + \text{oex} /\]  
\[ /\text{a} + \text{oex} /\]  

(c. association:  
\[ /\text{s} + \text{oex} /\]  
\[ /\text{k} + \text{sap} /\]  

( + Onset Rule)  
\[ /\text{s} + \text{.sap} /\]  
\[ /\text{k} + \text{sap} /\]  

d. Stray Erasure:  
\[ /\text{s} + \text{oex} /\]  
\[ /\text{k} + \text{sap} /\]  

e. final form:  
sapsap  
ksapsap

The processes of association and Stray Erasure are viewed as universal conventions. They do not need to be listed as rules for a language but they do have to follow the constraints of a language's syllable structure.

The theory seems to work well for reduplicated forms but not for Lexical Compounds. Kellogg (1991:38) claims that Stray Erasure applies at the end of each level of the lexicon. This would mean that there should be no geminates at any level. This contrasts with Shaw's analysis. Shaw differentiates between Levels I and II by showing that geminates don't occur at Level I but can occur at Level II. She gives the examples of the Lexical Compounds (Shaw 1985:185):

(16)  
\[ /\text{c's}+\text{ap}/[\text{p}'+\text{at}] /\]  
c'sapp'ata 'butcher beavers (beaver + butcher)  
\[ /\text{wa}+\text{lit}/[\text{p}'+\text{et}] /\]  
wa'lit'ete 'gunsalec'  
\[ /\text{t}'+\text{ok}/[\text{k}'+\text{u}] /\]  
t'okk'ù 'to give over an enemy'

Boas and Deloria (1941:13) also list several compounds where there appears to be gemination:

(17)  
\[ /\text{h}+\text{pp}'+\text{sh} /\]  
happ'ishi 'to collect moccasins (moccasin + collect)  
\[ /\text{h}+\text{pp}'+\text{at} /\]  
happ'ata 'to tie moccasins in a bundle (mocc. + tie in bundle)  
\[ /\text{s}'+\text{uk} /\]  
sukk'a'shaka 'to whip a horse (horse + to whip)
iyotalk'lya 'to make sit down'
škjloayka 'to rope a horse' (from Baechel (1970))

Either the above examples are exceptions or Kellogg's analysis doesn't hold up. I hesitate to call these exceptions simply because they are few in number. The conditions needed to form possible geminates limit the number that can be formed. A C# root (usually a noun) must form the first member of a compound and the second member must begin with the same consonant. Add to this the fact that only a limited number of phonemes actually occur root finally; and we narrow the possibilities more. It would be better for a theory to be able to explain these clusters rather than to lose them as exceptions. But geminates are not the only consonant clusters that appear. There are other Lexical Compounds which contain complex consonant clusters which are not acceptable syllable onsets.

škškš 'white horse' (horse + white)
p'elmaš 'smell of fire [p'elmaš] (fire + smell)
capkš 'to kill beavers' (beaver + to kill)

It becomes clear that there is a difference in how the formation of complex is handled in Reduplication and Lexical Compounding. Reduplicated forms seem to adhere to strict well-formedness rules and Structure Preservation which quickly delete or change any segments which could make an unacceptable onset. Lexical Compounding rules seem to be more lax. We could possibly temper Kellogg's analysis by limiting Stray Erasure to Level 1. This would handle the dilemma but then it would be hard to argue that her analysis is any simpler than Shaw's. And what about the condition given by the first Lexical Phonologists (Kiparsky) that the domain of Structure Preservation is the Lexicon? More recent work done in Lexical Phonology has shown that many of the strict conditions put on the theory in its formative years no longer hold up. In the introduction to Studies in Lexical Phonology, Kiparsky and Hargas (1993:16) write that 'with nearly a decade of subsequent work, we now know that many of these characteristics (such as Structure Preservation) cannot be considered diagnostic of the lexical or postlexical status of a rule. (Bold letters are my addition). Also: 'In some languages, structure preservation appears to hold of postlexical rules, whereas in other languages, some rules which are clearly lexical (albeit word-level) may not be structure-preserving (Kiparsky and Hargas (1993:16)).'

The major drawback in limiting Structure Preservation to Level 1 is that the structural rule of epenthesizing a root final -a to C# roots occurs at Level II after Lexical Compounding (Lexical Compounds formed from C# roots do not have the epenthesized -a but Syntactic Compounds (Level III) do). I do not claim to have the answer to this problem but it reveals that more work is needed in the
area of Dakkota syllable structure.

NOTES

1. I believe I need to make some comments about geminates in Dakkota. I will be the first to admit that on the surface (or phonetically) there don’t appear to be geminates (i.e., two identical segments). But underlyingly they can arise! As in the example given /ux/ will reduplicate to /uxux/. I consider the two adjacent x’s to be geminates although they are quickly destroyed by the Stray Enerase of the left-most one since it cannot associate to the following onset giving /ux+ux/. I will call them geminates for now although perhaps we should call them virtual geminates.

2. Boas & Deloria (1941:13) do not write the doubled consonants as I have done. They mark the consonant in question with a | in to show the extra length of the segment. For example, where Boas & Deloria write ḥ suppose, I write ḥppaahi.

REFERENCES


A case study of reduplication in Lakota. *Linguistic Notes from La Jolla.* v16: 29-55


