ABSTRACT
        Comanche's mutation system, at first glance a
relatively simple one, poses the following problems of analysis for
both: (1) the variation in phonological substance manifested by the
mutating segments themselves; and (2) the larger contextual pattern
within which this mutation takes place. Comanche appears to exhibit a
slightly skewed but typical variety of consonant mutation for which
an insightful floating feature analysis might be expected. Such an
account is approached and contrasted with a feature changing
approach, specifically the parameter framework advocated by
Archangeli. Contains 18 references. (LB)

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COMANCHE CONSONANT MUTATION:
Initial Association or Feature Spread?

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Abstract: Comanche initially appears to
exhibit a slightly skewed but typical
variety of consonant mutation for which
one should expect an insightful floating
feature analysis if claims for this
approach are valid. I attempt such an
account and contrast it with a feature
changing approach, specifically the
parameter framework recently advocated by
Archangeli. I argue that the latter is
superior.

Any analysis of mutation must attempt to account
for two aspects of the phenomenon, namely (i) the
variations in phonological substance manifested by the
mutating segments themselves and (ii) the larger
contextual pattern within which this mutation takes
place. Comanche's mutation system, at first glance a
relatively simple one, poses interesting problems of
analysis for both (i) and (ii).

Morpheme initial consonants exhibit the mutation
pattern shown in (1).[1] Refer to table 1 on the next
page for examples.

(1) a. p   t   c   k   k^w
    b. ^{h}p ^{h}t ^{h}c ^{h}k ^{h}k^w
    c. β   r

By hypothesis, selection between series (a), (b) and (c)
depends on some phonological property of the preceding
morpheme. A morpheme final skeletal position can be
filled only by a glide or vowel. Morphemes with a final
/h/ or /?/ predictably induce series (c). All others
may induce any of the three series. Mutation occurs
after both morpheme and word boundaries, but at the
beginning of a phonological phrase bounded by pauses the
only option is the series (a) unaspirated stops. I will
refer to (b) as the preaspirated stop series. The exact
status of these consonants has been questioned, some
studies taking them to be clusters, i.e. [hC] (Canonge
1957; Miller 1973; Armagost 1988a, 1988b), others
suggesting a single segment analysis (Riggs 1949). The

stop

1a. *hiɛaʔa* 'on what'

2a. *ɛuni* 'to see'
3a. *sooɬi* 'much, many'
4a. *ɬɛnanii* 'men'
5a. *nakIɬuku* 'the same ear'
6a. *ɛani* 'to hang suspended sg.'
7a. *nakiaki* 'to come in sight'
8a. *kʷeʔua* 'to shed'

preaspirated stop

1b. *huuʰɛaʔa* 'on a log'

2b. *waciʰɛuni* 'to spy on'
3b. *wahaʰɬi* 'two'
4b. *nanaʰɬɛnanii* 'male relatives'

6b. *wiʰɬani* 'to throw over a line'
7b. *ɬaʰkia* 'to drive out pl.'
8b. *ɬaʰkʷeʔua* 'to take off shoes sg.'

voiced spirant

1c. *ɛapiɓaʔa* 'on a head'
    nakIɓaʔa 'on an ear'
    tiʰkaʔɓaʔa 'on a table'
2c. *naßuni* 'to see REFL'
3c. *tiɛʔiʔɛi* 'child'
4c. *naʔɛɛnaʔɛiʔ* 'male relative'
5c. *moʔoɛuku* 'the same hand'

Table 1: Morpheme initial obstruents other than [s]

3

4

stop

1a. *papi* 'head'
2a. *ʔoti* 'brown'
3a. *paciʔ* 'older sister'
4a. *pika* 'buckskin'
5a. *yikʷi* 'to sit pl.'

preaspirated stop

1b. *ʔihpii* 'to sleep sg.'
2b. *kʷihti* 'to shoot sg.'
3b. *huhkuuʔ* 'bird'
4b. *pihka* 'to make a drumming sound'
5b. *paracihkʷeʔe* 'to shine'

voiced spirant

1c. *paβiʔ* 'older brother'
2c. *kari* 'to sit sg.'

Table 2: Morpheme medial obstruents other than [s]

5

6

ω

question forms a major thread running through this paper. In keeping with normal Numic usage, (c) may be referred to as the voiced spirant series despite the fact that [ɾ] is a tap. The strong asymmetry between (a,b) and (c) is given an appealing historical explanation by McLaughlin in work soon to be published. Finally, table 2 includes some examples to suggest that all the consonants of (1) are in superficial contrast within morphemes, though medial [ʰkʷ] is not at all common.

The consonants in (1) can be seen as the skewed manifestation of a basic five-position stop system found in a number of languages (Hockett 1955:102). Current autosegmental theories allow a number of possibe analyses. Before turning to a feature changing approach, which I will argue is superior, I will attempt to account for (1) through initial association of floating features in an analysis inspired by Lieber's treatment of Chemehuevi (1987:84-7), a related Southern Numic language. The full underlying consonant and vowel system of Comanche would be as follows, where capitals represent the source of (1) underspecified for various features:

(2)   P   T   C   K   Kʷ
          s
      m   n
                  y   w   h,?
                  i   ɨ   u
                  e   a   o

Hypothesizing for mutation series (1b) the single segment rather than cluster analysis, as introduced above, (1a,b) can be accounted for by allowing [spread] to function as a floating feature. I assume left to right, one to one initial association along with a timing mechanism whereby [+spread] is realized as preaspiration in stops. This value is also lexically present in the maximally underspecified /h/. Example (3a) gives the lexical entry for a morpheme having an initial /h/ and a medial preaspirated stop. The notation essentially follows Lieber's, with IPA transcription used informally for all melody features except [spread] and capitals continuing to be used for the source of series (1). Initial association and filling in of predictable values for underspecified [spread], i.e. [0spread], give (3b).

(3a)   C   V   C   V   V   C   *hu'tuu?* 'bird'

       h   u   C   u   ?

[+spr][0spr][+spr][0spr][0spr]

(3b)   C   V   C   V   V   C
       | | | \ / |
       h   u ⁿc   u   ?
      / | \   \   \
[+spr][-spr][+spr][-spr][-spr]

Turning now to an example of influence across a morpheme boundary, (4) gives a lexical entry consisting of a verb root preceded by an instrumental prefix.

(4)   *ta'k̓a* 'to drive out pl.'

       C   V   C   V   V

       T   a   —   K   ɨ   a

[0spr][0spr][+spr]   [0spr][0spr][0spr]

The verb root in citation form has [k], i.e. the default value for [spread]. This default value cannot be assigned in (4) prior to association of [+spread] from across the boundary or the following ungrammatical contour would result.

(5)   *x
                      /\
             [+spread] [-spread]

A contour constraint blocking association of [+spread] after default assignment would give incorrect *[takɨa]. Lieber does not address the mechanics of this problem in any substantial way, but merely leaves the mutation tier blank for such morpheme initial segments, i.e. [   ], with no association line except that from across the boundary. But it is clear that we need something to serve as a morpheme initial place holder on the mutation tier to guarantee correct lining up of second autosegments with second skeletal positions, etc. This problem is a manifestation of the extent to which the supposed autosegment is not an autosegment. In order to push the floating feature analysis through, I will assume [0spread] as above and cyclic initial association. On the second cycle [+spread] in essence

fills in the underspecified [0spread] in the root
initial segment.[2] Only at some later point in the
derivation will default values be assigned to any
remaining unspecified features. In the word initial
[t], [-spread] is by this mechanism. Lexical entry (4)
thus surfaces as (6).

(6)   C   V   C   V   V
        | | | | |
        t   a   k   t   a
       / | \   \   \
   [-spr][-spr][+spr][-spr][-spr]
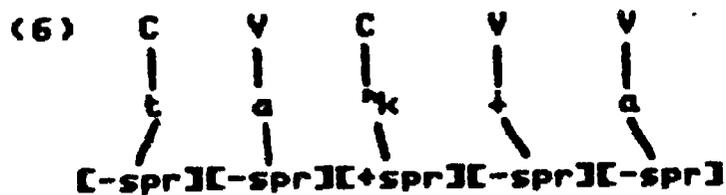
Since it is only the stops (and [h]) that are
[+spread], initial association to other segments must
be prevented. Within Lieber's framework this is
accomplished by lexically _prespecifying_ or _preattaching_
for /n/, etc. the value [-spread] (see Archangeli 1988b:
795 for criticism). In (7), an intermediate point in a
derivation, the above prefix is seen before a segment
with this preattached feature.

(7)   *tanityíki* 'to make a sound of footsteps'

   C   V   C   V   C   C   V   C   V
                              | | | | | | |
   T   a   -   n   t   ?   y   t   K   i
                              | \   \   \   \   \   \
[0spr][0spr][+spr]   [-spr][0spr][0spr] ...
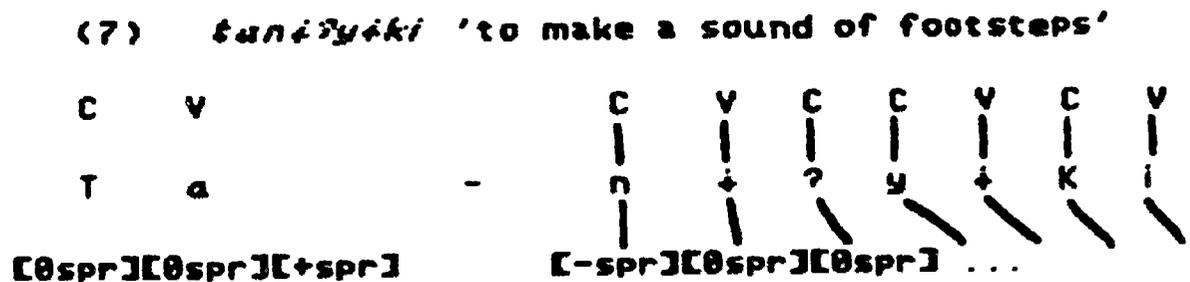
On the prefix cycle docking of [+spread] is prevented by
the constraint on contours. Eventual deletion of such
unassociated features results in surface [n]. This
approach unfortunately requires extensive lexical
attachment of what would otherwise be default values for
[spread]. It also fails to distinguish such
'irregularity' from true lexical exceptions such as the
invariant form [ⁿta] 'obj.', which has a [+spread] stop
even when suffixed to a spirantizing form such as
[puhihwi] 'money': [puhihwiβai] 'to have money', but
[puhihwiⁿta] 'money obj.' Lieber intends lexical
attachment to be costly, and this should presumably
explain the fact that there are only a few forms like
[ⁿta].

Turning now to the spirants of consonant series
(1c), the relevant mutation feature(s) must be
identified. The optimal floating feature analysis would
hypothesize surface [r] to be from [ð] by a late rule,

thus allowing analysis of the spirants as intermediate
/β, ð/. These then differ from the corresponding series
(1a) stops in two features, [voice] and [continuant].
Note that for the segments in (1) and (2) there are
implicational relationships between these features:
only the nonnasal [+voice] segments are continuants and
only the nonstrident continuants are [+voice] (again
taking [ɾ] to be intermediate /ð/). Hypothesizing both
[voice] and [continuant] as mutation features (as
Lieber would presumably do) therefore predicts non-
occuring phonetic realizations unless one constrains
intratier feature specifications prior to initial
association and default assignment. If we take just
one of the features to underlie spirantization, then the
predictable values for the other can be supplied by
default following initial association.

    Lieber proposes no constraints on selection of
mutation tiers, but formalizations of segment internal
feature geometry such as that in figure 1 on the next
page, which I now assume for the remainder of this
paper, can suggest motivated choice. If [+voice] is the
feature that causes spirantization of stops, then the
entire set of consonants in mutation series (1) can be
attributed to the laryngeal node rather than to the
interplay of two or more unrelated features. As in
most languages the third laryngeal feature is severely
constrained in Comanche, which has only a single
[+constricted] segment. There may still be unexplained
phonetic gaps, however, if values for [voice] and
[spread] can be restricted in the lexicon only by
duplicating the statement of certain default values
assigned to morpheme medial segments after initial
association.

    Shown in (8) is part of the derivation of
naɾínoo? 'saddle' (/na[+voice]/ 'reflexive', /T+/
'indef. obj.', /noo[+voice]/ 'to carry', /?/
'nominalizer'). Initial association has applied on the
penultimate cycle in (8a). The final cycle, eventual
assignment of default values to unspecified features
including [continuant], and a late feature changing
rule for [ɾ] give (8b) as the surface form. (In order
to simplify representation in this example I have
omitted the laryngeal node and show [voice] and [spread]
docking in a slightly misleading manner. Note that
while Lieber's framework would require lexical
attachment of [-spread] and [+voice] in nonmutating
initial segments such as /n/, /?/ could be unspecified
for [spread] since unwanted docking of [+spread] could

TONAL NODE

SKELETON

X—X—X

ROOT NODE

continuant
consonantal

LARYNGEAL NODE
voiced
spread glottis
constricted glottis

SUPRALARYNGEAL NODE

sonorant
nasal
strident

LABIAL
NODE

PLACE NODE

round

CORONAL NODE

TONGUE ROOT
NODE

anterior
lateral
distributed
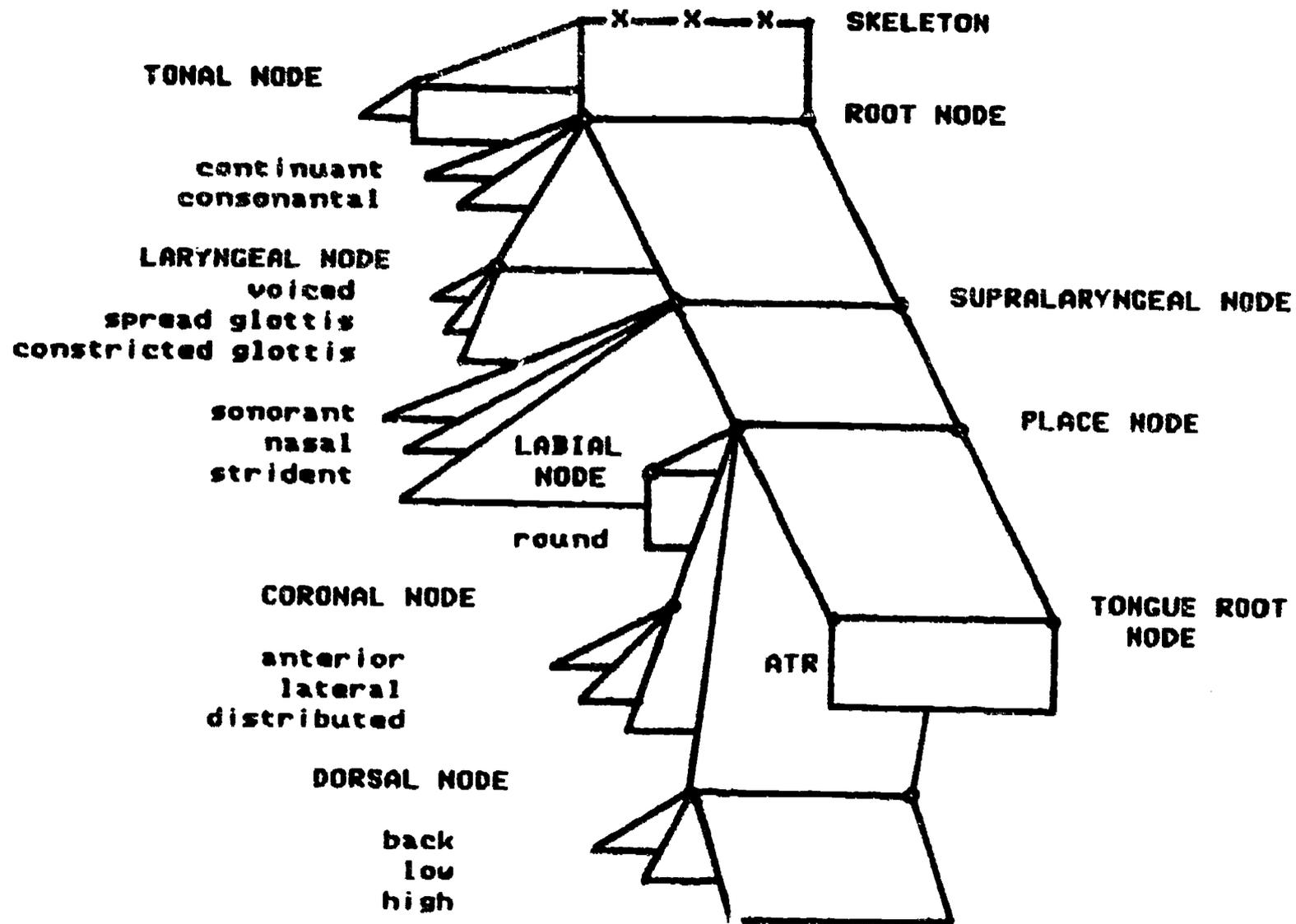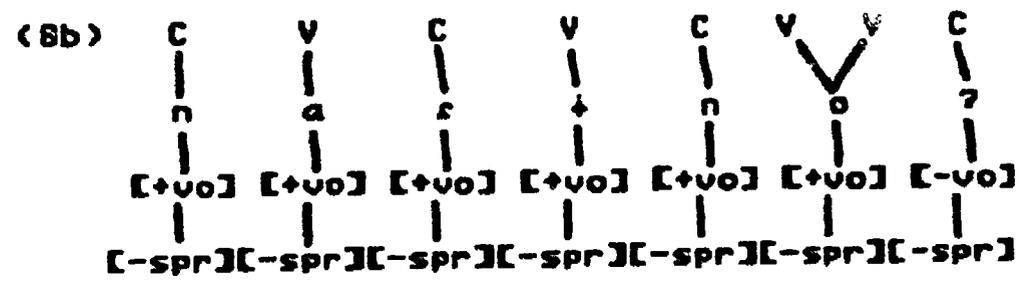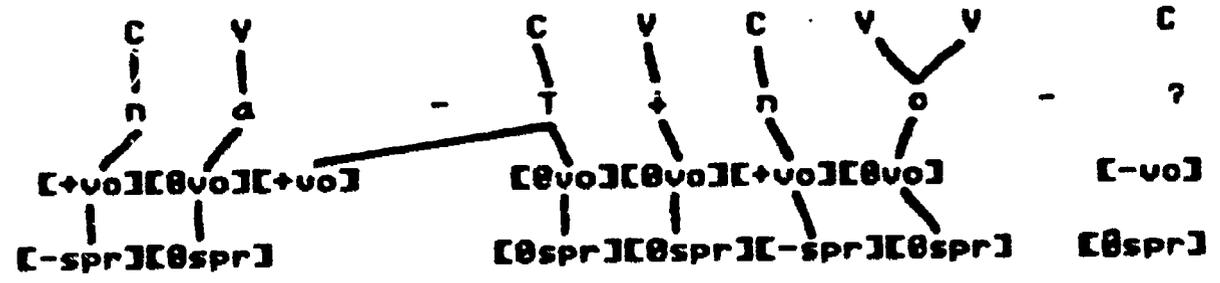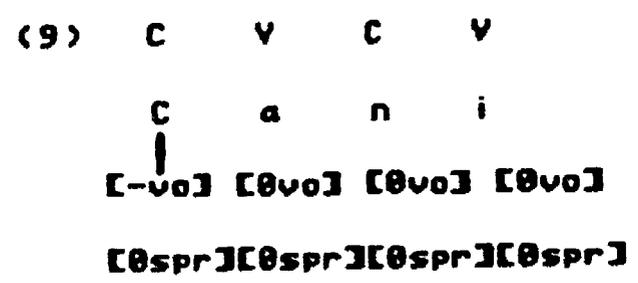
ATR

DORSAL NODE

back
low
high

Figure 1. Feature hierarchy (Clements 1985, Sagey 1986,
Ladefoged and Halle 1988, and others)

be prevented by a universal constraint blocking
[+constricted, +spread]. But similar blocked docking of
[+voice] in /?/ would require giving up maximal
underspecification of this segment as [+constric.ed].)

(8a) *narinou?* 'saddle'

Some account must be given of the fact that the
only mutation series spirants are [β,ɾ]. There are two
possible approaches to this sort of problem in Lieber's
framework. One could block unwanted docking of
[+voice] by preattaching [-voice] in all morpheme
initial /C,K,Kʸ/. The lexical entry for [cani] 'to hang
suspended sg.' would then be as in (9).

(9)   C   V   C   V

      C   a   n   i
      |
    [-vo] [θvo] [θvo] [θvo]

    [θspr][θspr][θspr][θspr]

Alternatively, one could propose unrestricted docking of
[+voice] across a morpheme boundary and a later rule to
delink this feature in the three appropriate segments
prior to the filling in of redundant [+continuant].
The value [-voice] could then be provided by default and
the segments would remain [-continuant]. This was
essentially the approach of Armagost 1988c.

Each of these alternatives requires a disjunction
of features in order to distinguish the relevant
segments and each involves other forms of complexity as

well. Though capable of mechanically cranking out the
data, it is clear that neither could be claimed to
provide any insight. Without attempting to justify a
choice between the two, I will now turn to a final
problem in the floating feature account of the spirant
series. While [β] occurs in all spirantization
contexts, [t] rather than [c] occurs if the preceding
syllable has a front vowel. This is illustrated in (11)
for the clitic postpositions /Pa?a/ 'on' and /Tuku/
'same'.

(11)		'on X'	'same X'
'buffalo'		ta?siwδo?βa?a	ta?siwδo?cuku
'table'		ti'ka?βa?a	ti'ka?cuku
'head'		papiβa?a	papituku
'ear'		nakiβa?a	nakituku
'clubbed ones'		wi'tokʷe?βa?a	wi'tokʷe?tuku

These data appear to require a delinking rule
along the lines of (12), whose application would be
followed by assignment of the default value [-voice] to
intermediate /T/, giving surface [t].

(12)   V   (C)   C
            | |
         [-back]   T
                                   ≠
                               [+voice]
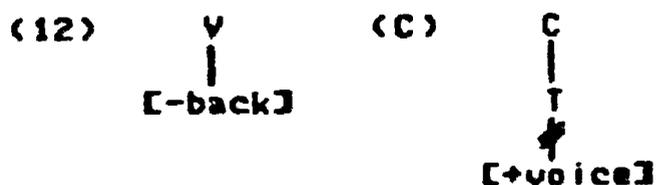
This completes the floating feature analysis on
the assumption, stated earlier, that consonant series
(1b) consists of single preaspirated phones rather than
clusters of segmental [h] plus stop. Riggs (1949)
defended this interpretation of (1b) though without
reference to what may be the strongest evidence in its
favor, the predictability at a fairly superficial level
of what are commonly known as organic voiceless vowels.
As (13) shows, unstressed vowels are devoiced by a
following voiceless continuant which, if /h/, then
deletes under various conditions (Armagost 1988b).
Preaspirated stops have no effect on preceding vowels.

(13) pukukfni 'barn' (cp. kahni 'house')
      wana?fhi 'cloth blanket'
      kutfhora 'to dig a firepit'
      ?omomfsi 'still by foot'
      kakfsa 'wing redup.'

pímɨsuʔa 'themselves also'
BUT: wacíʔpuni 'to spy on'
puhihwíʔa 'money obj.'
kumaʔpɨʔ 'husband'
yɨɾɨʔki 'to frighten'

Canonge (1957), however, in what amounts to an
unconnected addendum to his defense of the supposed
phonemic status of these vowels, argues that the
consonants are in fact clusters and not unit phonemes.
His most persuasive evidence is the existence of a
definite, perceptible syllable division between the
aspiration and the stop in both rapid and slow speech
(notwithstanding the majority of relevant line breaks
in Canonge 1958). It is certainly possible for the
above floating feature analysis to account for Canonge's
observation by means of a rule inserting a coda before
preaspirated stops, with delinking of the aspiration and
relinking to the new consonant. In order to maintain
the predictability of organic voiceless vowels, coda
insertion would be ordered after devoicing. Other
things being equal, however, the advantage would clearly
go to the analysis in which coda insertion and shifting
of aspiration was not necessary.

If Comanche does not have unit rreaspirated stops
then some mechanism other than initial association of a
floating feature must account for the difference in
consonant series (1a,b), thus weakening the hypothesized
parallel between preaspiration and spirantization. As
we saw, however, there are independent reasons for
doubting the floating feature analysis of spirantization
itself. In the feature changing alternative we must
still address two facts: [ɾ] is not a spirant and its
distribution differs from that of [β], as in (11).
These facts would be connected as direct consequences of
an early rule shifting /T/ to [ɾ] when preceded by a
back vowel (if there were no additional rule affecting
/T/). Then spirantization would affect only certain
occurrences of /F/ and would have nothing to do with
[ɾ].

In what follows I assume radical underspecifica-
tion and a highly restricted, parameterized approach to
phonology, in particular that of Archangeli (1988a).
Comanche's underlying consonant and vowel pattern is
again that shown in (2). For the present we can assume
that glottals are the only allowed codas, as is true
phonetically. /ʔ/ is minimally specified [+constricted]
and /h/, [+spread]. Looking first at consonant series

(1a,c), the tap formation rule (14) gives [r] in a
process unrelated to spirantization. In the framework
adopted here a rule can affect only a single feature or
node and the affected segment must be adjacent to any
named environment, where adjacency is determined by the
hierarchical organization of features given in figure 1
and the parameter 'level', which allows two options:
scanning at prosody (maximal level) or at the node
immediately dominating the feature or node undergoing
the rule (minimal level). 'Argument' names the feature
or node undergoing the rule, ,peration' names the
process involved, 'trigger' names adjacent conditioning
environment, and 'target' names intrasegmental
conditioning environment.

(14)   <u>Tap formation</u>
   Level: minimal
        Operation: spread left
        Argument: [son]
        Trigger: L = R = [+syll]; L = [+back]
        Target: [-cont,+cor]

Tap formation is illustrated in (15), which shows
a possible glottal segment intervening between the back
vowel and the affected /T/. (Refer again to (11) and
table 1.)

(15)

+back   +cor
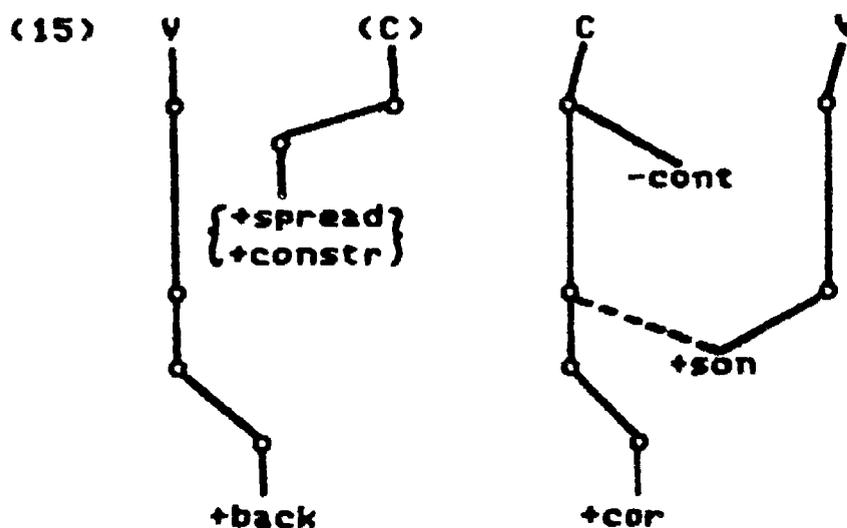
Note that since the intervening glottal is specified
only for a laryngeal feature, all others being
predictable, the segment is invisible when scanning
takes place across supralaryngeal nodes and thus need
not be mentioned in the rule, a desirable effect of this
approach. As we saw above, [+voice] is predictable in
[r]. I assume also predictability of whatever other
feature(s) may distinguish taps from stops, the

distinction perhaps being that of maintainable versus
momentary stricture (Catford 1988:78), though this is a
question on which there has been little consensus.
Finally, since (14) is sensitive to the environment on
the right of the affected segment, it automatically
distinguishes /T/ from /C/, to which we do not want it
to apply, assuming that the latter has the structure
shown in (16) (following Sagey 1986 and others). Thus
this aspect of tap formation is also free of cost.

(16)
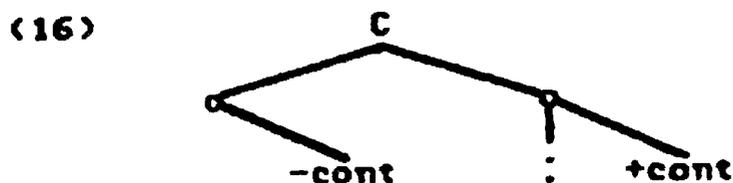
Spirantization then is restricted to the labial
stop, which must be converted to its voiced continuant
counterpart. Unfortunately, choice of neither [voice]
nor [continuant] as argument would allow a transparent
intervening glottal segment, as desired. A partial
remedy to this difficulty would be to view spirantiza-
tion as the rightward spread of [+continuant] to /P/
from a preceding vowel or /h/, once these segments are
provided the redundant value of this feature. No
assimilation to /s/ could occur since such a consonant
can only be an onset. But in this account of
spirantization, the desired assimilation across an
intervening /?/ would be blocked.

From the point of view of Comanche a more
satisfying solution is to hypothesize that either
[voice] or [continuant] is sufficiently low in the
hierarchy to allow an intervening glottal at no cost.
It is important to remember that while articulator
based geometries such as figure 1 must have some
pretheoretically satisfying fit with physiological fact,
they are not linguistic givens. The feature hierarchy,
like all other aspects of linguistic theory, can only be
determined through careful hypothesis testing over a
wide range of languages. These remarks logically apply
equally to both [voice] and [continuant], but a priori
one would certainly expect that [voice] should be a
laryngeal feature. By contrast, continuants are not
directly tied to the anatomy of a particular structure
but result from some configuration of the entire oral
tract. One would therefore expect the location of
[continuant] in the hierarchy to be less easily
determined, perhaps even variable across languages. The
data suggest that in Comanche [continuant] is at least

as low as the supralaryngeal node. Spirantization of
/P/ then can be stated as in (17), which is illustrated
in (18).

(17) Spirantization
      Level: minimal
      Oper: spread left
      Arg: [cont]
      Trig: L = R = [+syll]
      Targ: [+lab]

(18)
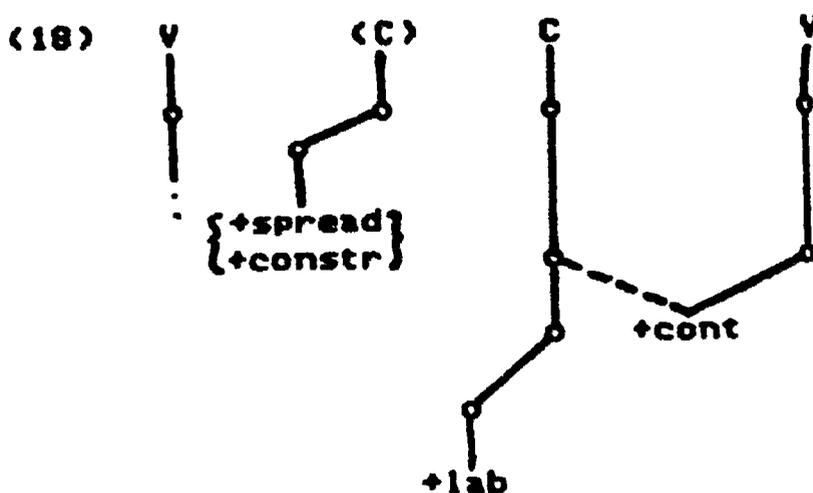
Given the hypothesized location of [continuant], an
intervening /h/ or /?/ is now transparent, as desired.
The output of rule (17), intermediate /ф/, falls into
the class of sonorants and continuants and is
predictably voiced, surfacing as [β]. (Both /s/ and the
glottals are removed from this class by prior assignment
of [-voice], predictable in these segments.)

     Tap formation and true spirantization together
account for all surface [ɾ] and [β] at relatively little
cost. They also automatically account for [t] rather
than [ɾ] following syllables with front vowels. The two
rules overgenerate, however, since they deny the
existence in phrase medial position of [p] and of [t]
after back vowels. While an intervening glottal is
transparent to both rules, their application would be
blocked by an intervening coda having some specified
feature sufficiently low in the hierarchy to be within
the level of scanning, i.e. no higher than the
supralaryngeal node. The fact that the only phonetic
codas are [h] and [?] can be directly accounted for by
lexically restricting codas to /h/ and /?/, as assumed
to this point. But the facts can be accounted for
indirectly by positing less constrained underlying codas
along with a rule to eventually delete nonglottal codas.

The 'opaque consonant' cannot be identified as any of the underlying segments given in (2), suggesting that it is only very minimally specified for features at or below the supralaryngeal node, perhaps merely [-sonorant]. Lack of evidence for general default values for obstruent point of articulation features suggests that the blocking segment cannot occur as an onset but only as a coda. A citation form such as *papi* 'head' then has the structure /Pa[-son]Pi/ at the point where spirantization attempts to apply. Similarly, tap formation is blocked in /?a[-son]Ta/ 'other', which surfaces as *?ata* .

The hypothesized [-sonorant] segment does not result in blocked organic devoicing, however. This is shown in (19) for /k+[-son]/, the causative-benefactive suffix. (The preaspirated [k] in both forms is interpreted as an [hk] cluster, as discussed above. A less definite future is marked by *-hutu?í*, a more definite future by *-tu?í* alone.)

> (19) *nomohkakítu?í* 'will hitch up (wagon) for'
>   (suffixes /k+[-son]-tu?ih/)
>   *tíhkakíhutu?í* 'will cause to eat'
>   (suffixes /k+[-son]-hu[-son]-tu?ih/)

Organic devoicing, which is an assimilation to the voicelessness of a following /h/ or /s/, does not tolerate any intervening segments and therefore follows deletion of the minimally specified obstruent in (19). However, note that the preconsonantal [h] in these and similar forms does not induce devoicing but does block tap formation and spirantization, as in (20).

> (20) *nacahpuni* 'to be tested'
>   *nanahtena* 'male relative'

This [h] is phonetically identical to the surface manifestation of the /h/ that induces organic devoicing, but is phonologically distinct from it. As can be seen, it shares three properties with the opaque obstruent appealed to above: it is a coda, it blocks tap formation and spirantization, and it does not induce organic devoicing. Lexically it appears to differ from the obstruent only minimally, being [+spread] while the latter is presumably [0spread].

The opaque obstruent hypothesized above thus appears to exist in two forms differing only in specification for [spread], a feature that until now was

distinctive only for /h/. While in general restricted
to medial and final codas, a handfull of irregular
suffixes have the [+spread] version in morpheme initial
position, e.g. *yakehṕíni* 'to cry much', with suffix
-hṕíni 'intensive'. If [0spread], the opaque segment
is deleted by a rule ordered after tap formation and
spirantization, as we saw above. If [+spread], its fate
is more complex. Preceding a noncontinuant obstruent
it surfaces as [h], but in all other contexts (phrase
final or preceding a sonorant or /s/) it is deleted.

Its manifestation as [h], as opposed to some other
phonetic reality, can be seen as virtually cost free
once the grammar contains the following dissimilation
rule.

(21)   Obstruent dissimilation
          Level: minimal
          Oper: delink
          Arg: supralaryngeal node
          Trig: [-son, -cont]
          Targ: [+spread]

This rule creates a segment identical to a lexically
underspecified /h/. Assuming conventional assignment
of predictable values for the other laryngeal features,
and conventional assimilation to the supralaryngeal
node of the preceding vowel, this segment surfaces as
[h]. No process has disturbed its status as a coda,
however, as shown in (22).

(22)
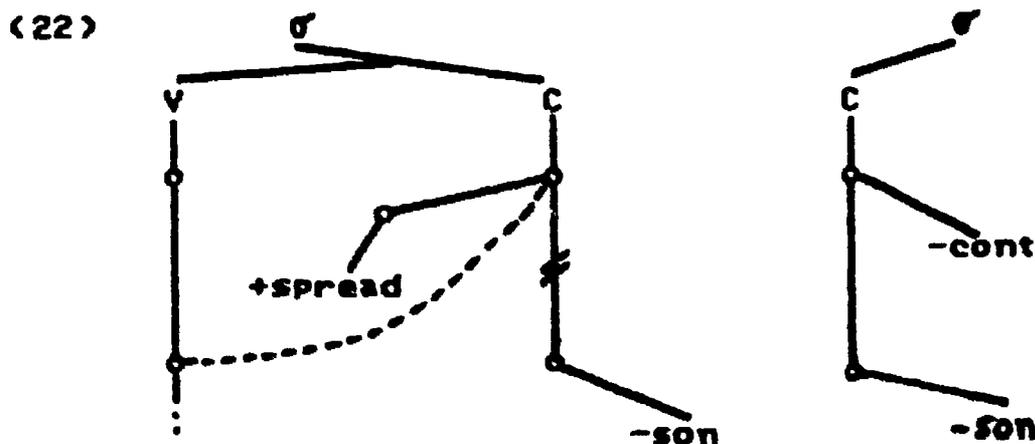
Summarizing the spreading analysis of mutation
series (1), /T/ following a back vowel undergoes tap
formation rule (14) and surfaces as [r], and
spirantization rule (17) affects only /P/. The possible
presence of an intervening transparent /h/ or /?/ need
not be mentioned in either rule, but an intervening

opaque obstruent coda results in blocked application.
This segment, when [+spread] and preceding /P,T,C,K,K^w/,
surfaces as an [h] with the desired properties of a
phonetic coda, but not until after organic devoicing is
triggered by underlying /h/ and /s/. Vowels followed by
preaspirated stops are therefore unaffected by organic
devoicing. Deletion of remaining obstruent codas,
whether [+spread] or [-spread], follows. This gives a
distribution in which [h] before a sonorant is from /h/
but [h] before a stop is from [+spread,-sonorant].

While initially appealing, the attempt to account
for (1) by hypothesizing a floating feature complex is
most likely misguided. Such an analysis accounts for
the distribution of [ß] and [c] only in a clumsy way.
The account of preaspiration would remain attractive if
one could maintain the fiction that preaspirated stops
are single phones and not consonant clusters, for this
would result in a very straightforward analysis of
organic voiceless vowels. On the other hand, the
spreading analysis of spirantization is quite elegant,
especially in the parameterized framework adopted here.
The spreading analysis of preaspiration makes for a
slightly more complicated account of the distribution
of vowel quality but this seems well worth the cost
since it avoids a dubious process of consonant slot
insertion and transfer of aspiration from stops to this
slot. Overall then, while this analysis differs in
detail from others for Comanche, it does reaffirm the
traditional approach involving Central Numic 'final
features' as presented by Miller (1973), McLaughlin
(1987), Charney (1988) and others.

NOTES

1. In this paper the term 'Comanche' refers to
that form of the language recorded in Canonge's
materials and my own limited fieldwork. Slightly
different varieties are found elsewhere, for example in
Charney 1988. Notation is conventional ('c' = 'ts'),
with stress marked only when it unpredictably falls on a
noninitial syllable. Some of the material in this
paper was presented before the 1988 Mid-America
Linguistics Conference, Norman.
    2. I am assuming that the following

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pseudocontour is interpreted by general linguistic
theory to mean [+spread], i.e. that [0spread] is
automatically removed in this situation.

(i)   X

        [+spread] [0spread]

    3. See Archangeli 1988a for similar arguments
that [round] is a dorsal rather than labial feature.

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