"A Two-Root Theory of Length" Revisited

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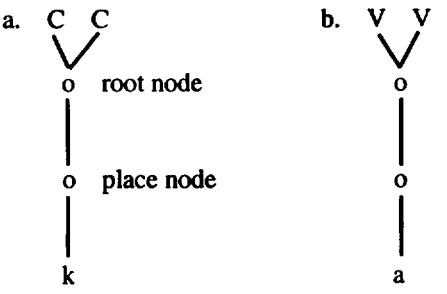
Kang Hyunsook(1994) **"A two-root theory of length" revisited.** *Linguistics vol. 2.* In this paper, I examine the representation of a geminate in Southern Sierra Miwok, a non-concatenative language. Arguing that a geminate in concatenative languages should be represented with two root nodes with a shared place node, Selkirk(1988) suggests that a long-distance geminate in non-concatenative languages should be transformed into a geminate with two root nodes by 'Tier Conflation'. In this paper, I consider what Tier Conflation is and argue that Tier Conflation cannot transform a geminate with one root node into a geminate with two root nodes in Southern Sierra Miwok.

0. Introduction

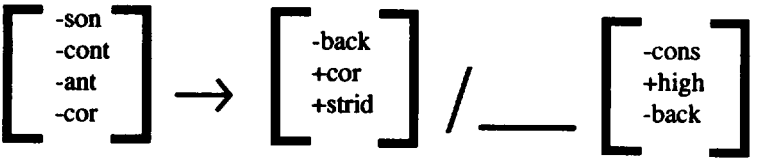
It has been suggested in autosegmental phonology that a geminate should be represented with one root node associated to two skeletal slots as in (1) (cf. Clements 1985, Sagey 1986, Schein and Steriade 1986, etc.).

(1)



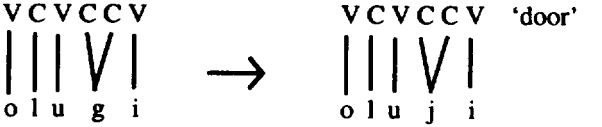
The representation clearly shows that a geminate behaves as a single unit if a phonological rule refers to melody whereas it behaves as two units if a phonological rule refers to both the skeletal slots and melody. For instance, citing Clements (1986), Hayes (1986) shows that palatalization in Luganda optionally applies to [k] and [g] changing them into [c] and [j] if they precede either the vowel [i] or the glide [y]. In order to capture the natural class of [i] and [y], Hayes (1986) formulates the rule as (2).

(2) Luganda Palatalization



Hayes (1986) argues that since palatalization in Luganda formulated as (2) does not mention the CV tier, it should palatalize the geminates as well. In fact, this is the case as in (3).

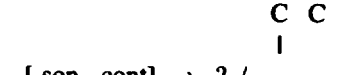
(3)



'door'

That is, if a rule mentions only the melodic elements, it applies to both a single segment and a geminate. On the other hand, Hayes (1986) shows that in Toba Batak the voiceless stops /p, t, k/ become glottal stops when they precede a consonant. Hayes (1986) formulates the rule as in (4). The rule mentions two tiers to indicate both the class of stops and the preconsonantal position.

(4) Toba Batak Glottal Formulation



(applies across word boundaries)

Since the rule mentions a single association line, Hayes (1986) argues that it should not apply to a geminate and it is the case as in (5).

(5) a. true geminates

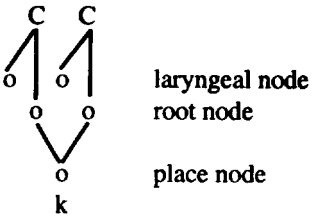
rupput	(*ru?put)	'grass'
gotti	(*go?ti)	'follower'
nakka	(*na?ka)	'jackfruit'

b. fake geminates

/lap piNgol/	→	la? piNgol	'wipe off the ear'
/adat-ta/	→	ada?ta	'our custom'

The view that a geminate should be represented with one root node with association lines to two skeletal slots has been challenged by Selkirk (1988). While discussing laryngeal fission and diphthongization, Selkirk (1988) argues that a geminate in concatenative languages should be represented with two root nodes each of which is separately associated to the syllable/mora structure of the skeleton as in (6)[1].

(6)



In addition, Selkirk suggests that a long-distance geminate in non-concatenative languages where a root node is multiply associated to the prosodic structure should be transformed into a regular two-root node geminate structure by 'Tier Conflation'[2]. Selkirk (1988) notes

> "Second, the multiple linking of root nodes to the skeleton, assumed, for example, for Semitic templatic morphology, is conceivably not an enduring property of the phonological representation that is derived from the mapping of melody to skeleton. Rather it may simply be an ephemeral step in the mapping procedure, one which is followed by a 'tier conflation' producing in all cases representations of the sort that have been argued for here *(a geminate structure with two root nodes—added by HSK)*, wherein each root has a single association to the syllable/mora structure of the skeleton."

In this paper, I will discuss the implications of the hypothesis suggested by Selkirk (1988) that Tier Conflation automatically transforms a geminate

with one root node into a geminate with two root nodes.

1. A geminate structure in non-concatenative languages

Greenberg (1950) notes that in Arabic, and in Semitic in general, there is a morphological restriction in roots against the first two identical consonants: that is, virtually there is no stem of the type CiVCiVCj. There are, however, stems in which the last two consonants are identical: stems of the form *samam* 'poison' are common.

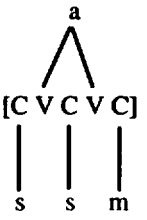
McCarthy (1981) implements this observation by suggesting that consonantal and vocalic melodies in Arabic are represented on two separate tiers and that two rules in (7) are active in Arabic.

(7) a. Arabic roots are subject to the OCP.
b. All autosegmental spreading in Arabic is rightward.

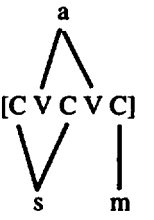
(8) The Obligatory Contour Principle (McCarthy 1986)
At the melodic level, adjacent identical elements are prohibited.

McCarthy (1986) argues that (9a) is ruled out since it violates the OCP in (8) and(9b) is ruled out by the clause in (7b).

(9) a. *sasam



b. *sasam



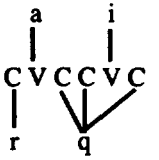
c. samam

The bi-tier/plane representation for Arabic has been well accepted and it has been applied to other non-concatenative languages as well (Archangeli 1984, Smith 1985, etc.).

Younes (1983), however, observes that long-distance geminates in non-concatenative languages sometimes behave like those in concatenative languages for certain phonological rules. For example, citing Schein (1981) and Kenstowicz (1982), Younes (1983) discusses a long distance geminate in Tigrinya produced by the spreading of a root node to empty prosodic

positions as in other Semitic languages. An example is given in (10).

(10)



In Tigrinya, there is a spirantization rule which can apply to a single /k, q/ in a postvocalic position. Interestingly, this rule spirantizes the last /q/ in /raqqiq/ without affecting the intervocalic geminate /q/, resulting in /raqqix/.

Based on the above observation, Younes (1983) argues that the representation (10) should be transformed into the representation in (11) at some point in the derivation by Tier Conflation (named by McCarthy 1986).

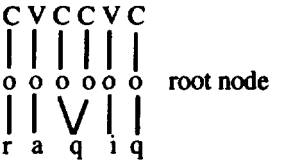
(11)

By Tier Conflation the information that the last segment /q/ in /raqqiq/ was a member of a geminate is lost and the spirantization rule is free to apply to it, resulting in /raqqix/. Note that one root node of /q/ is now divided into two root nodes in (11): one for a geminate /q/ and another for the word final /q/. If not, Tier Conflation would result in the ill-formed representation in (12) in which association lines are crossed as prohibited by convention in autosegmental phonology.

(12)

Selkirk (1988), however, seems to suggest that a geminate in (10) should be realized as (13) by Tier Conflation, not as (11).

(13)



The question is then what Tier Conflation does in autosegmental phonology. McCarthy (1986) notes that Tier Conflation folds the elements on the independent vocalic and consonantal tiers into a single linearized tier according to the information provided by associations with the CV skeleton. Therefore, the creation of a root node for the last segment /q/ is a well motivated process in (11); if not, the association line of a vowel crosses with the association lines of a long distance geminate when folding applies.

I argue, however, that there is no independent motivation why separate root nodes should be provided for the linear geminate /qq/ in /raqqiq/ as in (13). The linear geminate /qq/ in /raqqiq/ is not intervened by a vocalic element, and thus there is no need for separate root nodes for the linear geminate by Tier Conflation which provides the linearization of consonantal and vocalic melody elements. One might say that when a new root node is supplied for the last /q/ in /raqqiq/ by Tier Conflation, the other segments in a long distance geminate /q/ are also affected and acquire separate root nodes. In the following section, I will examine another non-concatenative language, Southern Sierra Miwok and show that this proposal cannot hold.

2. Southern Sierra Miwok

Certain stem types in Southern Sierra Miwok (CVXC, CVXCV and CVCVVC, hereafter Stem 1 types) show the templatic variation upon suffixation. For example, /-Ce-/[3]; 'nominal past' provides a $C_1VC_2VC_3$ template to a preceding Stem 1 types.

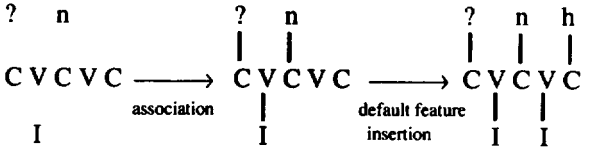
(14)

a.	hal-ki-	'to hunt'
	halik-Ce-te?	'I hunted'
b.	?Inn-[4]	'to come'
	?InIh-Ce-?	'he came'

In (14a), /hal-ki-/; 'to hunt' surfaces as /halik-/ when it undergoes

$C_1VC_2VC_3$ templatic variation on -Ce- suffixation. When /?Inn-/: 'to come' undergoes the same templatic variation, however, it surfaces as /?InIh-/ with a default consonant /h/[5] filling the C_3 slot and a default vowel /I/ epenthesized for the second V.

(15)

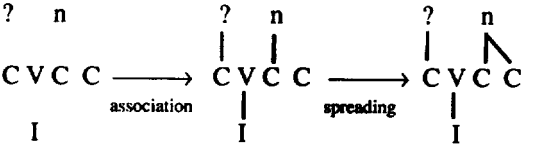


We can determine the underlying representation for /?Inn-/ to be /?n, I/ and when it is supplied with a C1VC2VC3 template, it undergoes the derivation in (15).

As is noted, for a $C_1VC_2VC_3$ template, default melody insertion rather than feature spreading is the default option for melody filling for skeletally nonadjacent segments[6] as is shown in (15): multiple linkings of a root node to skeletally nonadjacent positions rarely exists in Southern Sierra Miwok when Tier Conflation occurs.

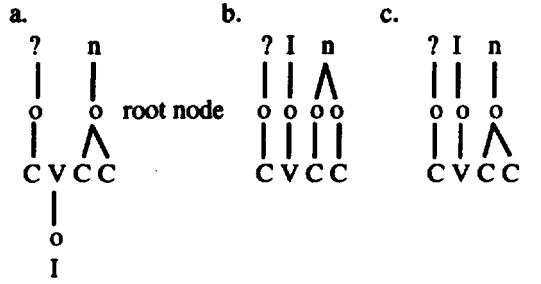
Whereas an empty adjacent position of an underlying template C1VC2C2 will be filled by an automatic spreading of the last melodic element. The derivation is given in (16).

(16)



The question is what motivates Tier Conflation to modify a geminate structure in (17a) into (17b) (suggested by Selkirk 1988), not into (17c)? Tier Conflation folds separate vocalic and consonantal planes into a single linearized plane according to the information provided by associations with the CV skeleton and thus it only predicts the transformation of (17a) into (17c).

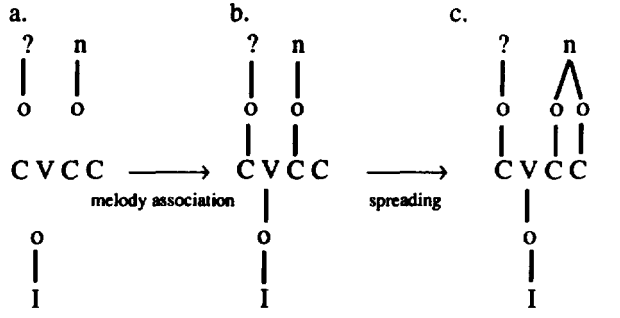
(17)



In addition, the structure of (17b) is more complex than that of (17c); (17c) only added the linear ordering of consonantal and vocalic melody to (17a) whereas (17b) additionally split a one-rooted geminate /n/ into a two-rooted geminate.

One might argue that the representation of a geminate with two root nodes in non-concatenative languages is derived when melody features are associated to skeletal positions. That is, when melody features spread to adjacent positions in Southern Sierra Miwok, a place node, not a root node, spreads to an appropriate skeletal node as in concatenative languages. Consider (18).

(18)



There is, however, evidence which argues that two adjacent identical segments should be represented with a single root node, not two root nodes.

Smith (1985) notes that when the combination of /jaN-/[7]; 'to lie someone

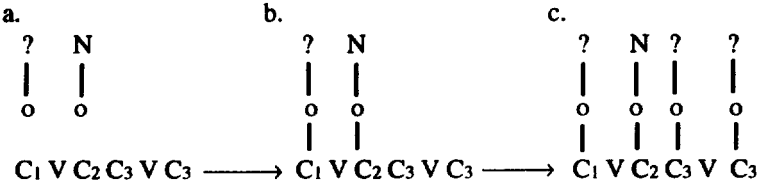
down' and /-Ne-/ 'mediopassive' is concatenated with /-nI-/ which provides a C1VC2C3VC3 template, /jaN?e?-/ appears as a surface form as in (19).

(19)

a. ?ojja-'name'	?oj?a?-nI-'call someone several times'
b. jaN-Ne-'lie down'	jaN?e?-nI- 'lie down restlessly here and there'
c. hukaa-j- 'smell'	hukjaj-nI-'sniff around'

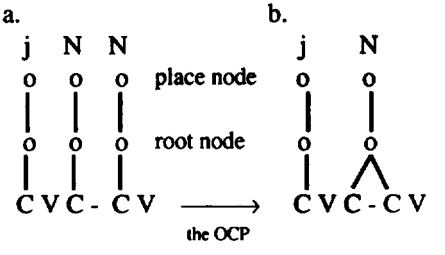
As Smith (1985) notes, if /jaN-Ne-/ is interpreted as a triconsonantal stem, it should surface as /jaNNeN-/ just as a triconsonantal /hukaa-j-/ in (19c) surfaces with its third consonantal melodic element on the last two C positions. However, /jaN-Ne-/ surfaces as /jaN?e?-/ just as another biconsonantal stem /?ojja-/ surfaces as /?oj?a?-/. The last two consonant slots are filled with a default consonant /?/ as though there were no third consonantal melody for /jaN-Ne-/. The derivation is given in (20).

(20)



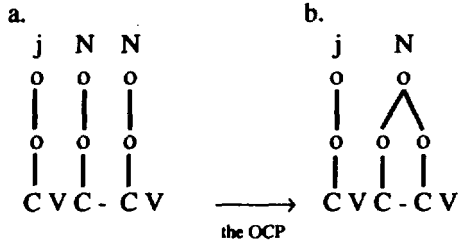
Since both /N/s in (19b) come from different morphemes, Smith observes that (21a) should be transformed into (21b) in order to derive the correct surface form in (19b). We can assume that the OCP which prohibits the same melodic elements from being adjacent transforms (21a) into (21b).

(21)

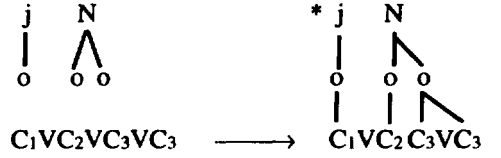


(21a) can be also transformed into (22b) which respects both the OCP and Selkirk's multi-rooted geminate structure. However, an incorrect surface form under a C1VC2C2VC3 template will be derived with the structure (22), as is shown in (23).

(22)



(23)



I argue that when two identical segments occur by juxtaposition, the OCP transform them into a geminate with one root node, not a geminate with two root nodes. Note that neither the uniplanar nor the biplanar representation has nothing to do with the application of the OCP onto the adjacent identical elements in (21) which results in a geminate with one root node. Therefore, I argue that the transformation of two adjacent identical segments should be transformed into a representation in (22b) regardless of the plane structure.

3. Conclusion

In this paper, I have argued that Tier Conflation cannot transform a geminate with one root node into a geminate with two root nodes in non-concatenative languages. Tier Conflation provides the linear ordering of consonantal and vocalic melody on independent planes by collapsing them and only when the association line crossing violation occurs by Tier Conflation, is the restructuring of featural geometry done. Tier Conflation itself has no chief say on the featural structure of a segment. Rather, there is evidence which transforms juxtaposed identical elements into a single-root

geminate in Southern Sierra Miwok.

Notes

[1] Instead of syllable/mora structure, we will use CV notation for convenience in this paper.
[2] In this paper, I will use 'tier' and 'plane' (Archangeli 1984) interchangeably.
[3] C copies the melodic elements of the previous consonant.
[4] /I/ represents a high back unround vowel.
[5] In most cases, the default consonant is /?/. For some specific cases including this template, it is /h/.
[6] In Southern Sierra Miwok, there are a limited number of templatic structures which require the spreading of a melodic element, producing a long distance geminate.
[7] /N/ represents a velar nasal consonant.

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