

INFIXATION, REDUPLICATION, AND METATHESIS IN THE SAANICH ACTUAL ASPECT

TIMOTHY R. MONTLER
University of North Texas

1. INTRODUCTION. Saanich, a dialect of North Straits Salish,¹ has a very productive aspectual morpheme, the ACTUAL (a kind of imperfective), with three variants whose distribution is predictable from the phonetic environment but seem to have nothing phonetically in common: a /ŋ/ infix, C₁ reduplication, and metathesis of C₂ and a following vowel. These are exemplified in 1-3.

¹North Straits forms with Klallam the Straits subgroup of the Central Coast branch of the Salishan family of native North American languages. Klallam is spoken primarily on the north shore of the Olympic Peninsula in Washington. The North Straits dialects Sooke, Songish, and Saanich were spoken aboriginally on the islands of Haro Strait and across the Strait of Juan de Fuca from Klallam on the southern tip of Vancouver Island around what is now the provincial capital, Victoria. The other three North Straits dialects, Semiahmoo, Lummi, and Samish were spoken on the islands of Rosario Strait and on the mainland coast from south of Vancouver, British Columbia to around Bellingham, Washington. Saanich today has the most speakers—around two dozen. There is barely a handful of Lummi and Samish speakers. There are no known living speakers of the other three dialects. Sooke has been described by Efrat (1969) and Songish by Raffo (1972).

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| (1) a. | táq ^w əŋ | 'cough' |
| | b. táʔq ^w əŋ | 'coughing' |
| (2) a. | ʔáp' | 'eat (soup)' |
| | b. ʔáʔəp' | 'eating (soup)' |
| (3) a. | ʔk ^w át | 'extinguish it' |
| | b. ʔáʔk ^w t | 'extinguishing it' |

In Montler 1986 I describe in detail the distribution of these three allomorphs and show how the occurrence of each can be predicted from the shape of the stem. In this paper I show how nearly all instances of these three forms of the ACTUAL² are phonologically related. The ACTUAL stem is formed by a rule that produces a CVCC structure around the stressed vowel using available phonological material. This CVCC pattern is often obscured by later, regular phonological processes. The proposed underlying form can be thought of as an abstract C₁CC frame for the stressed vowel of the stem. This frame functions as a sort of Procrustean bed to which the available phonological material of the stem must conform.

Before continuing, I present here a brief discussion of Saanich segments and syllables; details on Saanich phonology and morphology can be found in Montler 1986. The distinctive sounds of Saanich are: /p t ʔ k^w q q^w p' t' x' ʔ' k^w q' q^w ? θ s ʔ š x^w x x^w h m n l y w ŋ m' n' ʔ' y' w' ŋ' i e ə a/. /k/ and stressed /u/ occur in only a few loan words. I assume that syllables in Saanich are fairly ordinary. A syllable has a one consonant onset and may have a coda of one or more consonants that decrease in sonority from the nucleus, which is a single or, rarely, a

²The term ACTUAL in reference to this aspect was first used by Thompson and Thompson 1969 and 1971 in their description of Klallam. Demers 1974 discusses the phonology of the ACTUAL morpheme in Lummi, and Efrat 1978 describes some forms of the infixed form of the ACTUAL in Sooke and Saanich.

Though the semantics of this aspect is not the subject of this paper, it can be described briefly as a kind of imperfective often translated with English 'be ...ing'. It often has a continuative or progressive, but never habitual or repetitive, meaning. It seems that it can occur in words which are basically inchoative, stative, or resultive as well as in those which are basically active. It is fully productive and, in words which translate as verbs, it is very easy to elicit, although it occurs in words that translate into English as adjectives, nouns, and even pronouns. I have directly elicited hundreds of actual/nonactual pairs in both Klallam and Saanich, and I have encountered many more in Saanich texts.

geminate vowel. Stress is regularly assigned to the penultimate vowel in words with morphemes of equal inherent stress weight regardless of consonant clusters. Insofar as stress must be assigned to prosodic units, the only units significant to stress assignment in Saanich are syllables defined in this way. Hoard (1978) and others have claimed that many other types of syllables including all kinds of syllabic obstruents, even syllabic glottal stops, must be recognized in Salishan languages. For example, the phonetic and phonological distinction in Klallam /cə/ vs. /tsə/ would be attributed to a difference in number of syllables. In the former the alveolar affricate is articulated with a single expiratory pulse while in the latter the /t/ is released and the /s/ is rearticulated with no intervening vowel. Certainly a word like Saanich *tq'əčstše?* 'fifty' must be pronounced with four or five expiratory pulses corresponding to four or five peaks of relative sonority even though there are only two phonetic vowels. But it is useful (as Pike 1947 points out) to distinguish between phonetic expiratory pulses and phonological syllables. The Saanich word for 'fifty' has not four or five syllables but only two phonological CVC syllables. All other segmental material is extrasyllabic in the sense used in Clements and Keyser 1983. Saanich (and other Salishan languages) are unusual in that they have no or only minimal restrictions on what extrasyllabic material can occur on the surface. Although the analysis of the form of the ACTUAL presented here makes reference to closed and open syllables, this overall view of Saanich syllable structure and extrasyllabic consonants is not crucial.

Section 2 is a summary—amended from Montler 1986—of the distributional facts of the three forms of the ACTUAL. Section 3 shows how the three forms are related to a CVCC common phonological denominator. Since the implementation of the ACTUAL template is not entirely straightforward, and its effects are often obscured by later regular phonological processes, I first show its application in the clear cases then account for the superficially divergent forms. The conclusion, section 4, summarizes the procedure for forming Saanich ACTUALS.

2. THE DISTRIBUTION OF THE ACTUAL ALLOMORPHS. The glottal stop infix is the most common of the three forms. Since there are apparent variations in the position of this form itself, the rule for its placement is the most complicated—it is the 'elsewhere' case. The other two forms, reduplication and metathesis, are less common only because their typical environments

are less common. I will begin with a description of the distribution of the two simpler cases and then go on to the infix forms.

2.1. REDUPLICATION. The ACTUAL is formed by reduplication of the first consonant of a CVC root when stress is on the root and the root either 1) stands alone as a stem by itself or 2) is followed by a suffix beginning with a consonant. The copy of C₁ appears after the stressed vowel and is followed by a schwa. That is C₁VC becomes C₁VC₁əC, and C₁VC-CVX becomes C₁VC₁əC-CVX. Examples 4-7 illustrate the former, and example 8, which has the /-sən/ 'foot' suffix, illustrates the latter. In each example the (a) form is in the NONACTUAL and the (b) form is in the ACTUAL.

(4) a.	sqén'	'It's stolen.'	√qen'
b.	qéqən'	'He's stealing.'	
(5) a.	t'ə'é?	'be on top'	√t'ə'e?
b.	t'ə'é't'ə?	'riding (a horse)'	
(6) a.	q ^w əl'	'say'	√q ^w əl'
b.	q ^w əq ^w əl'	'saying (something)'	
(7) a.	s-k ^w úl	'school'	√k ^w ul
b.	s-k ^w úk ^w əl'	'going to school'	
(8) a.	ʔík ^w sən	'trip (lit. snag-foot)'	√ʔik ^w
b.	ʔíʔək ^w sən'	'tripping'	

Note that prefixes and clitics do not form any part of the environment for reduplication. Example 7, a recent loan from English, indicates the productivity of this process. The initial /s/ in the word is treated as the very common s- prefix and the remaining segments as a typical CVC root.

All noninitial sonorant consonants in the ACTUAL forms other than those in prefixes or clitics are glottalized. Glottalization of sonorant consonants accompanies the ACTUAL aspect in all of its forms. In the reduplicated and metathesis forms it is all noninitial resonants that become glottalized, and in the infix form it is all resonants following the stressed vowel.

2.2. METATHESIS. The ACTUAL is formed by metathesis³ of the second root consonant and a following vowel in two situations: 1) when the root is CC, i.e. underlyingly vowelless, and it is followed by a suffix beginning with a vowel, such as /-ət/ 'control transitive' or /-əŋ/ 'control middle', and 2) when the root has three consonants and the shape CCVC. In both cases C₁C₂VC becomes C₁VC₂C.

In Montler 1986 I show that the set of two consonant roots which take the metathesis form of the ACTUAL is the same set of roots that allow stress to fall on a set of suffixes⁴ that are otherwise never stressed. In other words the vowels of this set of suffixes take stress only when there is no other vowel in the word. When a vowelless root occurs without suffixes, a /ə/ is automatically inserted between the two consonants, and this may then take stress and the reduplicated form of the ACTUAL.⁵

Examples 9-17 are clear examples of this form of the ACTUAL. Each is based on a CC vowelless root followed by the 'control transitive' suffix.

³Metathesis in the ACTUAL aspect in a Straits Salish language was first described by Thompson and Thompson 1969. The patterns of the ACTUAL in Klallam (the language the Thompsons describe) are in some ways clearer and in others more obscure than those of Saanich. In Klallam there are many more cases of metathesis involving nonschwa vowels such as *čk^wut/čuk^wt*. But in Klallam there is both an underlying *u* (which in Saanich cognates is *a*) and a derived *u* from underlying *w*. There is both an underlying *i* and a derived *i* from *y*, which may correspond to either Saanich *y* or *l*. Klallam, therefore, has a great many more superficial nonschwas than Saanich, and it is not clear, looking only at Klallam, which of these are underlying and which are derived. The problem of discovering how infixation, reduplication, and metathesis are related is thus much more difficult in Klallam.

It is important to note that there is one case of CV → VC metathesis in suffixes described in Thompson and Thompson 1969 which is probably not an instance of the ACTUAL. The PERSISTENT morpheme is in Saanich an *i* suffix which always replaces a schwa in another suffix if there is one. The replaced schwa is in most cases the last schwa in the word as in *xčət* from underlying *xč-ət* 'figure it out' /*xčit* from underlying *xč-i-ət* 'know it' but *xčəsə* from underlying *xč-ət-sə* 'figure you out' /*xčəsi* from underlying *xč-ət-sə-i* 'know you'. In one case the PERSISTENT suffix precedes the *t* of the transitivizer and in the other follows it. This 'metathesis' is always associated with the PERSISTENT morpheme (see Montler 1986); it is not an example of the ACTUAL.

⁴These suffixes are /-ət/ 'control transitive', /-nax^w/ 'noncontrol transitive', /-əŋ/ 'control middle', /-sat/ 'reflexive', /-tal/ 'control reciprocal', and /-stax^w/ 'causative'.

⁵/yq/ 'big' is such a root. It occurs as a word alone as /čəq/ and reduplicated as /čəy'əq/ (with the /č/ ~ /y/ alternation discussed below) in the ACTUAL. When /yq/ occurs with /-sat/ 'reflexive' or /-stax^w/ 'causative', two of the suffixes which are ordinarily unstressed, the suffix gets the stress. This root occurs stressed only when there is no suffix.

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|------|----|------------------------|------------------------|------------------|
| (9) | a. | x ^w -q'p'ət | 'patch it' | √q'p' |
| | b. | x ^w -q'əp't | 'patching it' | |
| (10) | a. | sq'ət | 'tear it' | √sq' |
| | b. | səq't | 'tearing it' | |
| (11) | a. | sxət | 'push it' | √sx |
| | b. | səxt | 'pushing it' | |
| (12) | a. | šč'ət | 'whip it' | √šč' |
| | b. | šəč't | 'whipping it' | |
| (13) | a. | tk ^w ət | 'break it (a stick)' | √tk ^w |
| | b. | tək ^w t | 'breaking it' | |
| (14) | a. | tq ^w ət | 'tighten it' | √tq ^w |
| | b. | təq ^w t | 'tightening it' | |
| (15) | a. | t'sət | 'break it' | √t's |
| | b. | t'əst | 'breaking it' | |
| (16) | a. | θk ^w ət | 'straighten it out' | √θk ^w |
| | b. | θək ^w t | 'straightening it out' | |
| (17) | a. | θxət | 'shove it' | √θx |
| | b. | θəxt | 'shoving it' | |

Note that in these examples, as in the reduplicated forms, prefixes and clitics take no part in the process and do not form an environment for its application.

The ACTUAL occurs as metathesis also in roots whose underlying form is CCVC. That is CCVC roots appear in the ACTUAL aspect as CVCC. Examples 18 and 19 illustrate this.

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|------|----|---------------------|--------------|
| (18) | a. | t'ə'ək ^w | 'pinch' |
| | b. | t'ə'ək ^w | 'pinching' |
| (19) | a. | x'pəx | 'scatter' |
| | b. | x'əpx | 'scattering' |

2.3. INFIXATION. The ACTUAL is formed with a glottal stop affixed after the stressed vowel in all stems that do not provide the environments for reduplication or metathesis. The infix forms are not proportionately represented here. In fact, this is the form of well over half of recorded instances of the ACTUAL. The most common environment for the infix is where the stressed vowel of the root occurs in an open syllable. Stems containing a stressed vowel followed by CV are very common; they are usually formed of a CVC root and a VC suffix. The effect the ACTUAL infix has on such stems varies depending on the quality of the vowels and of the second consonant. The simplest case is where the stressed vowel is /i/, /é/, or /á/ (i.e. not /ǎ/) and the second consonant is not /l/.⁶ Examples 20-26 illustrate this environment.

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|------|--------------------------|-------------------|--------------------|
| (20) | a. ʔit ⁰ əŋ | 'get dressed' | √ʔit ⁰ |
| | b. ʔit ⁰ əŋʔ | 'getting dressed' | |
| (21) | a. ʔéč ⁰ ət | 'wipe it' | √ʔeč ⁰ |
| | b. ʔéʔč ⁰ ət | 'wiping it' | |
| (22) | a. ʔitən | 'eat' | √ʔitən |
| | b. ʔitənʔ | 'eating' | |
| (23) | a. čáq ^w əŋ | 'sweat' | √čaq ^w |
| | b. čáʔq ^w əŋʔ | 'sweating' | |
| (24) | a. wéqəs | 'yawn' | √weqəs |
| | b. wéʔqəs | 'yawning' | |
| (25) | a. x ^w itəŋ | 'jump' | √x ^w it |
| | b. x ^w itəŋʔ | 'jumping' | |
| (26) | a. ʔámət | 'sleep' | √ʔamət |
| | b. ʔámətʔ | 'sleeping' | |

⁶In Montler 1986 I more or less consistently did not include the glottal stop in representations of the ACTUAL form of words with a resonant following the stressed vowel such as example (26). That is, I wrote (26b) as /ʔámət/. The phonetic realization is actually [ʔámət] or [ʔámət] or [ʔámət], but a sequence of stressed vowel-glottal stop-resonant never contrasts on the surface with a sequence stressed vowel-glottalized resonant.

When the stressed vowel is an underlying /ǎ/, it is replaced by /é/ as in examples 27-29.

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|------|-------------|----------------------|------|
| (27) | a. xǎšəŋ | 'trip' | √xǎš |
| | b. xéʔšəŋʔ | 'tripping' | |
| (28) | a. ʔǎtəm | 'fish for herring' | |
| | b. ʔéʔtəmʔ | 'herring fishing' | |
| (29) | a. tǎšəlt | 'turn it upright' | |
| | b. téʔšəltʔ | 'turning it upright' | |

When the stressed vowel is /i/ or /é/ and is followed by /l/ there is a tendency for a schwa to be inserted between the infix and the /l/. The ACTUAL in such cases has two apparently freely varying forms as in 30 and 31:

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|------|---|----------------------|------|
| (30) | a. híləŋ | 'fall from a height' | √hil |
| | b. híʔləŋ ~ híʔələŋʔ | 'falling' | |
| (31) | a. qéləč ⁰ | 'spin' | |
| | b. qéʔləč ⁰ ~ qéʔələč ⁰ | 'spinning' | |

3. TOWARD A UNIFIED ACCOUNT. The data presented thus far represent the most straightforward cases.⁷ To see the underlying pattern it will be best to look first at metathesis and infixation. The phonological common denominator for these two forms is that both create a C₁CC environment for the stressed vowel. Metathesis rearranges the phonological material of the stem so that CCVC becomes CVCC, and infixation turns CVCX into CVCCX.

The reduplicated forms in examples 4-8 do not obviously follow the same pattern as metathesis and infixation. Reduplication seems to turn a CVC stem into CVCəC rather than CVCC. This second vowel in the reduplicated ACTUAL is always an unstressed schwa. There are several

⁷Aside from the forms obscured by later phonological processes to be discussed below, there are around ten words which are apparent ACTUAL forms but do not fall into any of these regular classes. See Montler 1986 for a list of these. One, /ʔáaʔ/ 'go aboard' /ʔǎʔáʔəʔ/ 'going aboard', is probably suppletive, and any of the others may not actually represent this aspect.

possible explanations for the source of this schwa. It may be (as assumed in Montler 1986) that the ACTUAL is formed in these cases by regressive reduplication of a full CV taking the main stress and that the schwa is derived from the root vowel by the regular process in Saanich that reduces all unstressed vowels to /ə/. Another possibility is that the rule for the reduplicated form of the ACTUAL states explicitly that a copy of C₁ followed by /ə/ be infixed after the stressed vowel of the root. While either of these two customary descriptions seems plausible, neither offers a satisfactory way of showing how the reduplicated form may be related to the infixed and metathesis forms. Such a relationship is clear if we assume that reduplication also creates a C₁CC environment for the stressed vowel and that the unstressed schwa in the reduplicated forms is inserted by a later phonological process; no reduplicated ACTUAL is unaffected by later processes. There is evidence suggesting that at one stage in the derivation of the surface forms of the reduplicated ACTUALS the stem does conform to the CVCC pattern. This evidence comes from the ACTUAL of CVC stems whose second consonant is /y/, /w/, or the glottalized counterpart of either or these.

- (32) a. téy 'canoe race'
b. téti? 'canoe racing'
- (33) a. x'iw' 'run away'
b. x'ix'u? 'running away'
- (34) a. qew 'rest'
b. s-qéqu? 'resting'

The ACTUAL forms of 32-34 show the effect of a regular process in Saanich which vocalizes the glides /y/, /w/, /y'/, and /w'/ between obstruents or between an obstruent and a word boundary with the glottalized glides decomposing into the homorganic vowel and a glottal stop. This process must follow the ACTUAL reduplication and sonorant glottalization and, since there are no other environments where glides become syllabic, the immediate input to glide vocalization for 32b, for example, must be /téty'/, a form having the same CVCC pattern as produced by metathesis and infixation. Thus 32b is derived in the steps: /téy/ → /téty'/ → /téti?/. We must conclude that it is the ACTUAL reduplication rule that produces this CVCC structure. If the ACTUAL rule produced a CVCəC structure then, the

schwa must be deleted to provide the environment for glide vocalization, but there is no independent motivation for such a schwa deletion rule,⁸ and in fact there are words such as *θáqəy'* 'sockeye salmon' which occur with an unstressed schwa in the relevant environment.⁹

If the ACTUAL rule produces CVCC, then the appearance of the schwa in 2 and 4-8 must be accounted for. The necessary rule inserts /ə/ in the environment C₁VC₁C#. This rule allows us to see the general pattern for all three forms of the ACTUAL, and it is consistent with the fact that no sequence C₁VC₁C# exists on the surface in Saanich. This rule of schwa insertion must, of course, follow glide vocalization.

A unified ACTUAL formation process for the three forms, infixation, reduplication, and metathesis, can be informally summarized as: achieve a CVCC structure. If the stressed syllable of the stem is open, close it with a glottal stop. If it is already closed, rearrange whatever is there into CVCC. So if all that is there is CVC, reduplicate the first C, and if there are three consonants, CCVC, metathesize the vowel and the second consonant.

As mentioned earlier, for the sake of perspicuity only the clearest cases have been presented. I have systematically excluded two types of data: (1) those that exhibit phonological processes that apply to obscure the CVCC structure and (2) NONACTUAL stems that are not of the form CCVCX, CVCVCX, or CVC (where X represents zero or more segments). In the following sections I present these data and explain their apparently divergent behavior.

3.1. EPENTHESIS IN SONORANT CLUSTERS. The (a), NONACTUAL, examples in 35-38 have the CCVC shape typical of stems that take the metathesis form of the ACTUAL. These differ from examples 9-19 in that the third consonant here is a sonorant.

- (35) a. t'əq'əŋ 'drip' √t'əq'
b. t'əq'əŋ 'dripping'

⁸In Montler 1986 such a schwa deletion rule was proposed. This rule was intended to account for just such cases as those discussed here. All other examples of schwa deletion followed by glide vocalization can be better accounted for by assuming that the schwa is epenthetic in the forms that do not show vocalization.

⁹When the lexical prefix *čən'* 'time of' occurs on the root *θáqəy'* the schwa does delete: *čən'θáqi?* 'sockeye season'. For some speakers *θáqəy'* freely alternates with *θáqi?*. (The English word 'sockeye' is a loan from the Coast Salish languages.)

- (36) a. č'təŋ 'crawl' √č't
 b. č'ətəŋ 'crawling'
- (37) a. kʷsəŋ 'count' √kʷs
 b. kʷəsəŋ 'counting'
- (38) a. š'təŋ 'walk' √št
 b. š'ətəŋ 'walking'

The metathesis is obscured in the (b) examples by a regular process of epenthesis that splits a pair of consonants when the second is a sonorant. Thus the ACTUAL rule applied to 35a, for example, produces /tʰəq'ŋ/, and then the sonorant cluster is later split by epenthesis. This epenthesis rule must be quite late since it must follow the glide vocalization rule discussed earlier.

The metathesis is obscured in examples 39-44 by the same process of epenthesis in sonorant clusters. In these examples the sonorant is the second consonant, so it is the NONACTUAL forms that have undergone the epenthesis.

- (39) a. t'əm'ət 'hit it' √t'm'
 b. t'əm't 'hitting it'
- (40) a. q'əm'ət 'cut it in two' √q'm'
 b. q'əm't 'cutting it in two'
- (41) a. kʷənət 'look at it' √kʷn
 b. kʷən't 'looking at it'
- (42) a. čənət 'bury it' √čn
 b. čən't 'burying it'
- (43) a. tələt 'splash it' √tɬ
 b. təl't 'splashing it'
- (44) a. kʷəl'ət 'pour it out' √kʷɬ
 b. kʷəl't 'pouring it out'

In 39-44 the ACTUAL forms conform to the CVCC target. Each of the roots is basically vowelless like those in examples 9-17 so that the input to ACTUAL formation for 39, for example, is /t'm'ət/. In the NONACTUAL the two consonants of the root are split by epenthesis and stress is then later assigned to this penultimate vowel.

Examples 45-48 show this same epenthesis in basically CCVC(C) roots.

- (45) a. ləm'é? 'kick'
 b. lém'ə? 'kicking'
- (46) a. təy'əqʷ 'smash'
 b. təy'qʷ 'smashing'
- (47) a. t'q'élč 'moon'
 b. t'éc'əlč 'it's a bright moon'
- (48) a. mələč 'roll over'
 b. məlč 'rolling over'

3.2. GLIDE OBSTRUENTIZATION. An unusual phonological process common to the Straits Salish languages causes some instances of underlying /y/ and /w/ to surface as /č/ and /kʷ/, respectively.¹⁰ Examples 49-51 show the effects of this process in NONACTUAL/ACTUAL pairs.

- (49) a. čəq 'big' √yq
 b. čəy'əq 'getting big'
- (50) a. kʷintəl 'fight' √win
 b. kʷiw'ən'təl 'fighting'

¹⁰See Montler 1986 for discussion and examples of this process. This alternation is apparently not completely automatic. Many cases of /w/ and /y/ do not alternate at all, while in some cases the alternations occur in a pattern of apparently free distribution. And in a number of forms, the obstruent occurs if stress follows and the sonorant occurs when stress precedes. In suffixes a /y/ or /w/ surfaces only when it is glottalized in the ACTUAL, otherwise it is /č/ or /kʷ/. Comparative evidence provides support for the sonorants rather than the obstruents as the underlying forms. Other Salish languages show nonalternating /y/ and /w/ in cognates. An exception is the root-initial labio-velar, which in Halkomelem is /kʷ/ rather than /w/; cases of noninitial alternating /w/ in Saanich are always /w/ in Halkomelem. This is an interesting historical/comparative problem that needs to be worked out.

- (51) a. $\lambda'əčəq'$ 'press down on' $\sqrt{\lambda'yəq'}$
 b. $\lambda'əy'q'$ 'pressing down on'

The underlying root in 49 is /yq/ and in 50 it is /win/ (followed by the 'control reciprocal' suffix). Examples 49 and 50 thus exhibit ACTUAL reduplication followed by glide obstruentization. The derivation of 49b, for example, proceeds in the following steps: stem /yq/ → ACTUAL formation /yəy'q/ → schwa epenthesis /yəy'əq/ → glide obstruentization /čəy'əq/. The relative ordering of these latter two processes is not decidable.

Example 51b is the metathesis form of the ACTUAL from an underlying stem / $\lambda'yəq'$ /. Example 51a shows that glide obstruentization follows the process of sonorant cluster splitting (discussed in section 3.1): / $\lambda'yəq'$ / → / $\lambda'əyəq'$ / → / $\lambda'əčəq'$ /.

3.3. THE ACTUAL OF STEMS OTHER THAN CVC, CCVCX, OR XCVCVX. All stems whose shapes have not yet been discussed take the glottal stop infix form of the ACTUAL. These include XCVVCX and CVCCX stems and those where the stressed vowel occurs at the end.

The stems in examples 52-55 are underlying XVVC, and the stems in 56-58 end in a stressed vowel. Each of these stems is based on roots ending in a stressed vowel. This root shape is very rare; the examples given here are the only ones I have recorded.

- (52) a. $x^wáŋ$ 'weep' $\sqrt{x^w a}$
 b. $x^w á?əŋ$ 'weeping'
- (53) a. $nét$ 'name it' \sqrt{ne}
 b. $né?ət$ 'naming it'
- (54) a. $sét$ 'send him' \sqrt{se}
 b. $sé?ət$ 'sending him'
- (55) a. $ʔəŋés$ 'remove it' $\sqrt{ʔəŋe}$
 b. $ʔəŋé?əs$ 'removing it'
- (56) a. $ʔən?é$ 'come' $\sqrt{ʔn?e}$
 b. $ʔən?é?ə$ 'coming'

- (57) a. $ʔəlxəw'é$ 'pit-lamp' $\sqrt{ʔlxw'e}$
 b. $ʔəlxəw'é?ə$ 'pit-lamping'
- (58) a. $θəŋé$ 'carry on back' $\sqrt{θŋe}$
 b. $θəŋé?ə$ 'carrying on back'

In 52 the root is / $x^w a$ / and has the /-əŋ/ 'control middle' suffix.¹¹ In 53 and 54 the suffix is the 'control transitivizer' /-ət/ and in 54 it is /-əs/, what I have called the 'effort transitivizer' (Montler 1986). The schwa is regularly deleted when immediately following another vowel. A final glottal stop preceded by a stressed vowel is regularly followed by an excrescent schwa as in 56b-58b. None of the ACTUAL forms in 52-58 display the CVCC target, but the placement of the /ʔ/ in these examples is like that of the infix forms in examples 20-26 in that it is positioned after the vowel of a stressed open syllable, thus closing it. I assume that these forms are only superficially exceptions to the CVCC pattern of the ACTUAL. In these stems the application of the CVCC frame produces forms that could only end in a double glottal stop. A general constraint against geminate final stops in Saanich accounts for the surface divergence from the CVCC pattern. Thus the derivation of 58b begins by producing the CVCC frame: / $θŋé$ / → / $θŋé?ʔ$ / → / $θəŋé?ə$ /.

Stems having the shape XCVCCX are not common. The NONACTUAL stem of example 59 is a rare CVCC root. It is the only such root I have recorded in the ACTUAL, and it is the only CVCC root with an obstruent as the second consonant. In example 60 the glottal stop is infix into the suffix /-əʔsə?/ 'water'.

- (59) a. $šápt$ 'whistle'
 b. $šá?pt$ 'whistling'

¹¹In Montler 1986 this form was incorrectly analyzed as containing the root / $x^w aən$ / with the infix splitting the geminate. It is clear to me now that this is a CV root with the vowel sounding sometimes long and sometimes short. A very regular process assimilates a schwa to another vowel across a glottal stop so that (52b) will sound like / $x^w á?əŋ$ / and (53b) will sound like / $né?ət$ /. In a functioning writing system that some of the Saanich people (primarily the late Dave Elliot of Tsartlip (West Saanich) Reserve) have developed on their own without the help of a linguist, the word represented in (52b) is consistently written XO,EN. The comma is the symbol for the glottal stop and E is the consistent symbol for /ə/. The native speakers' judgement thus supports the analysis given here.

- (60) a. čx^wéłsə? 'spit' √čx^w
 b. čx^wé?łsə? 'spitting'

In these two examples the basic stem already conforms to the CVCC target of the ACTUAL. The extreme rarity of the CVCC root shape lends support to this analysis of the ACTUAL—CVCC almost uniquely marks this morpheme.

4. CONCLUSION. Saanich has a large number of regular and productive morphological processes that radically alter the shape of the stem. These include various forms of reduplication, ablaut, infixation, and metathesis. These processes function to indicate an allied set of notions that might generally be called 'aspect': diminutive, collective, repetitive, resultative, and imperfective. These radical morphological processes in Saanich form a system in themselves distinct from prefixation and suffixation. All processes that involve internal stem change have reduplicative allomorphs, and two morphemes indicated by reduplication have only reduplicative allomorphs. No prefix or suffix has a reduplicative allomorph. This is all evidence of a fundamental, cognitive difference between processes like reduplication and processes like affixation. In particular, the ACTUAL in Saanich is not an affix in the ordinary sense. Reduplication, metathesis, and infixation in the ACTUAL are clearly phonologically related in their goal of producing a closed syllable, ideally CVCC, structure around the stressed vowel. Any formal theory of morphology must take this into account. No theory that treats reduplication as a kind of chameleon concatenative affix can account for the unity of reduplication, metathesis, and infixation in the Saanich ACTUAL aspect.

The ACTUAL placement rule can be considered to be a procedure whose primary goal is to produce a CVCC stem. This procedure produces the target stem shape through mechanisms of copying or moving available segmental material. These mechanisms are constrained so that if copying or movement of more than one segment would be required to achieve the target, adjunction of a syllable closing consonant is used. Since the floating feature [+constricted glottis] is always associated with the ACTUAL, this syllable closing consonant is realized as /ʔ/. This feature is thus anchored there and spreads to all sonorant consonants to the right. In reduplicated or metathesized forms glottalization is not anchored and spreads to all noninitial sonorant consonants. In its most common instances (examples 20-26), the ACTUAL is formed by closing an open stressed syllable. Thus the

most typical realization of the ACTUAL closes the stressed syllable and at the same time produces the CVCC structure. This structure, then, is the pattern for the formation of the ACTUAL for those stems whose stressed vowel is already in a closed syllable, i.e. the stems that take reduplication or metathesis.

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