

Roots, bases and stems in Colville-Okanagan
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0. The root has been a pre-eminent unit of description in Salishan linguistics. It has been claimed that roots are the semantic core of a word, that they are 'fundamentally intransitive' and 'agentive' or 'non-agentive'. The question of whether roots divide into major lexical categories has also prompted some discussion (Jelinek and Demers 1982, Davis 1993). If roots are lexical items, as is often claimed, then they ought to contain specifications for argument structure (aka lexical valence), semantic roles, and category. Very little progress has been made on the classification of roots on the basis of such putative contents. In my view this is because roots do not contain the information they are being tested for. Hess 1993 observes for Lushootseed that 'it is the stem not the root that is the basic descriptive unit of [the] verb'. Unlike previous users of the term 'stem', Hess goes on to illustrate how the stems classify more readily than roots. Speaking of his experience with Lushootseed Hess observes,

Once the correct criteria for stem identification were realized, large classes of stems fairly leapt out of the data; whereas, before there seemed to be no stem class larger than one member. (p.114)

The relationship between roots and stems remains unaddressed in the Interior Salish literature, and the terms are used interchangeably. I think there are descriptive advantages to being more precise in this area. This paper concerns itself with defining the terms 'root', 'base' and 'stem' with respect to Colville-Okanagan (CVOK). Data are from the Colville-Okanagan Dictionary (A. Mattina 1987) and my own field notes.

1. Roots and bases. Roots are traditionally defined in Salish by their shape and position in the word.¹ Whether they are CVC or, more rarely CVCC, they are morphologically unanalyzable. Along side this formal definition exists the use of root to mean a lexical item, which is assumed to be predicative. These two conceptions of the root blend in common practice to define roots as 'predicates of the shape CVC(C)'. This conception of the Salishan root makes the criteria for establishing roots different from those applied in traditional synchronic analyses of English. In English the root 'see' is basic to 'seeing' and 'seen'. It is unlikely however that 'see' would be taken as the root in the form 'see-saw'; we would say on semantic grounds that /sfsa/ is a separate root. The notion of the 'lexeme' was developed to formalize the semantic discontinuity between forms like 'see' and 'seesaw'. The 'lexeme' is an arbitrary association of form and meaning obtaining in a vocabulary item whose meaning is context-free (Aronoff 1992, Matthews 1974). The lexeme does not play a role in establishing roots in CVOK. Given the CVOK root /ʌ'aʔ and a form that appears to contain this root, /sʌ'aʔcfnm/ 'deer', few if any Salishanists would consider the latter form a root. This despite the fact that it defines a lexeme distinct from all other forms containing /ʌ'aʔ. There

¹ I use the term 'word' here to mean a fully inflected, free form with semantic content.

are good panchronic reasons for maintaining the shape-based definition of the root in Salishan, but descriptive adequacy requires that we classify forms on the basis of form and meaning at some level. (We need a term for inflecting forms larger than CVC(C) anyway, as they outnumber the CVC(C) forms.) I adopt the term 'base' for a form of any morphological complexity which corresponds to a single lexeme.²

Bases mean in ways that roots do not. For example, root meaning is not context-free. The bases in (1) illustrate that the meaning of /ʌ'aʔ is discernible only within particular attested forms.

(1)
 /ʌ'aʔ

/ʌ'aʔ-/	fetch s.t.
/ʌ'aʔʌ'aʔ-/	look for s.t.
/k-ʌ'aʔʌ'aʔ=inaʔ-/	look over, across s.t.
/ʌ'aʔ=sqáʌaʔ-/	get a horse
/k-ʌ'aʔ=íplaʔ-/	cause problems for s.o.
/n-ʌ'aʔ=s=íw's-/	look for s.t.
/ʌ'aʔʌ'aʔ=ús-mn-/	look for s.t.
/ʌ'aʔʌ'aʔ=mfn-/	look for s.t.
/k't-ʌ'aʔ-/	be jealous of s.t.
/ʌ'aʔʌ'aʔ=ús/	open one's eyes
/n-ʌ'aʔʌ'aʔ=ús-tn/	eyesight
/s-ʌ'aʔ=cfn-m/	deer
/ʌ'aʔʌ'aʔ=mfn/	detector
/k-ʌ'aʔ=ncút-(t)n/	a seeker, searcher

It is not possible from the forms in (1) to determine what the root alone means. This is grounds for rejecting the notion that roots are lexical items. Bases, by contrast, mean something in isolation or in a phrase; they translate (if imperfectly) into English verbs and nouns. Additional root-base sets are provided in (2).

²This is an elaboration of 'base' as it is used in the IS literature, where it refers to predicates larger than CVC(C). My emphasis is on its relationship to a lexeme, rather than on its shape. I will make a slight modification to this definition presently.

(2)

a. /t'k''a

/t'k''-/	put s.t. down
/t'k''=fw's-/	put s.t. in the middle
/t'k''-w's=fkst-/	carry s.t. in one's arms
/k't-t'k''-/	place s.t. on
/k-t'k''=fna?-/	put s.t. on top
/k't-t'k''-/	put s.t. under
/k't-t'k''=ftk''-/	float s.t.
/n-t'k''=fkn-/	put s.t. on one's back
/k-t'k''=fw's-/	put s.o. (on a horse)
/n-t'k''=ki?=sqáxa?/	saddle a horse
/n-t'k''=flt/	be pregnant
/s-t'k''=flp/	mattress
/s-t-t'k''=fla?p/	pillow, cushion
/n-t'k''-mín/	coffin
/s-n-t-t'k''-ncút-(t)n/	cot
/n-t'k''=ki?=sqáxa?-tn/	saddle

b. /wik

/wfk-/	see s.t.
/?p=wfk-/	catch a glimpse of s.t.
/n-wfk=tc'a?-/	look inside s.t.
/n-wk=pána?=qn-/	see s.t. w/corner of eye
/k't-wk-cút/	realize
/k't-wfk=xn/	see tracks
/wfk=la?x'/	see the world
/s-w'-w'fk=i'st/	electricity, lightening

c. /x''uy

/x''uy/	go
/k't-x''uy/	walk under
/k't-t-x''uy/	go along
/x''y-lw's/	travel around
/x''y=ús-/	take s.o. somewhere
/t-x''uy-mn-/	go to s.o.
/x''uy-tn/	departure
/s-x''uy-tn/	tracks
/n-x''uy-tn/	transportation
/s-n-x''uy-tn/	destination

d. /xlk

/xlk-/	whirl, spin
/xlk-m=fkst-/	turn by hand
/t-xlk-mfn-/	circle around
/n-xlk=fna?-/	go around over s.t.
/t-xlk=ús/	go around a bend
/t-xlk=áqs/	go around a curve
/t-xlk=t'níwt/	go around people
/t-xlk=úla?x'/	change country
/t-xlk=áq'/	turn (in winter dancing)
/n-xlák/	go around inside
/s-n-t-xlk-tán/	turning place

e. /nxil

/nxil-/	scare s.o.
/nxíl-mn-/	be scared of s.o.
/nxít/	be scared

f. /piq

/piq/	white
/piq-/	whiten s.t.
/piq=sxn/	silver coins
/s-pá-pq=tc'a?/	weasel (in winter)
/s-pq-mfx/	swan
/pq-m=áya?=qn/	gray-haired person
/k-piq=lps/	palomino horse
/n-paq=s/	cataract, white eye
/pq-l=qín/	bald eagle
/pq-pq=qín'/	whiskey jack

g. /xs

/xs-/	good, fine
/xs-mn/	? (cf. /xs-mn-cút/ 'well behaved', /xs-s-m-flx/ 'ameliorated')
/xs-xs=fkst/	handy, deft

h. /tm'

/s-tim'/	what, something
/s-ti-tm'/	a little something
/s-tm'=lscút/	wealth
/s-t-tm'-tim'/	clothes
/s-n-t-tm'tím'-tn/	clothing store, place to store clothes

- i. $\sqrt{p'n}$
 /p'in-a?/ birch bark basket

The segmentation in the bases serves the historical, comparative and synchronic interests of analysts. However, the hyphens should not suggest that these forms are produced by rule in the usual sense.³ There are many root-plus-affix combinations that do not occur. Lexical suffixes like /-fpla?/ and /-4lq?/ have limited distribution. Other affixes like /-mfn/ and /k't-/ are common, but are idiosyncratic in their choice of word-mates.⁴ The best we can say is that /-mfn/ and many other affixes, including the lexical affixes, appear in some bases and not in others. CVOK speakers (and linguists) can formally parse some complex bases just as English speakers recognize structure in forms like 'possible', 'legible', 'cynic', 'antic', 'sanction' and 'nation'. Yet this parsing does not mean that such words are produced by synchronic rule.

Neither should hyphenation in bases imply that the meaning of morphologically complex bases is semantically composite. The meaning of base-forming affixes is no more context-free than that of roots. Mattina (this volume) exemplifies in detail the distribution and semantic indeterminacy of one base-forming suffix /-mfn/, so I will not recapitulate that data here. However, other affixes also show a great deal of distributional and semantic idiosyncrasy. The meanings of the non-root segments in these noun bases are not isolable: /k't'-mfn/ 'wirecutter', /s-tx-mfn/ 'comb', /s-n-t'q"-mfn/ 'sewing machine', /q'y'-mfn/ 'book'; /t't-m=fp-tn/ 'rudder', /p'uct-tn/ 'paddle', /s-n-t'l=ula?x"-tn/ 'plow', /s-n-tu-mst-tn/ 'store'; /s-/k'a?-cfn-m/ 'deer', /s-/ty=ftc'a?/ 'stag', /t'fw=tc'a?/ 'female deer'. As with the verbal suffix /-mfn/, segmentation of /s-/ , /n-/ , /-mfn/ , /-tn/ , /-m/ is not productive despite an impression that these affixes have context-free meanings.

To summarize then, bases, of any shape, are distinct from roots in that a base is an idiosyncratically determined form of a lexeme.⁵ Bases, as forms of a lexeme, contain sufficient information for realizing the syntactic and semantic categories that are relevant to words, and therefore to syntax. Roots lack the means to realize syntactic or semantic categories. A study of the forms in (1) and (2) demonstrates that the content of a root is not sufficient to restrict the root to appearing in bases of a particular category, argument-structure type (i.e. transitive or intransitive) or semantic role array (e.g., agent-patient, experiencer-stimulus). Bases, by contrast are nominal or

³A. Mattina (this volume) has adopted the practice of using '+' in place of hyphens within bases. As I am addressing this issue in prose, the additional typographic device seemed unnecessary for present purposes.

⁴ /-mfn/ is not an indicator of argument structure or thematic orientation in a root. /-mfn/ occurs in bases containing roots claimed to be 'transitive' and 'agentive' (/c'q'-/ 'hit' s.t., /c'q'-mfn-/ 'throw's.t.), 'intransitive' (/pulx/ 'camp', /p'ulx-mn-/ 'camp with s.o.') and 'non-agentive' (/q'il-t/ 'be sick', /q'il-t-mn-/ 'be sick from s.t.').

⁵My term 'base' seems to parallel Hess' stem classes 'radical, basic and derived' which he distinguishes on the basis of degrees of morphological complexity. His classification is primarily formal; mine attempts to be semantico-syntactic.

verbal.⁶ Verbal bases fall into two argument-structure type classes: those which are notionally intransitive (e.g. /x'uy/) versus those that are notionally transitive (e.g. /t-x'y-mfn/.⁷ Also, bases encode unique arrays of semantic roles (c.f. /nxil-/ 'agent-patient' vs. /nxil-mn/ 'experiencer-stimulus'). Roots, especially in morphologically complex forms, give no sign of specifying a unique number and kind of arguments, as predicates are usually thought to do. As roots are neither lexical items nor predicates, it is more accurate to limit the term 'root' to its use in Semitic languages where a root is an unpronounceable series of consonants abstracted from the actual lexical items of the language. Root forms are the realizations of roots found in bases.

2. Bases and stems. Bases, consisting of root forms and certain affixes, are underived forms of a lexeme. There are affixes that introduce quite regular, limited changes in meaning to base forms, and which serve to predict other possible formations. I call this latter set of affixes stem-forming. I consider the base to be the domain of application of stem-formation rules. The base acts as plane separating the operation of base-forming processes from stem-formation rules. The output of stem-formation rules are 'stems'; they are derived forms of the base lacking inflectional markers. A base-stem set for the lexeme /k'a?k'a?/ 'look for' is given in (3).

(3)		
base	/k'a?k'a?/	look for s.t.
stems:	/k'a?k'a?-/	look for s.t.
	/k'a?k'a?-ám/	look for s.t.
	/k'a?k'a?-nt-/	look for s.t.
	/k'a?k'a?-st-/	look for s.t.
	/k'a?k'a?-4t-/	look for s.o.'s s.t.
	/k'a?k'a?-xft-/	look for s.t. for s.o.
	/k'a?k'a?-4?/	get looked for
	/k'a?k'a?-a?-núm-/	manage to get s.t. looked for
	/k'a?k'a?-ú?/	always looking for s.t.
	/səx"-k'a?k'a?-ám/	one who looks for s.t.

Though there are idiosyncratic gaps, the ability of a verb base to have a stem ending in /-nt/ is a good predictor of its ability to have stems with /-4t/ , /x(f)t/ , /-st/ , /-(V)m/ , {inchoative} , and /-núm/ . Other verbal bases accept /-st/ but not /-nt/ or its covariants. I generalize these contrasts using the notion of a derivational paradigm, or, the patterns of affixation observed across bases.

⁶There are several morphological and syntactic tests for nouns in CVOK. It is beyond the scope of this paper to discuss them here, so the noun-verb distinction is assumed.

⁷I prefer to think of 'notionally (in)transitive' in aspectual terms such as 'transitional' vs. 'process' which define primitive conceptual classes. Although these classes are reflected in the grammar, speakers use the resources of the language to override them, with consequences for argument structure. I think it useful to limit reference to (in)transitivity to discussions of clause structure.

The base-stem sets I-IV in (4) illustrate the major derivational paradigms I have found to date.

(4)

I. (see also /k'aʔk'aʔ/, above)

base:	/wfk-/	see s.t.
stems:	/wfk-/	see s.t.
	/wfk-m/	see s.t.
	/wfk-nt-/	see s.t.
	/wfk-st ₁ -/	see s.t.
	/wfk-tt-/	see s.o.'s s.t.
	/wfk-xt-/	see s.t. for s.o. (as in a dream)
	/wfk-ək/	get seen
	/wk-ək-nún-/	manage to get s.t. seen

base:	/k-ʔúk*t-mn/	crawl towards, sneak up to s.o.
stems:	/k-ʔúk*t-mn/	crawl towards, sneak up to s.o.
	/k-ʔúk*t-mn-nt/	crawl towards, sneak up to s.o.
	/k-ʔúk*t-mn-st ₁ /	crawl towards s.o.
	/k-ʔúk*t-mn-tt/	crawl towards s.o.'s s.t.

II.

base:	/ʔuk*t/	crawl
stems:	/ʔuk*t/	crawl
	/ʔuk*t-st ₂ -/	make s.o. crawl
	/n-ʔk*t-fls/	want to crawl

base:	/t'ux*t/	fly
stems:	/t'ux*t-/	fly
	/t'ux*t-st ₂ -/	make s.o. fly
	/n-t'x*t-fls/	want to fly

base:	/x*uy/	go
stems:	/x*uy/	go
	/x*uy-st ₂ -/	take (i.e. 'make go')
	/n-x*y-fls/	want to go
	/t-x*uy/	go back
	/c-x*uy/	come (i.e. 'go towards')

III.

base:	/piq/	white
stems:	/piq/	white, white one
	/pq-st ₂ -/	make s.t. white
	/pq-nt-/	whiten s.t.
	/paʔq/	become white

base:	/ʔilx*-/	hungry
stems:	/ʔilx*-t/	be hungry
	/ʔflx*-st ₂ -/	make s.o. hungry

base:	/nʔas-/	heavy
stems:	/nʔas-t/	be heavy
	/nʔás-st ₂ -/	make it heavy
	/nə-ʔ-ʔás/	become heavy

IV.

base:	/p'fnaʔ/	birch bark basket
stem:	/p'inaʔ/	"

base:	/s-ʔ'aʔcfnm/	deer
stems:	/s-ʔ'aʔcfnm/	deer
	/s-ʔ'aʔ-ʔ'aʔcfnm/	deer (pl.)

base:	/s-puʔ=ús/	heart, desire
stem:	/s-puʔ=ús/	"

Some diagnostics for these recurrent paradigms are tentatively sketched in (5).

(5)

- I. Accepts at least one of /-nt/, /-st₁/, /-tt/ or /-x(t)t/; forms inchoatives; does not accept /-st₂/ (e.g. /k'aʔk'aʔ/, /wik/).
- II. Accepts /-st₂/; does not form inchoatives (e.g. /t'ux*t/, /ʔuk*t/, /x*uy/).
- III. Accepts at least one of /-nt/, -st₁/, /-tt/, /-x(t)t/ or /-st₂/; forms inchoatives (e.g. /piq/, /ʔilx*-/, /nʔas-/).
- IV. Does not accept /-nt/, -st₁/, /-tt/, /-x(t)t/ or /-st₂/; does not form inchoatives (e.g. /p'fnaʔ/, /sʔ'aʔcfnm/, /s-puʔ=ús/).

A detailed discussion and exemplification of why I suggest these and not other diagnostics is beyond the scope of this paper. The point is that by defining bases as domain of application of stem-formation rules, patterns of derivation of form and meaning begin to fall out of the data. If we allow only for the distinction between roots and stems, we find no such patterns.

Derivational paradigms show sufficient irregularity to warrant the label 'derivational'. Some bases take /-tt/ but not /-nt/ (/x'ic/ 'give'); /-nt/ but not /-m/ (/kic/ 'get to', /maʔ/ 'break'; /-tt/ but not /-x(t)t/ (/ʔitn/ 'eat', /wik/ 'see'). Most verb bases form inchoatives, but it doesn't seem possible to predict which of several inchoative forms a given base will take.⁸ For example, most

⁸I am including many affixes under the label 'inchoative' to describe a group of one-place predicates that denote 'changed states'. I expect that aspectual distinctions within this group will be subtle, like that between English 'burnt' and 'burned', expressing contrasts that are

bases with /-nt/ stems form inchoatives with /-(V)C₂/ reduplication (wfk-nt- 'see s.t.', /wfk-ək/ 'get seen') but a few form inchoatives differently, e.g., /n^oál-nt- 'sink s.t.', /n^oal-t/ 'get sunk'; /má^o-nt- 'break', /ma^o-t/ 'get broken'; /c'wk-nt- 'burn s.t.' /c'w-á-k/ 'get burnt'; /c'íx-nt- 'heat s.t.' /ci-ʔ-íx/ 'get hot'. The distribution of other stem-forming affixes is sporadic.

Stem-formation rules are regular in the sense that they alter the meaning of the base in predictable ways, although the English translations do not always reveal this. More formally, it appears that they do not substitute syntactic or semantic features of the base.⁹ I expect that certain variations in meaning between a base and its stem can be handled by underspecifying the syntactic and semantic features of the base (say as [+N] rather than [+N,-V]) and allowing the features to be filled in either by (post-lexical) redundancy rules or stem-formation rules.¹⁰ In (6) I list some base-forming and stem-forming affixes. I have left out those I am most unsure of, as well as affixes that I consider to be inflectional. Where a form appears in both lists, homophony (or underanalysis) is assumed to obtain. Traditional labels are provided where they exist.

transitory or difficult to get at. Phonetic indeterminacy and the variability in speaker judgements make this an especially difficult area of research in CVOK. How inchoatives are related to their basic forms is nonetheless an interesting question that has not been formally addressed in CVOK.

⁹This means we need to identify which features are relevant to stem-formation. I assume that at a minimum there are features for category, semantic roles, and lexical aspect.

¹⁰Stem-formation rules seem primarily to add aspectual features to the base; they do in CVOK what is accomplished at the phrase level in English. For example, there are multiple aspectual readings (aka event types) of the form 'eat' depending on its complements. (Aspectual labels are for expository purposes only).

(a)	I ate.	'activity'
	I ate well.	'customary'
	I ate something.	'accomplishment'
	I ate sandwiches.	'durative'
	I ate a sandwich.	'terminative'

Similar gradations of aspect in CVOK are expressed within the word.

(b)	(way') kn ₂ ʔitn.	I ate.	'activity'
	kn c-ʔitn.	I (do) eat.	'customary'
	kn ₂ ʔitn-m (t stiq ^o).	I ate (some meat).	'accomplishment, punctual'
	əc-ʔit-st-n.	I ate (whenever I...)	'durative, imperfective'
	ʔit-nt-x ^o .	You ate it.	'terminative, completive'
	(way') ʔit-ət.	It's eaten.	'inchoative'

For most if not all stem-formatives, aspectual labels could efficiently replace 'transitive', 'intransitive', 'ditransitive', etc., to better reflect the morphosyntactic facts of CVOK.

(6)

Base-forming

Stem-forming

/-aʔ/	? (w/nouns)	/c-/	cislocative
/-cut/	reflexive	/-fmn/	habitual
/-flx/	motion/c-/	/-fʔst/	?
/k-/	resultative	/t-/	directional
/kʔ-/	'down'	/-tʔ/	ditransitive
/kʔt-/	'under'	/-m/	intransitive
/-t/	cmpd. connective	/-nún/	'manage to'
/-m/	middle	/-ncút, -scút/	reflexive
/-mfn/	stem-formative,	/-nt/	transitive
/-mfn/	instrumental	/-nwíx ^o /	reciprocal
/-mix/	person	/n-...-fls/	'want to'
/n-/	locative	/-p/	inchoative
/s-/	nominalizer	/səx ^o -/	nomen agentis
/-s/	cmpd. connective	/-st ₁ /	customary
/-tn/	instrumental	/-st ₂ /	causative
/-úʔ/	?	/-t/	stative
/-wix ^o /	reciprocal	/-(t)úʔt/	ditransitive
/-x/	stem-formative	/-úʔ/	habitual
	all lexical suffixes and prefixes,	/-wflx/	developmental
	e.g., /pʔ=/, /ús/, /=inaʔ/	/-x(f)t/	benefactive
		/-ʔ-/	inchoative
		/-(V)C ₂ / rdp	out-of-control

Most of the stem-forming affixes are incompatible with one another. That is, stems end in /-nt/ or /-st/ but not */-nt-st/, or end in /-wflx/ but not */-wflx-nt/. Other stem-forming affixes do combine with others of their kind. For example, the stem-formative /-nún/ requires /-nt/, /-t/ or /-st₁/ before inflectional markers are added. Also, /-nún/ co-occurs with inchoative markers. The semantic regularities between inchoative and /-nún/ stems and their respective bases suggest to me that they are aspectual versions of a single lexeme.¹¹ More work in this area of co-occurring stem-formatives may lead to my defining two levels in the stem-formation component.

Using the distinction between base-formatives and stem-formatives, I can distinguish between forms that cycle within the stem-formation component (e.g. /-nún/ stems) from those stems that are reanalyzed as bases. Such bases contain stem-formatives 'inside' base-formatives, as in the following examples.

¹¹A second kind of aspect marking, call it sentential aspect, combines with the lexical aspect of the stem to give a fuller range of event structures. Most of the aspect markers considered in Mattina 1993 I would classify as sentential. As these show more evidence of being truly inflectional, I do not address them here.

(7)

A. Base	B. Stem	C. Stem reanalyzed as base
/q'il-/ 'sick'	/q'il-t/ 'get sick'	/q'il-t-mín-/ 'be sick from s.t.'
/sp'- 'hit s.t.'	/səp'-p'/ 'get hit'	/səp'-p'-qn-/ 'get hit on the head'
/k'ul'-/ 'make s.t.'	/k'l'-ncút/ 'make' reflx.	/k'l'-ncút-tn/ 'God'
/x̣s-/ 'good'	/x̣as-t/ 'be good'	/x̣s-x̣s-t-f'ʔst/ 'lucky'
/ya ^c / 'gather'	/ya ^c -p/ 'arrived'	/ya ^c -p-míx/ 'the assembled people'
/ʔilx ^w -/ 'hungry'	/ʔilx ^w -t/ 'be hungry'	/s-ʔilx ^w -t/ 'hunger'

All of the forms in columns A. and C. have derivational paradigms of the types I distinguished in (5). The stems (in column B.) do not have such paradigms. Given the right definitions, we could say that bases form derivational paradigms, while stems form only inflectional paradigms.

3. Conclusion. I distinguish between roots, bases and stems in order to establish a basis for the semantic and syntactic classification of words in CVOK. Roots do not determine the syntactic or semantic properties of a word, and are therefore of little importance in such a classification. Rather, they are primarily of formal, historical, and comparative interest. Bases comprise the lexical items of CVOK, and they do contain the syntactic and semantic information lexical items are expected to have. Stems are alternates of bases that differ in constrained ways from bases, perhaps as lexical aspectual alternates. By distinguishing 'root' 'base' and 'stem' in the ways I have suggested, we have the rudiments of a word-formation model that can accommodate idiosyncracies in meaning and form and yet reveal significant patterns among the morphological units of CVOK.

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