Multiple Attractors in Grammaticalization: Evidence from Kuki Thaadow Verbal Morphology

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ABSTRACT. In Kuki Thaadow, a Tibeto-Burman language, there are several abnormalities in the templatic inflectional morphology of the verb. These abnormalities include position classes, multipositionality, arbitrary potentiation, semantic non-compositionality, and morpho-phonological idiosyncrasies. Some of the morphemes in this system pattern neither like prototypical affixes nor like prototypical clitics, and the ordering of their semantic functions does not align with predictions made by the relevance principle (Bybee 1985). This paper proposes a reconceptualization of how the process of grammaticalization is understood to produce dependent inflectional morphology from independent word forms. This reconceptualization is accomplished through examination of the image-schematic metaphors that are used in linguistic discourse on grammaticalization. Traditional views of grammaticalization employ an ATTRACTOR-ATTRACTED ENTITY model in which lexical roots exert semantic, morphosyntactic, and phonological ATTRACTIVE FORCES upon other morphs. A variety of inferences follow from this traditional model, including the postulation of a cline of morphosyntactic dependence--i.e. affix > clitic > word--and also the ordering predictions of the relevance principle. I argue for a more complex, *multiple attractor* model, in which ROOT-ATTRACTORS and NON-ROOT-ATTRACTORS contemporaneously exert grammaticalizational forces on morphs. This model is useful in conceptualizing how the abnormalities in the post-verbal morphology of Kuki Thaadow might have arisen on a diachronic time scale. In addition, the multiple attractor model explains why certain post-verbal morphs cannot be readily categorized as affixes or clitics, and why the order of these morphs controverts ordering predictions made by the relevance principle. A variety of related phenomena in other languages are suitable for analysis within this framework.

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1. **INTRODUCTION**.[+]

The set of bound morphs that can occur post-verbally in Kuki Thaadow[1,2] covers a diverse range of semantic functions. In normal discourse the co-occurrence of more than three or four of these morphs is uncommon, though judged felicitous. Systematic elicitation of combinatorial possibilities has revealed that some of the post-verbal morphs occur in a templatic order for arbitrary reasons, i.e. reasons that do not involve semantic scope or phonological constraints. The examples in (1) show this arbitrary, templatic order:

(1) a. *a-na-kaa-bɛɛ-hlon-taa-ee* 'they (two) already cried again and again'
3-PST-cry-ITER-DUAL-PERF.-DECL.

b. *a-na-kaa-bɛɛ-hlon-hiq-ee* 'they (two) did not cry again and again'
3-PST-cry-ITER-DUAL-NEG-DECL.

c. *a-na-kaa-bɛɛ-hlon-taa-hiq-ee* 'they (two) no longer cry again and again'[3]
3-PST-cry-ITER-DUAL-PERF.-NEG-DECL.

d. *a-na-kaa-bɛɛ-hiq-naa-uv-ee* 'they did not cry again and again, certainly'
3-PST-cry-ITER-NEG-EPIST-PL-DECL.

e. *a-na-kaa-bɛɛ-hiq-laay-naa-uv-ee* 'they did not yet cry again and again, certainly'
3-PST-cry-ITER-NEG-middle-EPIST-PL-DECL.

Two of the post-verbal morphs are *multipositional*: these morphs occur in multiple positions in the template, and the factors governing this distribution are arbitrary from a synchronic standpoint (i.e. there is no semantic consequence to occurrence in one position or the other). Examples (2) and (3) show how the DUAL /hlon/ and EPISTEMIC /naa/ may occur before or after the NEGATIVE /hiq/. There are several complicated morphological factors which bias--but do not always determine--the distribution of these multipositional morphs; these factors are considered in subsequent sections.

(2) a. *a-ki-voq-tɔɔ-hiq-beq-hlon-ee* 'they (two) did not hit each other at all'
3-REFL-hit-RECIP-NEG-ASP-DUAL-DECL.

b. *a-ki-voq-tɔɔ-hlon-hiq-beq-ee* *idem.*
3-REFL-hit-RECIP-DUAL-NEG-ASP-DECL.

(3) a. *a-nee-hlon-naa-hiq-ee* 'certainly they (two) did not eat'
3-eat-DUAL-EPIST-NEG-DECL

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b. *a-nee-hlon-hiq-naay-ee* *idem.*
3-eat-DUAL-NEG-EPIST-DECL

Multipositionality is only possible when the NEGATIVE /hiq/ co-occurs with these morphs. If the NEGATIVE /hiq/ is absent from an utterance, the DUAL and EPISTEMIC may each only occur in one position. This pattern will be called *potentiation of multipositionality*, in the sense that the presence of the NEGATIVE /hiq/ creates the potential for the two morphs to occur in multiple positions.

In order to consider this phenomenon morphotactic rather than syntactic, the morphs must be shown to be dependent forms (affixes, clitics, or "particles"), rather than independent words. Section *{2}* evaluates the post-verbal morphs against some of the characteristics prototypical of dependent morphs or of independent words (from Zwicky 1985), such as binding, ordering principles, distributional complexity, morphological complexity, deletion under identity, movability and replaceability, accentability, and phonological domain-hood. With some minor exceptions, the morphs pattern like prototypical dependent forms.

Section *{3}* evaluates the morphs against characteristics prototypical of inflectional affixes and clitics (from Pullum and Zwicky 1983), such as selection, arbitrary gaps, morphophonological idiosyncrasies, semantic idiosyncrasies, and syntactic restriction. In this case, the morphs pattern neither like prototypical affixes nor like prototypical clitics: some characteristics argue for viewing them as affixes, others argue for viewing them as clitics. Their morphosyntactic status is ambiguous.

There are thus two abnormal qualities exhibited by the post-verbal morphology: (1) potentiation of multipositionality, and (2) ambiguous morphosyntactic status. Section *{4}* presents a third abnormality: (3) *contradiction of semantically relevant order*: the order of semantic functions in the templatic part of the system deviates from the order predicted by the relevance principle (Bybee 1985).

Section *{4}* also describes a simple frame (or model) of GRAMMATICALIZATION, which constitutes the conceptual framework underlying linguistic discourse on grammaticalization. In this frame a lexical root is conceptualized image-schematically as an OBJECT exerting ATTRACTIVE FORCES on other morph-OBJECTS; the verb root is thus an ATTRACTOR[4]. This simple model of grammaticalization is not useful in understanding how the three anomalies in the KT post-verbal morphology could have arisen over time.

Section *{5}* advances two hypotheses: [1] in pre-KT there was an inflected auxiliary verb; and [2], with a revision to the simple frame of grammaticalization, the diachronic effects of this auxiliary verb can be modeled by treating the auxiliary as a NON-ROOT ATTRACTOR. This *multiple-attractor* model allows for an intuitive understanding of how the abnormalities of the post-verbal morphology might have arisen in the process of grammaticalization. It is suggested that this revised model can be used to conceptualize the diachronic development of similar phenomena in other languages with templatic morphology.

2. MORPHOLOGICAL STATUS: DEPENDENT OR INDEPENDENT?.

A number of tests designed to differentiate between independent words and dependent (non-independent) morphs--i.e. clitics and affixes--(Zwicky 1985) indicate that the post-verbal morphs in KT should be classified as dependent (or, "morphosyntactically bound"). Following Zwicky, I will proceed with the understanding the label "particle" does not describe a coherent morphosyntactic class, and that some particles classify as discourse affixes or clitics, while others classify as independent words. The "tests", which are better conceptualized as criteria

prototypical attributes, fall into several different categories: *{2.1}* tests based on similarities between clitics and inflectional affixes, *{2.2}* syntactic tests, and *{2.3}* and tests involving phonological domain-hood.

2.1 CRITERIA BASED ON SIMILARITY TO CLITICS AND AFFIXES. If the morphological behavior of a form resembles the behavior of a clitic or inflectional affix, this argues for classifying the morph as dependent, and vice versa, if the morph does not exhibit affix or clitic-like behavior, this argues for independence.

2.1.1 *binding*. Only one of the KT post-verbal forms can also occur in isolation; because the majority are bound, this criteria argues for classifying them as dependent. The exception is the complex formation /taq-beq/ (4a), which can occur in isolation in response to a question (4b). Its semantic force in isolation is similar to its post-verbal force. The form /taq/ can also occur in isolation (4c), but post-verbally this form only occurs in the complex formation with /beq/. The fact that there exists a discourse-functional use of this *form* does not necessarily imply that the formally identical post-verbal *morpheme* is not bound; since all other post-verbal forms are bound[5], the majority vote elects for classifying them as dependent.

(4) a. *a-nuuy-hiq-taq-beq-ee* 'he really does not laugh.'
3-laugh-NEG-MODAL-DECL.

b. *taq-beq* 'absolutely.'
really-fully

c. *taq* 'really.'
really

2.1.2 *ordering principles*. Alternative orders of affixes or clitics within a word normally convey differences in meaning, while alternative orders of words within phrases sometimes convey the same meaning. Strict templatic ordering normally suggests clitic or affix status.

For most KT post-verbal morphs, this criterion points to dependent status, in agreement with the binding criterion. There are three types of ordering principles operative between the post-verbal morphemes of KT: scope-determined ordering, scope-biased ordering, and strictly templatic ordering. (5a-b) shows an example of scope-determined ordering between the ITERATIVE /bɛɛ/ and the CAUSATIVE /saq/.

(5) a. *ka-kaa-bɛɛ-saq-ee*
1-cry-ITER-CAUS-DECL. 'I make [(him) cry again and again]'

b. *ka-kaa-saq-bɛɛ-ee*
1-cry-CAUS-ITER-DECL. 'again and again I make [(him) cry]'

Scope-determined ordering is characteristic of derivational affixation--a "derivational" morph is here viewed as a morpheme whose semantic contribution is highly relevant to the event described by the verb (Bybee 1985). Aspectual morphs, like the ITERATIVE, are thus more derivational in nature than TENSE and NUMBER morphs like the PERFECT /taa/ and the DUAL /hlon/. Scope-determined order is indicative of bound affixation. Such ordering normally applies

to morphs of higher relevance, because less relevant semantic functions often do not interact scopally.

In other cases, scope is only a contributing factor to the ordering of post-verbal morphs, co-existing with a templatic order. (6a-b) show an example of "scope-biased" ordering. In scope-biased ordering, two morphs occur in both possible orders, but one order--the templatic order--allows both interpretations of semantic scope, while the marked, scope-biased order allows only one interpretation of semantic scope.

(6) a. *tsapang a-hlay-khom-saq-uv-ee* 'he makes [the children run together]'
children 3-run-together-CAUS-PL-DECL ~ 'together they make [the child run]'

b. *tsapang a-hlay-saq-khom-uv-ee*
children 3-run-CAUS-together-PL-DECL 'together they make [the child run]'

Scope-biased ordering has also been observed between causative, applicative, and reciprocal suffixes in a number of Bantu languages (Hyman 2002). It is hypothesized that scope-biased ordering is an innovation from a proto-Bantu templatic ordering of these suffixes. Whether this explanation makes sense for KT and related languages is an open question. As with scope-determined ordering, scope-biased ordering is indicative of dependence.

For the most part, the more derivational (valence-altering and aspectual) morphs in KT interact scopally, i.e. their ordering is scope-determined or scope-biased[6]. In contrast, the more inflectional morphs (i.e. less verb-relevant, e.g. TENSE, MODALITY, NUMBER, POLARITY) exhibit strictly templatic ordering, with no scopal interactions. Examples of the templatic orders were seen in (1).

In the post-verbal morphology there is an association between root-proximity, scopal-ordering, and high verb-relevance, and conversely an association between root-distality, templatic ordering, and low verb-relevance. Thus, conceptually distinguishing between two groups of post-verbal morphs is not un-reasonable. Below is presented a (simplified) schematic of this distinction. For now, the "co-verb stem" may be thought of as a verb stem in the conventional sense. The "para-stem" may or may not be appropriately described as a stem, and as we will see, the application of various tests of morphological status produce interesting contradictions.

PREFIXES		CO-VERB STEM	PARA-STEM							DISC. MARKER
SUBJ/OBJ. PERS., PAST, REFL/PASS	**R O O T**	CAUS. APPL. RECIP. ASPECT ADV.	DUAL /hlon/	PERF. /taa/ EPIST. /naa/	NEG. /hiq/ /poo/ EMP. /bow/	ASP. /beq/ /laay/ MOD. /taq-beq/ /beq-seq/	(DUAL) /hlon/	(EPIST.) /naa/	PL. /uu/	DECL. /ee/ IMPER. /in/

The multipositionality of the DUAL and EPISTEMIC--without a corresponding difference in meaning--might argue against considering these forms (and perhaps all para-stem forms) as dependent. However, Zwicky notes that clitics "on occasion exhibit some freedom of order with respect to one another, though not normally with respect to their hosts" (288). Furthermore, Bickel (in press) has reported the discovery of free prefix ordering in Chintang, a branch of

Kiranti, another Sino-Tibetan language. If one grants that free affix and clitic ordering exists, the conclusion that semantically inconsequential free relative ordering of forms is characteristic of independent words must be called into question. Hence, scopal ordering of co-verb stem morphs is characteristic of dependents morphs, while the "free" ordering of some para-stem morphs does not argue strongly either way for dependence.

2.1.3 *distributional complexity*. Elements with simplex distributions, i.e. with a single principle governing their distribution, are probably clitics or affixes. For example, if the distribution of a morph can be described with statements such as 'combines with the head verb of a clause' or 'combines with the first constituent of a clause,' then the element is likely to be a clitic or affix.

All Kuki Thaadow co-verb morphs only occur with lexical verb roots, which argues for considering them dependent. However, some para-stem morphs, e.g. the DUAL /hlon/ and PLURAL /uu/ (7), the semantically enigmatic forms /beq/ and /laay/ (8), and the EMPHATIC FOCUS marker /bow/ (9), also have post-nominal uses. This could argue for classifying these forms as independent words, though whether this duplex distribution is complex enough to warrant that conclusion is unclear.

(7) a. *na-neq-hlon-ee* 'you (two) eat'
2-eat-DUAL-DECL.

b. *na-neq-uv-ee* 'you all eat'
2-eat-PL-DECL

c. *na-zɔɔng-hlon* 'your (du.) monkey'
2-monkey-DUAL

d. *na-zɔɔng-uu* 'your (pl.) monkey'
2-monkey-PL

(8) a. *a-neq-hiq-laay-ee* 'he does not eat yet'
3-eat-NEG-yet-DECL.

b. *a-neq-hiq-bɛq-ee* 'he does not eat at all'
3-eat-NEG-absol.-DECL

c. *zaan-laay* 'in the middle of the night'
night-MIDDLE

d. *ii khat-beq na-tsoy-low-ham-oo* 'did you carry anything?'
thing one absol. 2-carry-NEG-INTERR-DISTAL.

There is a convincing reason *not* to consider these patterns evidence for independent word status: the post-nominal forms constitute different morphemes than the post-verbal forms under consideration. The crux of the issue here is whether the post-nominal uses are functionally different enough from the post-verbal uses, such that the forms belong to separate morphemes.

One can reasonably assert that possessor number (7b) is functionally different from agent/patient number (7a), since there are distinct semantic principles governing the use of these functions. In (8b), the form /laay/ serves as nominal post-position, but this is only possible with nouns referring to a duration of time or nominalized event verbs. In the post-verbal context (8a), the form can only occur with the NEGATIVE /hiq/ present and its semantic contribution is aspectual, indicating that an event has not yet begun. The form /beq/ is less tractable to classification, but appears to occur post-nominally only as a negative polarity item.

(9) a. *ka-neq-bov-ee* 'I *do* eat'
1-eat-EMP-DECL.

b. *zɔɔng-bow a-neq-ee* 'a *monkey*-(FOCUS) eats'
monkey-EMP 3-eat-DECL

In examples (9a) and (9b), the form /bow/ endows the verb and nominal, respectively, with emphatic focus. Its distribution is the least restricted of all the post-verbal forms (excepting /taq-beq/, c.f. *{2.1.1}*). If marking of argument focus is a different semantic function than the marking of event focus, then the distribution of this form does not necessarily suggest distributional complexity of a single morpheme, and hence does not argue for morphosyntactic independence. However, to the extent that (9a) and (9b) represent the same "function" of /bow/, the distribution is a distribution of a coherent morpheme and thus argues for independence.

Despite the distributional ambiguities of the EMPHATIC FOCUS /bow/ and the MODAL /taq-beq/, other para-stem morphemes, such as the NEGATIVES /hiq/ and /poo/, the EPISTEMIC /naa/, the PERFECT /taa/, and the AGENT/PATIENT NUMBER agreement markers /hlon/ and /uu/, do have simplex distributions: they combine only with a verb stem (i.e. the co-verb stem). Hence, the patterns cannot be taken as evidence of non-simplex distribution, and thus argue for viewing the morphs as dependent.

2.1.4 *morphological complexity*. Independent words are not uncommonly morphologically complex: they can be analyzed as composed of two or more morphemes. In contrast affixal units are rarely complex. Most KT post-verbal morphs appear to be morphologically simplex, and thus prototypically dependent.

However, there are several notable exceptions. In the para-stem, the modal forms /taq-beq/ 'truly' and /beq-seq/ 'absolutely', which contain relatively transparent parts (/taq/ 'hard' and /seq/ 'alone'), cannot occur independently. This is yet another way in which the para-stem morph /taq-beq/ is not prototypical of a dependent form[7].

2.2 SYNTACTIC CRITERIA. Words are syntactic constituents and are thus subject to syntactic processes, while clitics and affixes are not syntactic constituents and thus should not undergo syntactic processes. If a unit undergoes some syntactic process, then that unit should be classified as an independent word.

2.2.1 *deletion under identity*. Parts of words are not subject to deletion under identity, while whole words can undergo such deletion. "Deletion under identity" is deletion when there is an anaphoric linkage between the deleted form and some other constituent in its sentence. This contrasts with "free deletion," where no such linkage is involved (e.g. *have you seen Bob?* > *you seen Bob?*); Zwicky and Pullum (1983b) argue that free deletions are not syntactic but rather morphological, involving zero allomorphy.

Some post-verbal morphs can be indeed be omitted in KT, but these omissions are not anaphoric. The omissions appear to depend upon the salience of the information in the understood discourse context, i.e. they are cases of free deletion. For example, when two verbs[8] are conjoined, as in (10a-b), the para-stem PERFECT /taa/ and EPISTEMIC /naa/ can be omitted from the first conjunct but still have scope over both verbs. Of course, the interpretations in which the PERFECT and EPISTEMIC do not have scope over the first conjunct are also available. When the two conjoined verbs belong to separate clauses, by virtue of having different participants, this omission is judged awkward if the intended reading is that of scope over both clauses (10c-d).

(10) a. *ka-nuuy-(taa) in ka-nee-taay-ee*
1-laugh-(PERF) CONJ 1-eat-PERF-DECL. '[I laughed and ate] already'

b. *ka-nuuy-(naa) in ka-nee-naay-ee*
1-laugh-(EPIST) CONJ 1-eat-EPSIT-DECL. '[I laughed and ate] certainly'

c. *a-nuuy-(taa) in ka-nee-taay-ee*
3-laugh-(PERF) CONJ 1-eat-PERF-DECL. ?? '[He laughed already] and [I ate already]'

d. *a-nuuy-(naa) in ka-nee-naay-ee*
3-laugh-(EPIST) CONJ 1-eat-EPIST-DECL. ?? '[He laughed certainly] and [I ate certainly]'

The same pattern of omissibility holds for the DUAL /hlon/. These facts could be interpreted as either [1] "free deletion" of affixes in conjoined verb stems, or [2] deletion under identity of words in conjoined phrases.

There are several reasons why the free deletion analysis is more reasonable. First, some para-stem morphs cannot be deleted under conjunction. In (11a-b) the NEGATIVE /hiq/ patterns this way, and so do the NEGATIVE /poo/[5] (11c-d) and PLURAL /uu/ (11e-f).

(11) a. *ka-nuuy-hiq in ka-nee-hiq-ee*
1-laugh-NEG CONJ 1-eat-NEG-DECL. 'I do not laugh and do not eat'

b. *ka-nuuy in ka-nee-hiq-ee* 'I laugh and do not eat'
1-laugh CONJ 1-eat-NEG-DECL. ?? 'I do not laugh and do not eat'

c. *ka-nuuy-poo in ka-nee-poo-ee*
1-laugh-NEG CONJ 1-eat-NEG-DECL. 'I do not laugh and do not eat'

d. *ka-nuuy in ka-nee-poo-ee* 'I laugh and do not eat'
1-laugh CONJ 1-eat-NEG-DECL. ?? 'I do not laugh and do not eat'

e. *ka-nuuy-uv in ka-nee-uv-ee*
1-laugh-NEG CONJ 1-eat-NEG-DECL. 'we laugh and eat'

f. *ka-nuuy in ka-nee-uv-ee* 'I laugh and we eat'
1-laugh CONJ 1-eat-NEG-DECL. ?? 'we laugh and eat'

The fact that the para-stem morphs NEGATIVE /hiq/, NEGATIVE /poo/, and PLURAL /uu/ cannot have scope over both conjuncts argues against treating the conjunction as phrasal, since deletion under identity in phrasal conjunction would be expected to apply to all omissible words, if these were truly words. Thus the omission in (11) seems more like free deletion of dependent forms. Note that the DUAL /hlon/ and the PLURAL /uu/ pattern differently in this regard--whether this relates to their positional separation will be considered later.

Second, some co-verb stem morphs are subject to what appears to be the same brand of deletion. The aspectual/adverbials /kit/ 'again' and /khom/ 'together' can be omitted yet retain semantic scope over both conjuncts (12a-b).

(12) a. *ka-nuuy-(kit) in ka-nee-kit-ee* '[I laugh and eat] again'
1-laugh-(again) CONJ. 1-eat-again-DECL.

b. *ka-nuuy-(khom)-uv in ka-nee-khom-uv-ee* '[we laugh and eat] together'
1-laugh-(together)-PL CONJ. 1-eat-together-PL-DECL.

The potential for some co-verb stem morphs to be omitted in pragmatically appropriate circumstances, and the restrictions upon omission of other para-stem morphs, argue for viewing the omissions as free deletions operating on dependent morphemes in conjoined verbs, rather than deletion under identity in conjoined phrases.

2.2.2 *movability and replaceability.* Parts of words are not subject to movement rules or to replacement by a pro-form. None of the KT post-verbal morphs participate in "gap-filler" relations, or appear to derive from a movement transformation leaving a trace. There are also no instances in which pro-forms can replace post verbal morphology. It is unlikely that the multipositionality of the DUAL /hlon/ and EPISTEMIC /naa/ arises from a movement transformation, since no other morphs undergo the transformation; conceptualizing this as a "transformation" is thus not well motivated. The absence of movement and replacement of para-stem morphs argues for considering them dependent.

2.3 PHONOLOGICAL DOMAINS. The criteria employed above are founded upon empirically observed distributional patterns and a range of semantic and syntactic concepts assumed to provide cross-linguistically relevant functional distinctions. However, the phonological tests in Zwicky (1985) are not applicable without somewhat less tenable assumptions about what constitutes the phonological word and phrase "domains" in Kuki Thaadow[9]. The three tests Zwicky provides are tests for the existence of distinct word and phrase-domains in which operate [1] *morpheme boundary-rules*, [2] *segmental phonology rules*, and/or [3] p*rosodic phonology rules*.

The morpheme boundary-rule test is based upon whether there are "internal sandhi" rules applying only within phonological words and "external sandhi" rules applying only between phonological words. The segmental and prosodic tests are based upon whether there are phonological processes occurring only within phonological words and processes occurring only within phonological phrases. All of these tests share an assumption of well-defined of phonological word and phrase domains, which can be thought of as lexical and post-lexical levels.

The descriptive adequacy of phonological "levels" (i.e. a phonological word/phrase domain distinction) has been called into question by several authors, among them Inkelas (1998),

who observes that in many languages it is necessary to identify construction-specific (or morpheme-specific) phonologies: *co-phonologie*s. Furthermore, languages with extensive agglutinative morphology may exhibit multiple phonological domains within a word. These "domains" can be viewed as generalizations over co-phonologies of the morphs within the domain. In other words, clusters of phonological patterns can describe a "domain" within a word or phrase.

It is thus not easy to use phonological domains as an argument for or against dependence. Assuming that clusters of cophonological patterns specific to post-verbal morphology are evidence of dependence, the data considered below argue for (a) analyzing the post-verbal morphology as dependent; (b) separating co-verb stem and para-stem domains; (c) possibly the analysis of a sub-domain within the para-stem.

2.3.1 *lexical vs. phrasal domains.* There are a number of indications that there exists a phonological domain boundary between adjacent lexical items in Kuki Thaadow. Several phonological processes occur between certain grammatical morphs and lexical roots, but do not occur between adjacent lexical items. For example, the DECLARATIVE /ee/, IMPERATIVE /in/, and several nominal post-positions trigger a nasal release of a preceding coda /p/ or /t/ on a verbal or nominal root (13a-d).

(13)	*/tsoop/*	'to kiss'
	/mat/	'bedbug'
a.	*ka-tsoop^{n}-ee* 1-kiss-DECL.	'I kiss (it)'
b.	*tsoop^{n}-in!* kiss-IMPER.	'kiss (it)!'
c.	*mat^{n} in* bedbug with	'with a bedbug'
d.	*mat^{n} aa* bedbug GEN.	'of a bedbug'

(14)	*/kum/*	'to descend'
	/hlon/	DUAL
a.	*a-kum:-ee* 3-descend-DECL	'he descends'
b.	*a-kum-khom:-ee* 3-descend-together-DECL.	'they descend together'
c.	*a-kum-hlon:-ee* 3-descend-DUAL-DECL	'they (two) descend'

A second phonological process following this distributional pattern is the lengthening of nasal and liquid codas before the DECLARATIVE /ee/ and the aforementioned grammatical morphs (14a); this process also applies to co-verb and para-stem morphs (14b-c). A third phonological process with this distribution is the fricativization of coda /w/ --> [v], exemplified with a root, co-verb morph, and para-stem morph in (15).

(15) a.	*a-taav-ee* 3-pray-DECL	'he prays'	/taaw/ 'to pray'
b.	*a-taaw-zov-ee* 3-pray-COMPL-DECL	'he finishes praying'	/zow/ COMPLETIVE
c.	*a-taaw-zow-bov-ee* 3-pray-COMPL-EMP.FOC.-DECL	'he finishes praying-FOC'	/bow/ emphatic FOCUS

All grammatical forms which trigger these alternations are onsetless, but it is not clear exactly what phonological features are responsible for these alternations, since the PLURAL /uu/ and some other onsetless grammatical morphs do not trigger the alternations. This suggests that the phonology is to some extent construction-specific. Yet another indication of dependence is the failure for onsetless post-verbal and post-nominal morphs following open syllables to exhibit glottal stop insertion, which is otherwise regular between lexical items.

Regardless of the construction-specificity of the alternations, these patterns can be considered evidence of dependence[10], because the grammatical forms which trigger them (nominal and verbal post-positions) exhibit dependent behavior in a variety of respects, and because the patterns do not apply between adjacent lexical items. Thus there appears to be a phrasal domain of phonology distinct from a lexical domain.

2.3.2 *prefix-root domain.* Internal to a domain composed of prefixes and verb root, there exist tone sandhi rules which conspire to produce a single tonal contour. The PERSON prefixes (e.g. 3RD PERSON /a-/) underlyingly bear low tones, but when preceding an underlying low tone verb, high tone allomorphs are realized (16). The same pattern occurs when the person prefixes precede the PAST /-na-/ or REFLEXIVE/PASSIVE /-ki-/ prefixes (17). The PAST prefix /-na-/ appears to have an underlying high tone, since the tone of a following low verb or /-ki-/ assimilates to this high tone (17c-d).

(16) a. *à-née-ˈêe* 'he eats'
3-eat-DECL.

b. *à-núuy-êe* 'he laughs'
3-laugh-DECL.

c. *á-kàp-ˈêe* 'he cries'
3-cry-DECL.

(17) a. *á-pèt-ˈêe* 'he bites'
3-bite-DECL.

b. *á-kĭ-pèt-ˈêe* 'he is bitten'
3-PASS-cry-DECL.

c. *á-ná-pét-ˈêe* 'he cried'
3-PAST-cry-DECL.

d. *á-ná-kî-pèt-ˈêe* 'he was bitten'
3-PAST-PASS-cry-DECL.

The ultimate effect of this allomorphy is that the prefix-root system has a single tonal contour[11]; moreover, this allomorphy is specific to this domain, the alternations do not apply between the root and following co-verb morphs[12].

2.3.3 *co-verb stem domain*. There is evidence for treating co-verb stem morphs as members of a coherent phonological domain with the verb root. First, consider the boundary between co-verbs and the verb root. A regular downstepping process applies when a high /H/ or falling /HL/ tone follows a low /L/ or falling /HL/ tone, whether between a root and a co-verb morph (18a) or between two co-verb morphs (18b). This downstepping process is also observed in noun-internal phonology, and thus seems normal for word-internal interaction.

(18) a. *à-tsóom-ˈkhóm-ùv-êe* 'they jump together'
3-jump-together-PL-DECL

b. *á-kàp-khóm-ꜜzów-ùv-êe* ‘they finish crying together’
3-cry-together-COMPL-PL-DECL

In the co-verb domain there are few morpheme-specific co-phonological interactions. Several co-verbs trigger a suppletive (non-phonologically conditioned) allomorph of the verb root (c.f. section 3.3.1), but this is not strictly speaking a phonological interaction.

More evidence for a co-verb stem domain is the existence of an intensifying/aspectual reduplication construction which can apply to all verb roots and many co-verbs[13] (19). None of the para-stem morphs can be reduplicated in this manner, which suggests that the co-verb stem and para-stem constitute separate phonological domains.

(19) a. *ka-tsoom-tsoom-ee* ‘I jump and jump’
1-JUMP-REDUP-DECL

b. *ka-tsoom-khaa-khaa-ee* ‘I absolutely never jump’
1-jump-never-REDUP-DECL

2.3.4 *para-stem domain*. Another argument for distinguishing co-verb from para-stem domains is found in a peculiar allomorphy observed with the DUAL */hlôn/*. When /hlon/ follows a falling tone, there is an irregular tonal contour simplification: a low-tone allomorph of the DUAL occurs (20a). This contrasts with the regular downstepping observed between root and co-verb morphs. This morphophonological alternation occurs regardless of whether the preceding falling tone is associated with a root (20a) or co-verb morph (20b), and regardless of whether the falling tone is underlying or derived (20c).

(20) a. *à-tsóom-hlòn-êe* ‘they (two) jump’
3-jump-DUAL-DECL

b. *á-kàp-khóm-hlòn-êe* ‘they (two) cry together’
3-cry-together-DUAL-DECL

c. *à-nùuy-dén-hlòn-êe* ‘they (two) laugh often’
3-laugh-often-DUAL-DECL

The fact that this tonal contour simplification, which essentially changes [H L H L] > [H L], does not occur between a root and co-verb or between two co-verbs. That suggests that the process is sensitive to *something* about co-verbs and roots--that “something” might well be called a domain boundary, and one might conclude that root and co-verb morphs constitute a domain whose phonology does not include this contour simplification rule.

One problem with treating the contour simplification process observed with /hlon/ as evidence for a domain boundary is that /hlon/ is the only para-stem morph with an underlying falling tone, and thus the only morph to undergo this process.[14]

Better evidence for separate co-verb and para-stem domains comes from several morphophonological processes which occur between a discourse marker (such as the DECLARATIVE /ee/) and certain para-stem morphs, but which do not occur between /ee/ and co-verb stem morphs.

These processes are glide epenthesis, final contour tone anticipation, and optional elision of the discourse marker. (21a-c) illustrate glide epenthesis and final contour tone anticipation

with the PERFECT /*tàa*/, EPISTEMIC /*nàa*/, and NEGATIVE /*pòo*/. When these morphs immediately precede the DECLARATIVE /*êe*/, a glide is epenthesized and the falling contour of the DECLARATIVE is anticipated.

(21) a. *á-kàp-táay-èe* 'he already cried'
3-cry-PERF-DECL

b. *á-kàp-náay-èe* 'he cries, certainly'
3-cry-EPIST-DECL

c. *á-kàp-póoy-èe* 'he does not cry'
3-cry-NEG-DECL

(22) a. *á-kàp-tâay* 'he already cried'
3-cry-PERF-DECL

b. *á-kàp-nâay* 'he cries, certainly'
3-cry-EPIST-DECL

c. *á-kàp-pôoy* 'he does not cry'
3-cry-NEG-DECL

In addition, these forms can undergo a morphophonological reduction in which the discourse marker itself is elided (22). Otherwise, when these morphs do not precede the declarative, their tone is low and their underlyingly long vowels are normally shortened[15]. This can be seen, for example, when the forms precede the plural (23).

(23) a. *á-kàp-tà-ùv-êe* 'they already cried'
3-cry-PERF-DECL

b. *á-kàp-nà-ùv-êe* 'they cry, certainly'
3-cry-EPIST-DECL

c. *á-kàp-pò-ùv-êe* 'they do not cry'
3-cry-NEG-DECL

It is not insignificant that these processes involve a relationship between the discourse marker /ee/ and preceding open syllables. The alternations do not occur between /ee/ and any co-verbs morphs, which argues for treating the para-stem as separate domain from the co-verb. There are just two co-verb morphs that are open syllables and underlyingly low-tone: the ITERATIVE /*bèɛ*/ and the bisyllabic aspectual /*támzòo*/ 'more'. (24) shows that neither can participate in contour anticipation or glide epenthesis. The restriction of contour anticipation to para-stem morphs is good evidence for separating co-verb stem and para-stem phonological domains.

(24) a. *á-hlùq-bèɛ-êe* 'he falls again and again'
3-fall-ITER-DECL

b. *à-hlúu-ꜜtámzòo-êe* 'he falls more'
3-fall-more-DECL

Intriguingly, contour anticipation, glide epenthesis, and optional discourse marker elision do occur between /ee/ and verb roots, shown in (25). This is unexpected because the process seems to "skip" the co-verb morphs (24). If anything, this must be interpreted as further evidence for a boundary between the para-stem and co-verb.

(25) a. */á-khèɛ-êe/* --> *á-khèɛ-èe* ~ *á-khêɛy* 'he peels (it)'
3-peel-DECL.

2.3.5 *para-stem sub-domain.* In addition to viewing the para-stem as a phonological domain, there may be justification for positing a para-stem-internal sub-domain. Certain morphs exhibit a curious correlation between tone, syllable closure, morphophonological (non)interaction with the DECLARATIVE /ee/, and (even though this is not strictly speaking a phonological characteristic) co-occurrence restriction.

To wit, the underlyingly low tone open syllables of the PERFECT */tàa/*, EPISTEMIC */nàa/*, NEGATIVE */pòo/*, and PLURAL /ùu/ interact phonologically with the DECLARATIVE */êe/* and are morphologically not dependent upon the presence of the NEGATIVE /hĭiq/. In contrast, the particle-like morphs */láay/*, */béq/*, */tàq-béq/*, and */béq-séq/* are all closed syllables, have underlying high tones, do not interact with /ee/, and are morphologically dependent upon the presence of */hĭiq/* (section *{5}* will consider the significance of these correlations)[16]. It is as if the presence of /hiq/ "creates" a coherent sub-domain within the para-stem.

Does the purported existence of these separate "domains"--i.e. morphotactically-organized clusters of phonological patterns--argue for or against viewing the morphs within as dependent or independent? In other words, do the co-verb and para-stem domains correspond to morphosyntactic word/phrase domains? Since construction-specific morphophonology is more likely to be observed between dependent items than independent items, the domain-phenomena described above can be considered evidence that the post-verbal morphs are more akin to prototypically dependent morphs than independent morphs.

2.3.6 *inter-domain pauses*. This is not a criterion mentioned in Zwicky (1985), but given the intuitive correlation between morphosyntactic word-hood and phonological word-hood, even a brief pause should not be judged acceptable between a dependent morph and its host/stem, while such pauses may be relatively more natural between independent words, especially if there is a way for the speaker to construe the prosodic phrasing of the utterance with a boundary between the words.

In KT the co-verb and para-stem are normally and preferably uttered as a single prosodic phrase, with no intervening pauses. However, this unitary phrasing may not be obligatory across the board. There is some evidence that pauses between para-stem and co-verb are not as unnatural as pauses within these domains. This evidence comes from elicitation of relative "naturalness" judgments, which reveal that not all post-verbal pauses are equally unnatural. Pairs of utterances--contrasting only with respect to where a post-verbal pause was located--were the tokens in this paradigm, and the speaker was instructed to decide if she would be more likely to hear or produce one of the tokens than the other[17].

Relative naturalness judgments were clearest when contrasting co-verb stem or para-stem internal pauses with a pause *between* the co-verb and para-stem. Within the para-stem, only the naturalness of pauses between para-stem morphs and the DECLARATIVE /ee/ were investigated in this paradigm. A summary of results is schematized below. Since the pauses are in all cases judged less natural than the absence of a pause, one should conclude that these findings only weakly indicate morphosyntactic independence of the para-stem.

ROOT (-) CO-VERB (-) CO-VERB (+) PARA-STEM MORPH (-) DECLARATIVE

2.4 SUMMARY OF ARGUMENTS FOR (IN)DEPENDENCE. In sum, the criteria for distinguishing independent words from dependent forms (affixes and clitics) indicate that both co-verb stem morphs and para-stem morphs are dependent. These arguments are re-enumerated below:

I. ARGUMENTS FOR DEPENDENCE

1. *binding*: almost all post-verbal morphs cannot occur in isolation
2. *ordering*: scopal in co-verb; para-stem mostly templatic
3. *distribution*: most *morphemes* (form - function pairings) only occur post-verbally
4. *syntactic deletion*: failure for some para-stem morphs to delete under identity in conjunction
5. *movement and replacement*: no syntactic processes observed
6. *phonological domains*: irregular morphophonological processes in the para-stem domain, the possibility of a sub-domain in the para-stem, and irregular boundary rules between co-verb and para-stem.

II. ARGUMENTS FOR INDEPENDENCE

1. *binding*: one post-verbal morph also occurs in isolation
2. *distribution*: several *forms* and arguably one morpheme also occur post-nominally
3. *complexity*: two morphs are semantically complex (to some extent).

Arguments (1) and (2) for independence are not very compelling, because most of the para-stem forms with complex distributions have somewhat different functions outside of post-verbal position; thus most post-verbal *morphemes* have simplex distributions. Furthermore, argument (3) for independence applies to only two morphs and in any case is not a knockout argument because of partial opacity of the components.

In contrast, the arguments for analyzing post-verbal morphs as dependent are more numerous and carry greater weight. Hence I will proceed with the understanding that the morphs in question are dependent morphemes. Yet we should not accept the concept of *dependence* uncritically, since later we will consider how meaningful this concept is when certain factors have been involved in the grammaticalization of the system. Next consider the status of the dependent post-verbal morphs:

3. MORPHOLOGICAL STATUS: AFFIX-LIKE OR CLITIC-LIKE?

Inflectional affixes and clitics[18], both "dependent" forms, have a number of attributes in common, which allows for them to be distinguished from independent words. Attempts can also be made to distinguish between affixes and clitics. Zwicky & Pullum (1983) offer several tests for this purpose: selection, arbitrary gaps, morpho-phonological idiosyncrasies, semantic idiosyncrasies, and syntactic interaction. Again, these "tests" represent prototypical attributes of category members; they do not represent necessary or sufficient conditions. One should not view all dependent morphs as belonging to either one category or the other.

3.1 SELECTION. Clitics have a low degree of selection with respect to their hosts: they attach to words of multiple categories. In contrast, affixes have higher degrees of selection with respect to their stems. Inflectional affixes combine with stems of particular lexical categories, and derivational affixes are even more selective, usually occurring with only some sub-classes of verbs.

Kuki Thaadow co-verb stem morphs are highly selective, like derivational affixes. For example, the valence-altering morphs like the CAUSATIVE, APPLICATIVE, and RECIPROCAL require verbs with certain participant-role frames. Many aspectual morphs in the co-verb require non-stative or motion verbs.

In comparison, para-stem morphs are less selective than co-verb morphs: they can occur with a wider range of verb roots than many co-verbs. This lower selectivity is prototypical of inflectional affixes: there is only one category of independent word to which the para-stem morphemes attach. Clitics, on the other hand, would be expected to combine with a number of different lexical categories.[19]

3.2 ARBITRARY GAPS. The existence of arbitrary gaps in logically possible stem/host-affix/clitic combinations is more characteristic of affixed words than of clitics. Here "arbitrary" means that there can be no reasonable semantic explanation for the gap.

The concepts of "STEM" and "HOST" depend upon concepts of "AFFIX" and "CLITIC," which play different roles in various contested models of linguistic structure. This contestedness makes the *arbitrary gaps* criterion difficult to evaluate definitively. For now, I will consider two very different understandings of *stem* and *host*:

1. *derivational stem/host*: the collection of morphs to which an affix/clitic "attaches" at some stage in the process of derivation, which begins with a root and cyclically concatenates "items" to the root in a temporal order matching the linear "surface" order of the forms.

2. *constructional stem/host*: all morphs co-occurring in a given utterance with an affix/clitic.

What distinguishes these conceptions is that the notion of a *derivational* stem/host relies upon a view of morphology as the sequential application of either rules (process morphology) or concatenation of morphs (item-based morphology). An arbitrary gap in the distribution of an affix/clitic must follow from the presence or absence of *derivationally prior* items or rules, i.e. the components of the stem/host present before the unsuccessful addition of the morph resulting in a gap. In these models, the norm is to assume that linear "surface" order mirrors the sequential order of morphological operations. Given this assumption, arbitrary gaps in the KT post-verbal morphology must follow from the presence or absence of a *preceding* morph.

One modification of the normal derivational view--though still in the derivational spirit--is to abandon the assumption that derivational order matches surface order. So doing, derivational order becomes difficult to infer and sometimes indeterminate. Indeterminate derivational order is only problematic if affixation and cliticization are assumed to be derivational in nature, and if one is committed to describing linguistic structure derivationally.

In the constructional view, there is not *necessarily* a sequential process in which an affix/clitic is attached to a stem/host[20]. The *constructional stem/host* is merely all of the forms co-occurring with the clitic. Arbitrary gaps can arise from the presence or absence of any item, whether the item precedes or follows the clitic in linear temporal order.

Keeping both conceptions of *stem*/*host* in mind, lets consider what sorts of arbitrary gaps are observed in Kuki Thaadow. "Arbitrary gap" is read loosely here, to include patterns where some morph does not normally occur where expected. These arbitrary patterns can be classified into several types: intra-positional (simple) blocking (i.e. position classes), inter-positional (mass) blocking, potentiation, and multipositionality.

	CO-VERB STEM	PARA-STEM							DISC. MARKER
		p1	***p2***	***p3***	***p4***	***p5***	***p6***	***p7***	
R O O T	CAUS. APPL. RECIP. ASPECT ADV.	DUAL /hlon/	PERF. /taa/ EPIST. /naa/	NEG. /hiq/ /poo/ EMP. /bow/	ASP. /beq/ /laay/ MOD. /taq-beq/ /beq-seq/	(DUAL) /hlon/	(EPIST.) /naa/	PL. /uu/	DECL. /ee/ IMPER. /in/

3.2.1 *position classes (intra-positional blocking).* There is some evidence that in one case, three para-stem morphs comprise a "class" by virtue of occupying the same position (*p3*) and being mutually exclusive, for apparently arbitrary reasons. These morphemes are the NEGATIVE /hiq/, NEGATIVE /poo/, and EMPHATIC FOCUS marker /bow/. It is not clear whether the failure of the morphs to co-occur is entirely arbitrary or is due to semantic blocking. For example, two of the morphs expone negation[13], so semantic blocking due to redundancy is a likely explanation for the pattern. Yet the blocking between the emphatic focus marker and the other two morphs is less clearly semantic in nature. Moreover, these morphs exhibit indistinguishable syntagmatic relations to the other para-stem morphs.

There is also suggestive evidence for another position class (*p2*) involving the PERFECT /taa/ and the EPISTEMIC /naa/[21]. The argument for this analysis comes from the observation that the two morphs cannot co-occur adjacently (26a), even though semantically they do not seem particularly incompatible. This arbitrary mutual exclusivity is characteristic of a position class. An alternative position for /naa/ (*p6*) is potentiated by the negatives /hiq/ and /poo/ (26b-c).

(26) a. * *a-nuuy-hlon-ta-naay-ee*
3-laugh-DUAL-PERF-EPIST-DECL.

b. *a-nuuy-hlon-hiq-naay-ee* 'they (two) do not laugh, certainly'
3-laugh-DUAL-NEG-EPIST-DECL.

c. *a-nuuy-hlon-na-hiq-ee* *idem.*
3-laugh-DUAL-EPIST-NEG-DECL.

What makes this argument even more compelling is that EPISTEMIC /naa/ can in fact co-occur with PERFECT /taa/ when the NEGATIVES /hiq/ or /poo/ occur (27a-b). One might suspect that semantic scope is responsible for this situation, but scope turns out not to be involved (c.f. section 3.4).

(27) a. *a-nuuy-hlon-ta-po-naay-ee* 'they (two) no longer laugh, certainly'
3-laugh-DUAL-PERF-NEG-EPIST-DECL.

b. *a-nuuy-hlon-ta-hiq-naay-ee* *idem.*
3-laugh-DUAL-PERF-NEG-EPIST-DECL.

In both views of *stem*/*host*, the mutual exclusivity of these position classes is responsible for arbitrary gaps. For example, EMPHATIC FOCUS /bow/ is "arbitrarily" prevented from occurring

because the NEGATIVE /hiq/ has already been "added" to the host in the process of derivation. Likewise, addition of the EPISTEMIC /naa/ in (*p2*) is arbitrarily blocked by the prior addition of PERFECT /taa/ to the host. The arbitrary gaps characteristic of position classes argue for considering these morphs inflectional affixes, rather than clitics.

3.2.2 *potentiation of multipositionality (inter-positional un-blocking)*. The NEGATIVE MODALITY and ASPECT markers (*p4*) can only occur when the NEGATIVE /hiq/ is used[22], shown in (28). Recall that /hiq/ also makes possible the multipositional distributions of /hlon/ and /naa/, cf. (2).

(28) a. *a-nee-hiq-laay-ee* 'he does not eat yet'
3-eat-NEG-MID-DECL.

b. *a-nee-hiq-beq-ee* 'he does not eat at all'
3-eat-NEG-ALL-DECL.

c. *a-nee-hiq-beq-seq-ee* 'he absolutely does not eat'
3-eat-NEG-ALL-ONLY-DECL

d. *a-nee-hiq-taq-beq-ee* 'he really does not eat'
3-eat-NEG-HARD-ALL-DECL

The NEGATIVE /hiq/ in position class (*p3*) can be viewed as the source of potentiation of subsequent positions. The flip side of this view is that /hiq/ "un-blocks" positions which are otherwise blocked. Yet there is no single position or simple generalization that can describe an original "blocker", and thus the potentiation analysis seems more straightforward[23].

As might be expected, the situation is somewhat more complicated than presented in the preceding paragraph; the multipositional distributions of the DUAL and EPISTEMIC are not potentiated by exactly the same factors and conditions:

EPISTEMIC /naa/: *simplex potentiating factor*. This morph is always preferred in its potentiated position--when that position has been made available through potentiation, of course. Furthermore, not only does the NEGATIVE /hiq/ serve as a potentiator, but the NEGATIVE /poo/ does so as well[24].

DUAL /hlon/: *complex potentiating factors*. This morph is only felicitous in its potentiated position when PERFECT /taa/ does not occur in (*p2*). Only /hiq/ serves as its potentiator. Furthermore, /hlon/ is preferred in its potentiated position only when certain morphs occur in (*p4*). This pattern of relative grammaticality judgments is represented in the table below. Since gradient judgments are notoriously hard to measure and unreliable with only one subject, a three-level grammaticality scale has been employed in the present investigation. These levels can be thought of as normal, relatively less normal but still felicitous (-), and categorically not grammatical (*).

p1	*p2*	*p3*	*p4*	*p5*	*p6*
DUAL1	**PERF/ EPIST**	**NEG/ FOC**	**PRT**	**DUAL2**	**EPIST**
hlon	naa				
hlon	taa	*x*	*x*	*	*
hlon		poo		*	naa
hlon		hiq		(-hlon)	naa
hlon		hiq	laay	(-hlon)	naa
hlon		hiq	laay beq	(-hlon)	naa
(-hlon)		hiq	beq	hlon	naa
(-hlon)		hiq	taq-beq	hlon	naa
(-hlon)		hiq	beq-seq	hlon	naa

What is unexpected is that the (*p4*) morphs following /hiq/ influence the felicity of the DUAL in its alternative position. Without any of the (*p4*) morphs present, or with /laay/ present, the DUAL is judged less felicitous in the potentiated position than in its default position. In contrast, with the NEGATIVE MODALS following /hiq/, /hlon/ is *preferred* in (*p5*) and dispreferred in (*p1*)--unless the PERFECT /taa/ is present.

The presence of the PERFECT forces the DUAL to occur in its default position, effectively "blocking" the potentiated position. The shaded cells represent the claim that (*p5*) is potentiated by /hiq/. There are thus several curious differences between the potentiation of /naa/ and /hlon/:

	EPISTEMIC *naa*	DUAL *hlon*
1. potentiators:	{/hiq/, /poo/}	{/hiq/}
2. interaction w/particles:	none--(*p6*) always preferred	PRTs. condition grammaticality
3. interaction w/PERFECT:	mutually exclusive in (*p2*)	must precede /taa/
4. interaction directionality:	preceding morphs	preceding morphs

The most suggestive observation about the morphotactic behaviors of /hlon/ and /naa/ is found in their co-occurrence patterns. These are represented in the table below. Intriguingly, if /naa/ occurs in its default slot (*p2*), then /hlon/ must also occur in its default position (*p1*). This means that the EPISTEMIC /naa/, when occurring in (*p2*), behaves just like the PERFECT /taa/ in requiring DUAL /hlon/ to precede itself, providing further motivation for grouping them in a position class.

p1	*p2*	*p3*	*p5*	*p6*
DUAL1	**PERF/ EPIST**	**NEG**	**DUAL2**	**EPIST**
+ hlon		hiq		
		hiq	- hlon	
+ hlon		hiq		naa
		hiq	- hlon	naa
+ hlon	naa	hiq		
	naa	hiq	* hlon	

What these potentiation and blocking patterns have in common is that they appear semantically arbitrary, and thus constitute arbitrary gaps in the combinations of morphs. Again,

one might question whether the gaps in the distribution of the EPISTEMIC are truly arbitrary or have some semantic motivation, for example a scopal interaction between the EPISTEMIC, PERFECT, and the NEGATIVES. Section *{3.4}* takes up this issue, arguing that a scopal interaction cannot be an explanatory factor in the synchronic system. Note that a scopal explanation cannot account for the multipositionality of the DUAL.

3.2.3 *directionality of conditioning factors*. The arbitrary morphological gaps observed in the para-stem morphology are characteristic of affixes, rather than clitics. Zwicky & Pullum (1983) write of English clitics that there are "no cases where a PARTICULAR host word fails to combine with one of the three simple clitics...never the case that some single expected host-clitic combination fails to occur."

However, the derivational and constructional construals of *stem/host* are not equally suited to accounting for the arbitrary morphological gaps in this case. In Kuki Thaadow, the *stem/host* is much more morphologically complex than in English. From a derivational perspective, and with the assumption that linear order from the root mirrors derivational order, some arbitrary gaps are not predictable from the host. For example, consider a derivational view of the following utterance, with numbers corresponding to successive stages of concatenation or rule application:

(29) a. [[[[[[*a*-[*nuuy*]]-*saq*]-*hiq*]-*beq*]-*hlon*]-*ee*] 'they (two) do not make (him) laugh at all'
2 1 3 4 5 6 7

The derivational view encounters a problem: why would the DUAL /hlon/ not have been added between step-*3* and step-*4*? After step-*3*, the "host" does not include any of the morphemes that are relevant to predicting which position the DUAL occurs in. How would the derivational mechanism "know" that the PERFECT /taa/ would not be added, which would have required the dual to occur here? And how would this mechanism know that the NEGATIVE /hiq/ and one of its particles /beq/ will be added in step-*4* and step-*5*, which the felicity of the potentiated DUAL depends upon? A similar issue arises in the derivation of the EPISTEMIC /naa/.

There are two solutions to this problem in derivational approaches. One can propose a semantic featural look-ahead component in the derivational mechanism. Alternatively, one can abandon the assumption that linear order mirrors derivational order. In both solutions, the predictive capacity and conceptual simplicity of the derivational approach is weakened.

In the constructional view, the *stem/host* is merely all co-occurring morphs. Knowledge of the stem/host can unproblematically be used to predict the distribution of the multipositional morphs. It should be noted here that the non-derivational view does not imply ahierarchical structure: hierarchical relations can still exist independently of sequential operations to derive them.

Thus we have seen that there is something unusual about some of the arbitrary gaps in the para-stem: these gaps depend upon following morphs, which, assuming root-proximity is derivational-precedence, is unexpected. Section *{5}* offers a hypothesis to account for the apparent bi-directionality of morphotactic interactions in the para-stem. Note that this bi-directionality itself does not necessarily argue for either clitic or affixal analysis of the morphs in question.

3.3 MORPHO-PHONOLOGICAL IDIOSYNCRASIES. Morphologically conditioned phonology is more characteristic of affixes than of clitic groups. Analogous to their lower degree of selection, clitics tend to phonologically interact only weakly with hosts. Zwicky & Pullum

(1983) state that *normally* there are "no cases where some particular host-clitic combination shows an unexpected phonological form" (505). Clitics and affixes alike can have allomorphs determined by the phonological and morphological attributes of their hosts/stems. In contrast, only affixes tend to affect stems; clitics do not tend to affect hosts.

Thus, the only strong indicator of a phonological distinction between clitics and inflectional affixes is whether they trigger morphophonology in their hosts/stems. Hosts/stems can trigger alternations in their respective clitics/affixes, so this cannot distinguish between the two classes.

Once again, these conclusions are intimately involved with a derivational conceptualization of morphology. So, if there are multiple clitics or affixes in a word, then the derivational host/stem is the collection of morphs present "before" the "addition" of the morph in question, and linear surface order of morphemes reflects the order of their derivation. This means that for morpho-phonological purposes, host-alternations are strong evidence of affixation. In contrast, in the constructional view of *host*/*stem*, any alternation might be suggestive of affixation, but one cannot distinguish whether an alternation results from the effect of a stem/host upon an affix/clitic, or vice versa.

3.3.1 *dependent morphs triggering allomorphy in stem/host*. There is a clear case of suppletive root allomorphy observed between certain co-verb morphs and the root. Almost all verb roots have two formally distinct suppletive allomorphs. In many cases the difference between the allomorphs involves a coda consonant alternation, and/or vowel shortening, and/or a change in the tone of the root (30). In a few cases, there is no formal difference whatsoever (31).

(30).

kàp$_1$, *kàa*$_2$	'to cry'
núuy$_1$, *nùy*$_2$	'to laugh'
tsôom$_1$, *tsòp*$_2$	'to jump'
nêe$_1$, *nêq*$_2$	'to eat'
pèt$_1$, *pèe*$_2$	'to bite'
hlùu$_1$, *hlûq*$_2$	'to fall'
vòo$_1$, *vòq*$_2$	'to hit, beat'

(31).

nàm$_1$, *nàm*$_2$	'to kiss'
dàp$_1$, *dàp*$_2$	'to be cold'

The distribution of these two allomorphs, which have been called *stem1* and *stem2*, is determined by morphological, syntactic, and discourse factors[25] (note that these root allomorphs can function as "stems," but they are by no means the maximal realization of the verb stem). Examples of all three co-verbs that trigger root allomorphy are provided in (32) below. Furthermore, observe that the allomorphy can be non-local (33), i.e. can occur when a co-verb morph that does not trigger allomorphy intervenes between the root and stem2-requiring co-verb morph. The fact that certain co-verbs trigger root allomorphy argues for analyzing them as affixes, rather than clitics.

(32) a. *ka-kaa*$_2$*-saq-ee* 'I make (him) cry'
1-cry-CAUS-DECL

b. *ka-kaa*$_2$*-peq-ee* 'I cry for (him)'
1-cry-APPL-DECL

c. *ka-kaa$_2$-bɛɛ-ee* ‘I cry again and again’
1-cry-ITER-DECL

(33) a. *ka-kaa$_2$-khom-saq-uv-ee* ‘We make them cry together’
1-cry-together-CAUS-PL-DECL

b. *ka-kaa$_2$-khom-peq-uv-ee* ‘We cry for them together’
1-cry-together-APPL-PL-DECL

c. *ka-kaa$_2$-doq-bɛɛ-ee* ‘I cry out again and again’
1-cry-OUT-CAUS-DECL

3.3.2 *vowel shortening*. The morpho-phonology of vowel shortening exhibits several idiosyncrasies. Vowel shortening applies to verb roots and co-verb morphs when followed by a co-verb morph (34a-b), or by some para-stem morphs (34c-e). The PLURAL /uu/ and DECLARATIVE /ee/ are exceptions, failing to trigger vowel shortening in the stem/host (33a),(35a-c). This alternation is not observed between major lexical categories (N and V), just like contour anticipation and glide epenthesis (cf. section 2.3), and thus operates in the lexical domain.

(34) a. *na-ne-khaa-ee* ‘you never eat’
2-eat-ITER-DECL.

b. *na-ne-kha-khom-uv-ee* ‘you never eat together’
2-eat-ITER-together-PL-DECL

c. *na-ne-hlon-ee* ‘you (two) eat’
2-eat-DUAL-DECL.

d. *na-ne-bɛ-hlon-ee* ‘you (two) eat again and again
2-eat-ITER-DUAL-DECL

(35) a. *na-nee-ee* ‘you eat’
2-eat-DECL

b. *na-nee-uv-ee* ‘you all eat’
2-eat-PL-DECL

c. *na-ne-khaa-uv-ee* ‘you all never eat’
2-eat-ITER-PL-DECL.

One idiosyncrasy observed with the vowel shortening alternation is the failure of some low tone verbs--but not all of them--to undergo vowel shortening in the appropriate contexts (36). A more curious morphophonological idiosyncrasy is the application of vowel shortening to para-stem morphs when followed by the PLURAL /uu/, which remarkably does not trigger vowel shortening on a preceding co-verb morph or verb root (37). Also, before the DECLARATIVE /ee/, the long vowel of the PLURAL shortens and a fricative is epenthesized (37); this does not happen when a phrasal boundary follows the PLURAL, and does not happen to any other /uu/ nuclei (38).

(36) a. *a-doo-zing-ee* ‘he often holds (it)’
3-hold-HABIT-DECL

b. *a-nuu-hlon-ee* ‘they (two) rub (it)’
3-rub-DUAL-DECL

(37) a. *na-ne-hiq-lay-uv-ee* ‘you all do not yet eat’
2-eat-NEG-MID-PL-DECL

b. *na-ne-ta-uv-ee* ‘you all already ate’
2-eat-PERFECT-PL-DECL

c. *na-ne-na-uv-ee* ‘you all eat, certainly’
2-eat-EPIST-PL-DECL.

(38) a. *na-neq-uu-a-hii* ‘it is that you eat’
2-eat-PL-3-COPULA

b. *a-guu-ee* ‘he steals (it)’
3-steal-DECL

In sum, morpho-phonological idiosyncrasies argue for treating post-verbal morphs as affixes, rather than clitics, because they trigger changes in preceding stem/hosts, and because there are seemingly arbitrary exceptions to these processes. As Zwicky (1985) writes: “morphophonological processes like ablaut, umlaut, consonant changes, reduplication, accent shifts, and tone alterations are common as the phonological exponents of inflectional or derivational formations in morphology...parallel phenomena involving clitics or independent words are at least very rare, if not unexampled” (300).

3.4 SEMANTIC IDIOSYNCRASIES. Semantically idiosyncratic combinations of clitics + hosts are unexpected. Non-compositionality is more characteristic of affixed words than of clitic groups. Examination of the semantic functions of combinations of para-stem morphs has revealed a couple of idiosyncrasies, which argues for analyzing them as affixes.

3.4.1 *co-verb stem idiosyncrasy.* One clear example of semantic idiosyncrasy-- which should perhaps be called “lexicalization”--is observed with the co-verb morph /doq/, which can express either DIRECTION or ACCOMPLISHMENT/ABILITY. Compare (39a-b) with (39c-d); in the first two examples the semantic contribution of the morph is directional (UP or OUT), while in the latter two its contribution is a more lexicalized notion of ability or accomplishment. This sort of semantic bleaching of a directional concept is expected from a derivational affix.

(39) a. *a-loong-doq-ee* ‘it flows out’
3-flow-OUT-DECL

b. *ka-ham-doq-ee* ‘I scoop up’
1-grab-UP-DECL

c. *ka-kap-doq-ee* ‘I am able to cry’
1-cry-ABILITY-DECL

d. *ka-zaam-doq-ee* ‘I escape’
1-flee-ACCOMPL.-DECL

3.4.2 *para-stem non-compositionality*. Most of the semantic functions associated with para-stem morphs are not expected to interact scopally with each other. For example, the NUMBER marking morphemes, DUAL /hlon/ and PLURAL /uu/ are not expected to interact with the TENSE/ASPECT, NEGATION, and MODALITY functions, simply because the semantic function of NUMBER marking is naturally orthogonal to these functions. Likewise, the EMPHATIC FOCUS marker /bow/ marks clausal/propositional focus and thus is not modified by other semantic functions in the para-stem or co-verb morphology.

There are several morphemes whose semantic scopal interactions are logically possible, but which nonetheless do not interact in this way. The potentially interacting morphemes are the PERFECT[26] /taa/, the NEGATIVEs /hiq/ and /poo/, and the EPISTEMIC /naa/. For example, consider the reading of the combination of the PERFECT and NEGATIVE.

The normal interpretation of this utterance is shown in (40a), where the NEGATIVE does not have scope over the PERFECT, nor does the PERFECT have scope over the NEGATIVE; rather, the interpretation appears to be non-compositional: the speaker reports that this utterance is equivalent to the same utterance in which the NEGATIVEs /hiq/ or /poo/ are absent (41)[27]. What the utterance in (40) cannot mean is (40b), where the NEGATIVE has scope over the PERFECT.

This pattern is unexpected because of its non-compositionality: the presence of the NEGATIVE /hiq/ does not actually expone NEGATION in this case. The same pattern holds for the NEGATIVE /poo/. The import of this is that the potentiation of a position for the EPISTEMIC /naa/ by the NEGATIVE /hiq/ cannot be seen as a semantic-scopal enabling--at least in the synchronic system; rather, the potentiation is entirely an arbitrary morphological pattern.

(40) *à-née-tàa-hĭ̈q-êe* a. ‘he no longer eats’ = same as (26)
3-eat-PERF-NEG-DECL. [PERFECT *eat*]

b. * ‘he did not already eat’
[NEG [PERFECT *eat*]]

(41) *à-née-táay-èe* ‘he already ate’
3-eat-PERF-DECL

For a second example of non-scopal interaction, consider the utterances in (42) below, where the EPISTEMIC /naa/ occurs before and after the NEGATIVE /hiq/. Recall that (42a) is dispreferred relative to (42b), yet still acceptable. (42a) is judged to have the exact same meaning as the preferred order in (42b). Here there is no scopal consequence to changing the order of EPISTEMIC and NEGATIVE, the EPISTEMIC always has scope over the entire clause/proposition.

(42) a. *à-née-naa-hĭ̈q-êe* ‘he certainly does not eat’
3-eat-EPIST-NEG-DECL [EPIST [NEG *eat*]]

b. *à-née-hĭ̈q-naa-êe* idem.
3-eat-NEG-EPIST-DECL

For a third example of semantic idiosyncrasy in the para-stem, consider the morphs that are dependent upon the presence of the NEGATIVE /hiq/, e.g. /laay/ 'yet'. The post-nominal force of this form is approximately 'amid'. If the linear order of the post-verbal morphs is assumed to reflect derivational order and semantic scope, the utterance in (43) should have the interpretation in (43a), rather than the actual interpretation in (43b).

(43) *à-née-hïq-laay-êe*
3-eat-NEG-MID-DECL.

a. * 'he is in the middle of not eating'
[MIDLE [NEG *eat*]]

b. 'he is not in the middle of eating' ~ 'he does not yet eat'
[NEG [MIDDLE *eat*]]

The absence of scopal interactions to some extent argues for treating the para-stem morphs as affixes rather than clitics, and the non-compositionality observed between the PERFECT and NEGATIVES is an even stronger argument. Prototypical clitics are much more semantically well-behaved than this.

3.5 SYNTATIC RESTRICTION OF PARA-STEM MORPHS. In contrast to the preceding criteria, this criterion argues for viewing para-stem morphs as clitics. The distribution of para-stem morphs is restricted in certain syntactic contexts; these morphs do not fall under the scope of a number of syntactic rules. Such syntactic restriction is common for clitics, and not typical of affixes.

Zwicky argues that syntactic rules can affect affixed words, but cannot affect clitic groups[28]: "there exist no syntactic operations that treat a word combined with one of its clitics as unit" (1983). This assertion is a consequence of viewing cliticization as a "post-syntactic" operation. It assumes that there are such things as syntactic "operations" that "transform" an underlying structure into a surface structure.

In contrast, it is equally valid to posit the existence of distinct syntactic constructions whose patterns merely appear to derive from a single "deep structure". For example, the relative order of verb and argument in a relative clause can differ from basic word order. This can be viewed either as the result of a transformation from a basic declarative utterance to a relative clause, or as two co-existing constructions, a basic-declarative construction and relative clause construction. In either case, one would not expect verbal affixation to differ substantially between the two constructions.

In Kuki Thaadow, the set of available para-stem morphs is generally the same across BASIC DECLARATIVE, IMPERATIVE, and BASIC INTERROGATIVE contexts. For example, the NEGATIVE /hiq/, EPISTEMIC /naa/, and DUAL /hlon/ can occur in all three of these contexts[29] (44a-c). It is interesting to note that the INTERROGATIVE marker /am/ requires the stem2 form of the verb root and that glottal stop insertion appear to apply between this marker and the EPISTEMIC /naa/ and PERFECT /taa/, which suggests that /am/ is morphosyntactically different than the DECLARATIVE /ee/. The set of co-verb morphs is also nearly identical across these contexts.

(44) a. *kà-hláy$_1$-hïq-hlón-náay-èe* 'we (two) do not run, certainly'
1-run-NEG-DUAL-EPIST-DECL

b. *hláy$_1$-hĭq-hlón-nàa-ên!* ‘(you two) run, really!’
run-NEG-DUAL-EPIST-IMPER.

c. *ná-hlày$_2$-hĭq-hlón-nàq-âm?* ‘you (two) dont run, certainly?’
2-run-NEG-DUAL-EPIST-INTERR.

Now, consider the post-verbal morphology in a functionally different type of question, which I will refer to as an EVENT-GIVEN INTERROGATIVE. This construction is used when the speaker assumes that some event is occurring, and interrogates the addressee as to exactly what that event is. Contrasts between BASIC and EVENT-GIVEN INTERROGATIVES are shown below in (45).

(45) a. *na-neq-ham?* ‘are you eating?’ (I can see youre doing something)
2-eat-EVENT.INTERR

b. *na-neq-am?* ‘do you eat?’
2-eat-INTERR

c. *na-nuy-ham?* ‘are you laughing?’ (as someone suggested)
2-laugh-EVENT.INTERR

d. *na-nuy-am?* ‘do you laugh?’
2-laugh-INTERR

What is surprising and intriguing about the EVENT-GIVEN INTERROGATIVE construction is that many of the para-stem morphs available in the more basic contexts are not available in this construction. In fact, the only morphs that are available are the DUAL /hlon/ and PLURAL /uu/. Furthermore, a different NEGATIVE morph--/low/--is used, and this morph occurs in the same position relative to the DUAL, PLURAL, and the NEGATIVE-dependent morphs /laay/ and /beq/, which are not always dependent in this context.

The absence in this syntactic context of para-stem morphs like the PERFECT /taa/, EPISTEMIC /naa/, and NEGATIVEs /hiq/ and /poo/ argues for analyzing them as clitics. Indeed, there are several other syntactic contexts that exhibit the same restrictions: adverbial clauses, complement clauses, and a clausal focus construction involving a form of the copula /hii/. Subject/object clefts, relative clauses, and participial clauses restrict para-stem morphology even further, allowing only the NEGATIVE /low/ and the morphs /laay/ and /beq/. These distributions are shown in the table below. It almost goes without saying that co-verb morphs are generally fully available across these syntactic contexts.

DISTRIBUTION OF POST-VERBAL MORPHOLOGY BY SYNTACTIC CONTEXT		basic decl. VP	imper.	am?	ham?	clefts / relative clauses	partic. clause	adverb. clause	compl. clause	clausal focus
ROOT				STEM2	STEM2			STEM2	STEM2	STEM2
CO-VERB		FULL	FULL	FULL	FULL	FULL	FULL	FULL	FULL	FULL
para-stem	DUAL **hlon**	hlon	hlon	hlon	hlon	*	*	hlon	hlon	hlon
	PERF **taa**	taa	taa	taq	*	*	*	*	*	*
	EMPH. FOC. **bow**	bow	*	*	*	*	*	*	*	*
	NEG. **poo**	poo	*	*	*	*	*	*	*	*
	NEG. **hiq**	hiq	hiq	hiq	*	*	*	*	*	*
	EPIST. **naa**	naa	naa	naq	*	*	*	*	*	*
	PLURAL **uu**	uu	uu	uu	uu	*	*	uu	uu	uu
	NEG. **low**	*	*	*	low	low	low	low	low	low
	ASP. PET **taq**	*	*	*	pet (taq)	*	*	*	*	pet taq
	ASP. **laay taq**	*	*	*	laay (taq)	*	*	*	*	laay taq
	FUTURE/IRR. **ding**	*	*	*	ding	*	*	*	*	ding

These data suggest that para-stem morphs should all be analyzed as enclitics. The transformational reasoning behind this is as follows: in contrast to co-verbs morphs, para-stem morphs are unavailable in clefts or relative clauses, which are formed by syntactic operations on a verb (i.e. V'). Since co-verb morphs can occur with a verb in these contexts, these morphs must be subconstituents of V'. Conversely, since para-stem morphs cannot occur in these contexts, they must not be subconstituents of V'. Since they are bound/dependent, the para-stem morphs must be clitics[30].

This reasoning cannot apply to EVENT-INTERROGATIVES, adverbial clauses, complement clauses, and clausal focus constructions, since the DUAL and PLURAL are available in those cases. This is problematic because there is apparently no good reason why the other para-stem morphs are unavailable in these contexts. Note that there is a suggestive formal similarity between the NEGATIVE /hiq/, the glottal fricative [h] in /ham/, and the COPULA /hii/, which plays a role in some of these constructions. Section *{5}* will make use of this similarity to advance an hypothesis to explain these distributions.

3.6 SUMMARY OF ARGUMENTS FOR AFFIX VS. CLITIC STATUS. In sum, the criteria for distinguishing between affix- and clitic-hood of co-verb morphs are in agreement: co-verb morphs are clearly affixes. They are highly selective, some exhibit idiosyncratic semantics, some interact morphophonologically with the verb root, and together with the verb root these morphs appear to form a phonological domain as well as a unit for syntactic operations/constructions. However, the criteria are in conflict when considering para-stem morphs:

I. ARGUMENTS FOR PARA-STEM MORPHS AS AFFIXES

1. *arbitrary gaps*: complex and semantically unmotivated morphotactics of para-stem morphology, including position classes, potentiation, and multipositionality
2. *morpho-phonological interactions*: verb root allomorphy, morphologically conditioned stem/host vowel shortening, and morpheme-specific phonology (i.e. PLURAL and DUAL).
3. *semantic idiosyncrasies*: non-compositionality of PERFECT /taa/ + NEGATIVE /hiq/, ascopality of NEGATIVE /hiq/ + ASPECTUAL /laay/, and failure for alternative orders of EPISTEMIC and NEGATIVE to exhibit scopal differences.

II. ARGUMENTS FOR PARA-STEM MORPHS AS CLITICS

1. *syntactic restrictions*: para-stem morphs are unavailable in certain syntactic contexts.
2. *selection*: some para-stem morphs are less selective (assuming their functions with non-verbal hosts are identical).
3. *phonological domains*: co-verb stem and para-stem appear to constitute distinct phonological domains (c.f. 2.3)

While the post-verbal morphology is clearly dependent, the status of para-stem morphs as affixes or clitics is less clear. The criteria disagree, with semantic and morphological criteria pointing toward the affix analysis, syntactic criteria pointing toward the clitic analysis, and morpho-phonological criteria pointing in both directions. It should not be surprising that these criteria disagree; Zwicky himself notes that the criteria are not definitional, but rather prototypical: "as in medical diagnosis, interfering factors can prevent even clear cases from exhibiting a certain symptom, and a particular symptom might result from some condition other than the one at issue" (1985).

In other words, the morphological categories of AFFIX, CLITIC, and INDEPENDENT WORD are not classical categories; they are cognitively more realistic categories which show degrees of membership and prototype effects. That is, the "symptoms"/criteria which Zwicky provides are not definitional, but constitute aspects of a prototype, and only some of these aspects might be exhibited by any member of the category.

Kuki Thaadow is thus a language in which the prototypical structure of the categories AFFIX and CLITIC is highly evident, due to the fact that the para-stem morphs do not exhibit all the prototypical aspects of one or the other category.

Given that these categories cannot be straightforwardly applied to the para-stem morphology, one might wonder (a) whether the categories are useful analytically for KT, and (b) why the morphology does not readily align with them. The following section considers how clitics, affixes, and independent words fit into traditional models of grammaticalization. Section *{5}* will argue that the clitic/affix distinction does not map well onto the para-stem morphology because the distinction is only sensible in a simplified model of grammaticalization which is inappropriate for understanding Kuki Thaadow.

4. THE FRAME OF GRAMMATICALIZATION, MORPHOSYNTACTIC STATUS, AND RELEVANCE

4.1 TERMINOLOGICAL ISSUES. The concept of "dependence"--or, "non-independence"--which was employed in the preceding sections, is far from a theoretical primitive. Basically speaking, this notion applies to the relationship between two forms, one of which is normally a verb or noun root, and the other of which is a less lexical, more grammatical morph. Seldom do any two authors employ exactly the same notion of "dependence," which may to greater or lesser extent involve semantic, morphosyntactic, and phonological aspects of the relationship.

Much research and theorizing on the process of "grammaticalization" normally highlights semantic change. This is so despite the fact that most authors point to morphosyntactic and phonological changes as prototypical concomitants of semantic process. A hodgepodge of diverse terms are used to describe these various dimensions of change.

For example, Heine and Kuteva refer to "*decategorialization*--loss in morphosyntactic properties characteristic of lexical or other less grammaticalized forms, and *erosion* (or 'phonetic reduction')--loss in phonetic substance" (2002, italics added), as mechanisms interrelated to the semantic changes.

Hopper and Traugott state that most linguists would agree upon a "cline of grammaticality" which "has as its leftmost component a lexical, or content, item and moves through stages of being more syntactic (grammatical word, clitic) and finally morphological (inflectional affix)" (1993). Clitics are "constrained to occurring next to an autonomous word, known as the host"; inflectional affixes are "always dependent and bound; that is to say, inflections by definition are always part of another word"; the cline moves from "freer to more bonded constructions".

Bybee et. al. (1994) distinguish between dependence and "fusion," effectually differentiating between affixation and cliticization:

> "Along with reduction in phonetic bulk comes a loss of autonomy and growing dependence on surrounding phonetic material. We distinguish between the general loss of autonomy, which we call dependence, and the actual fusion of the gram with the verb, which we call fusion. The reason for making this distinction is that some grams, because of their syntagmatic position or their low relevance to the verb, or both, become dependent on surrounding material but do not ever affix to the verb" (1994: 110).

Notice that Bybee et. al. identify two factors potentially responsible failure of some morph to become an affix: [1] low relevance; [2] syntagmatic position.

It should be clear that there are a number of ways of talking about the process of grammaticalization, and there are a number of ways of talking about the things that undergo this process. What I will argue in the next section is that all of this discourse on grammaticalization shares a common frame, i.e. a collection of metaphors and image-schematic structure[31], which constitutes a conceptualization of grammaticalization. What "grammaticalization" means, and how we reason about grammaticalization, are reflected in the language we use to talk about this phenomenon.

4.2 THE FRAME OF MORPHOSYNTACTIC GRAMMATICALIZATION. "binding," "bound," "bond," "fusion," "part of a word," "erosion," "loss," "attraction," "phonetic bulk," "autonomy," "freedom," "surrounding material"--these words exemplify some of the metaphoric and image schematic mappings that have been used to conceptualize various aspects of grammaticalization. All of them are derived from the following frame of the morphosyntactic dimension of

grammaticalization. Section *{4.2.1}* will extend this frame to semantic and phonological dimensions of grammaticalization.

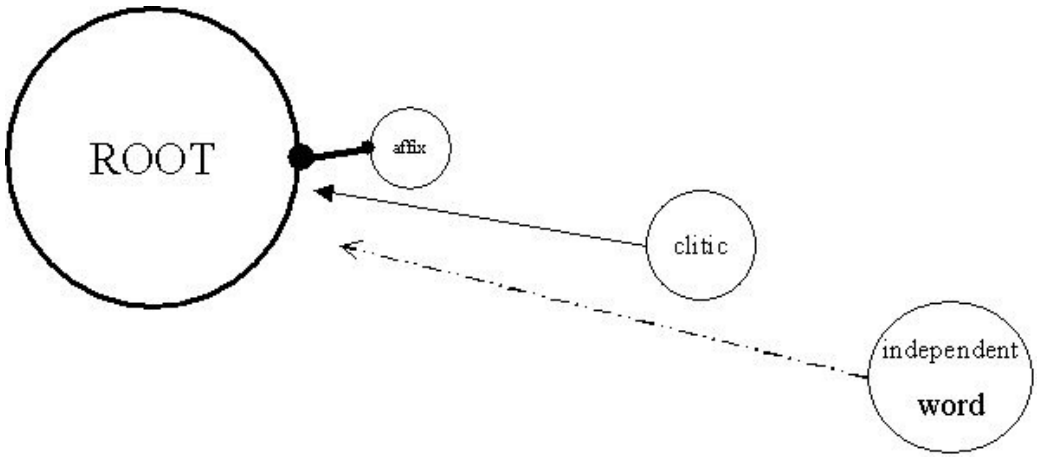
I. THE FRAME OF (MORPHOSYNTACTIC) GRAMMATICALIZATION:
1. morphemes are PHYSICAL OBJECTS
    a. lexical roots are OBJECTS
    b. affixes, clitics, and independent words (morphs) are OBJECTS
2. OBJECTS can exert ATTRACTIVE FORCES on other OBJECTS
    a. lexical root-OBJECTS exert an ATTRACTIVE FORCE on morph-OBJECTS
    b. degree of dependence/bondedness is STRENGTH of ATTRACTIVE FORCE
    c. an independent object experiences a relatively WEAK FORCE
    d. a dependent object experiences a relatively STRONG FORCE
3. MORE MASSIVE/CLOSER OBJECTS exert STRONGER ATTRACTIVE FORCES
    a. lexical roots are MASSIVE OBJECTS
    b. morphs are LESS MASSIVE OBJECTS
    c. strength of attraction is SPATIAL PROXIMITY
4. relative temporal relations are RELATIVE SPATIAL RELATIONS
    a. relative proximity in utterance-time is RELATIVE SPATIAL PROXIMITY
    b. change in relative spatial proximity is MOTION
5. words are CONSTRUCTED OBJECTS or CONTAINERS
    a. grammaticalization is root-ward MOTION caused by ATTRACTIVE FORCE
    b. binding/fusion is the RESULT of a PROCESS OF CONSTRUCTING, OR PUTTING IN A CONTAINER

What this frame structure provides is a model for understanding not only the terminology used to discuss morphosyntactic grammaticalization, but the actual application of the concept and reasoning by means of the concept. I will not here defend the usefulness of frame and image-schematic analysis, tools which are well-established in cognitive linguistics (Lakoff 1987, Talmy 1988, Langacker 2002). I do not claim that the aspects of the frame listed above exhaustively describe the concept of morphosyntactic grammaticalization, but I do contend that they are well motivated.

(1) is relatively obvious, as are the entailments (1a) and (1b), because most of the language used to talk about linguistic "form" involves metaphoric mappings from concrete, physical source domains. Even though this metaphor seems trivial, it is fundamental to the following aspects of the frame.

(2) provides the central image-schema of the frame. This image schema is a generalization over some members of the class of force-dynamic image schemas described in Talmy (1988)[32], albeit with different terminology. Entailment (2a) is the normal instantiation of the roles inherent in this force dynamic schema: a lexical root plays the role of ATTRACTOR, and morphs/grams play the roles of ATTRACTED entities. Entailments (2b-c) follow intuitively from force-dynamic inferences.

(3) may be less central, or less necessary, to understanding grammaticalization, but it allows for a more natural grounding to the image schematic interpretation: physical forces such as gravity and electromagnetism are sometimes used to construe the concept[33]; the use of language involving bonding and attraction is evidence of this. Aspects (1)-(3) and their entailments provide the basis for the simple but useful image schema depicted below, which represents the independence of a morph by its size, and represents the strength and direction of experienced forces by thickness and direction of arrows.



(4) provides crucial connections between the image schema and real time, which applies on three scales: utterance-time, synchronic time, and diachronic time. Since grammaticalization is a "process"--i.e. involves change in time--understanding the temporal dynamics of the image schema *is* conceptualizing grammaticalization. By (4a), morphs which in temporal order are "closer" to the verb root in any given utterance can be conceptualized as "closer" in space to the verb root. This spatial proximity most basically applies to any given utterance. Each of these utterances is really independent, but due to the pervasive metonymy in which a language abstracts or generalizes over a collection of utterances, spatial proximity can be extended to apply to an implied average relative proximity in a single dimension. One more inferential step in (4b) allows change in "proximity" over historical time scales to be conceptualized as motion, which is the expected result when an unopposed attractive force is exerted upon some object.

(5) offers an image-schema friendly way of conceptualizing grammaticalization as motion, and the relation between words and non-words. "Construction" in this context could mean any of several more concrete interpretations: contacting, connecting, conglomerating, co-locating, collecting, etc. The point is that whatever group of morphemes is treated as a "word" can be visualized in such a way that those morphemes enter into some image-schematic relation which either differentiates between word-internal and word-external or between being part of a word and not being part of a word.

4.2.1 *Extension of the frame to semantic and phonological dimensions of grammaticalization*. Aspects (1)-(5) provide most of the conceptual structure necessary to understand the morphosyntactic consequences of grammaticalization. But where are semantic structure and semantic change in this frame? Where are phonetic/phonological form and phonetic/phonological change? Just a moment of consideration should lead one to the conclusion that the "structures" and "changes" in both of these dimensions are conceptualized with frames that are very similar to the one described above.

To wit, semantic "features" are objects and their "bleaching" is loss of mass construed metonymically as loss of color. Degree of "relevance" corresponds to strength of attractive force. Likewise, phonetic form is mass which through "reduction" becomes less massive, and morphophonological "interaction" is construed as physical or force interchanges between two bodies. Undoubtedly there are some differences in semantic, morphosyntactic, and phonetic frames of grammaticalization, and these differences deserve greater treatment in subsequent work.

4.2.2 *Other extensions to the frame.* There are additional aspects one might find it necessary to include in the morphosyntactic frame. For example, one might make explicit some generic "periphrastic" force that opposes grammaticalization, i.e. an antagonist to the attractive force. This is useful to account for the fact that often morphosyntactic status can be very stable over long periods of time--independent words often remain independent (frequency may play a role here).

On the other hand, some metaphors may not be appropriate in the schema. For example, note that the frame employs no hierarchical "inverted tree" metaphor, in which morphemes correspond to ends of branches, combination of morphemes is coming together of branches, and the "lowest" branch is the "root"--such image schematic structure produces many inferences which do not gel with those of the force dynamic schema of grammaticalization.

Indeed, one of the major reasons that synchronic and diachronic linguistics have failed to be theoretically integrated in a unified model is that inferences from BRANCH image schemas conflict with inferences from ATTRACTOR image schemas.

4.3 SEMANTIC RELEVANCE AS AN ATTRACTIVE FORCE IN THE FRAME OF GRAMMATICALIZATION. This simplified model of grammaticalization--which is an *understanding* of grammaticalization--is problematic because it does not offer an explanation for why there should be cases like Kuki Thaadow, in which the morphosyntactic status of some morphs is neither clearly affixal nor clearly clitic-like. That is, this model does not help us understand why there are arbitrary gaps and semantic idiosyncrasies (affix-like properties) in a group of morphs which are syntactically restricted and which constitute a separate phonological domain from the co-verb morphs.

There is another way in which this simplified frame is deficient: the frame does not tell us what the *underlying cause* of the attractive force is; it only stipulates the existence of the force as exerted upon some morph by a root morph. Consequently, we have no way of predicting *how "close"* any particular morph will be to the root relative to other morphs. Thus, we need a way of conceptualizing this force that allows us to predict the relative spatial (temporal) location of various dependent morphs. It turns out that there already exists a domain of terminology for talking about one highly significant dimension of force: *semantic relevance*.

The *relevance principle* (Bybee 1985), although put forth as a synchronic generalization about the relation between the semantic function of a morph and its morpho-phonological fusion with a stem, can be used to make predictions about relative ordering of morphs; these predictions follow from the model of grammaticalization outlined above.

The principle itself appears to be merely an observation about a synchronic correlation: "the degree of morpho-phonological fusion of an affix correlates with the degree of semantic relevance of the affix to the stem," where "relevance" is defined as "the extent to which the meaning of the affix directly affects the meaning of the stem" (1985: 4), and "a meaning element is relevant to another meaning element if the semantic content of the first directly affects or modifies the semantic content of the second" (1985: 13). Although no explicit mention of a diachronic motivation for this principle is made in the above formulation, the notion of "degree of fusion" is normally understood image-schematically, as outlined in the frame of morphosyntactic grammaticalization.

Furthermore, the frame allows for the relevance principle to make predictions about the relative ordering of functional categories. The empirically observed relative ordering of fused categories shown below (from Bybee 1985) *is* a predicted ranking of semantic relevance:

ROOT - VALENCE - VOICE - ASPECT - TENSE - MOOD/MODALITY - AGREEMENT

Consider that the empirically observed order of dependent semantic functions is not equivalent to "degree of fusion". If the relevance principle were only a generalization about the relation between semantic relevance and synchronically construed fusion, then there would be no basis for making a prediction about relative order.

On the contrary, it is precisely because of the frame that fusion/dependence implies "proximity" and that proximity is understood as the result of root-ward "motion" on a diachronic time-scale. Hence the connection between degree of fusion and linear order can be made. Bybee herself is aware of this diachronic facet of the relevance principle:

> "the mode of expression of inflectional categories -- whether they are suffixes or prefixes, what order the affixes occur in, and so forth -- can to some extent be seen as a result of the sources from which they develop diachronically. A major source of inflectional markers is full lexical items, which reduce both semantically and phonologically into inflections" (1985: 8)

> "the meaning and the ordering of affixes is not freely decided by each generation of speakers, so any proposed explanation must be an explanation of the creation of affixes and their particular order. The relevance principle applies here because it also applies to elements before they are bound, and while they are still movable in the clause. So the more a concept has to do with the content of the verb, the closer it will occur to the verb stem. Thus when these elements become bound to the verb stem, their order will be the same" (1985: 211)

4.4 RELEVANCE PRINCIPLE ORDER PREDICTIONS IN KUKI THAADOW. Can the relative order predictions of the relevance principle be applied to the post-verbal morphology of Kuki Thaadow? Bybee is careful to state that predictions of order apply to affixal forms and not necessarily clitics--this is the reason she distinguishes between *fusion* and *general dependence*. The KT para-stem morphs were shown in section *{3}* to be neither prototypically affixal nor clitic-like. Should predictions about affix ordering be applied to these morphs? For the sake of argument, let us temporarily pretend that the morphs are sufficiently fused to fall under the scope of relevance principle predictions.

4.4.1 *confounds to the relevance principle*. There are a number of reasons why relevance principle ordering predictions might not be applicable between two particular morphemes in a given language:

[1] *non-templatic ordering*. If affix ordering is non-templatic--i.e. non-morphological factors determine ordering--then the predictions are not applicable. For example, if semantic scope or phonological constraints influence relative affix order, then we should not compare the orders to those predicted by the relevance principle. Also, free affix ordering, which is extremely rare but attested by Bickel (in press), does not lend itself to comparison with relevance principle predictions. Ultimately, only templatic systems can be evaluated along these lines.

[2] *position classes:* if two or more morphs inhabit an internally mutually exclusive position in the template, then clearly the relative order of their semantic functions cannot be evaluated. In KT, the NEGATIVES /hiq/ and /poo/ and EMPHATIC FOCUS /bow/ constitute a position class, and thus the relative order of their semantic exponents is undefined. More intriguingly, the PERFECT /taa/ and EPISTEMIC /naa/ appear to constitute a position class in the absence of the NEGATIVE /hiq/--in the presence of /hiq/, however, the EPISTEMIC /naa/ is preferred in a distinct position, and can co-occur with PERFECT /taa/. It seems that in this case the relative order of the PERFECT and EPISTEMIC should be amenable to comparison with relevance principle predictions.

[3] *portmanteaus*: a morpheme which expones multiple functions obviously cannot be evaluated with respect to the relative order of those functions. This does not mean that the functions cannot be evaluated with respect to other functions associated with different morphs.

[4] *opposite sides:* if morphemes occur on opposite sides of a root, the relative order of their functions cannot be evaluated.

[5] *different epochs of grammaticalization:* though not explicitly mentioned by Bybee as a confound to the relevance principle, it seems reasonable to suppose that some counterexamples to the relevance principle ordering predictions follow from grammaticalization occurring in different epochs of time.

ROOT - VALENCE - VOICE - ASPECT - TENSE - MOOD/MODALITY - AGREEMENT

PREFIXES		CO-VERB STEM	PARA-STEM							DISC. MARKER
			p1	***p2***	***p3***	***p4***	***p5***	***p6***	***p7***	
SUBJ/OBJ. PERS., PAST, REFL/PASS	**R O O T**	CAUS. APPL. RECIP. ASPECT ADV.	DUAL /hlon/	PERF. /taa/ EPIST. /naa/	NEG. /hiq/ /poo/ EMP. /bow/	ASP. PRT. /beq/ /laay/ MOD. PRT. /taq-beq/ /beq-seq/	(DUAL) /hlon/	(EPIST.) /naa/	PL. /uu/	DECL. /ee/ IMPER. /in/

4.4.2 *Kuki Thaadow order vs. relevance principle predicted order.* The order of semantic functions in the post-verbal morphology exhibits some alignment with and some opposition to the predictions of the relevance principle.

On a global scale, the relative order of co-verb versus para-stem semantic functions is expected. The co-verb contains valence-altering morphs such as the CAUSATIVE /saq/, APPLICATIVE /peq/, and RECIPROCAL /tɔɔ/, and also a variety of aspectual morphs. These functions are expected to be more proximal to the root than para-stem functions of NUMBER agreement, TENSE, and MODALITY, because the latter less directly affect the meaning of the verb root.

On the more local scale of the para-stem, there are several morphs which occur in unexpected positions. First, the DUAL, which is number agreement[34], precedes TENSE/ASPECT and MODALITY when it occurs in (*p1*), and when it occurs in (*p5*) it normally precedes EPISTEMIC MODALITY. Second, some of the "particles" that must co-occur with the negative are aspectual in nature. These expressions of ASPECT are out of place with respect to TENSE, MODALITY, and POLARITY[35], all of which are less relevant to verb meaning.

It does not seem to be the case that any of the confounds listed in the preceding section can be definitively fingered as culprits for the failure of the relevance principle predictions to be borne out in Kuki Thaadow. The only confound that cannot be ruled out is the possibility that grammaticalization occurred in differential epochs. This may indeed be part of the story, but section *{5}* will suggest that there is an additional confound to relevance principle ordering predictions, and that this factor should be incorporated into a revised frame of grammaticalization.

4.5 WHAT THE FRAME OF GRAMMATICALIZATION FAILS TO ACCOUNT FOR IN KUKI THAADOW. To sum up the issues that have arisen in our analysis of Kuki Thaadow, the

following are findings which are neither predicted nor explainable using the traditional frame of morphosyntactic grammaticalization:

1. *ambiguous morphosyntactic status of para-stem morphs*: even though ambiguous status is not unheard of, it is important to understand that in this group of morphs the co-existence of arbitrary gaps, morphophonological idiosyncrasies, and semantic idiosyncrasies (affix-like qualities) with syntactically restricted distribution and separate phonological domains (clitic-like qualities), is mysterious given only the basic frame of grammaticalization.
2. *potentiation and blocking of multipositionality:* the frame cannot account for why DUAL /hlon/ and EPISTEMIC /naa/ can occur in two positions, nor why the occurrence of NEGATIVE /hiq/ appears to potentiate the alternative positions and why the PERFECT /taa/ blocks the potentiated position of the DUAL.
3. *order contradictory to relevance principle predictions:* assuming that the positions of the DUAL and the position of the ASPECTUAL morphs occurring with the NEGATIVE are not due to grammaticalization in different epochs, the frame offers no insight into why these functions are not ordered according to their verb root-relevance.

It is entirely possible to intuit that these three issues are interrelated, but not without using a more complicated model of grammaticalization to understand the relations. The next section will propose an explanation for these issues which involves an amendment to the frame described above.

5. REVISION TO THE FRAME OF GRAMMATICALIZATION: MULTIPLE ATTRACTORS

5.1 WHAT IS MISSING IN THE FRAME? Even though the basic frame allows for a tripartite distinction between semantic, morphosyntactic, and phonological attractive forces, there is no unstipulative reason for these forces not to be in harmony, since all three of them are exerted upon any given morph by the same root morph attractor. In other words, there is something unsatisfying about stipulating that the morphosyntactic, semantic, and phonological relations between some morph and a root are what they are in some synchronic state of a language because of how strong the root-ATTRACTOR forces in morphosyntactic, semantic, and phonological dimensions must have been in some prior state.

Recall that earlier the possibility of a "periphrastic" force was suggested, i.e. a general attractive force opposing the root attractor. This force might alternatively be conceptualized as a repulsive force between a morph/gram and a root attractor. Yet either way, this antagonistic force does not offer any non-stipulative account of why there would be differential strengths of semantic, morphosyntactic, and phonological periphrastic forces or repulsive forces. The reason why no such non-stipulative account exists is because all non-root morphs must be understood as uniform in the way they experience the attractive force of the root-attractor, due to of the ATTRACTOR / ATTRACTED ENTITY dichotomy. This follows because only the entailment (2a) was included as a consequence of (2), repeated below:

2. OBJECTS exert ATTRACTIVE FORCES on other OBJECTS
    a. lexical root-OBJECTS exert an ATTRACTIVE FORCE on morph/gram-OBJECTS

The use of only this entailment (2a) forces one to reason about grammaticalization in terms of a single attractor, the root-attractor. A seemingly simple but conceptually rich addition to the frame (2a*) opens the door for a more sophisticated understanding of grammaticalization, as well as a more descriptively powerful model:

2. OBJECTS exert ATTRACTIVE FORCES on other OBJECTS

a. lexical root-OBJECTS exert an ATTRACTIVE FORCE on morph/gram-OBJECTS

a*. non-root-OBJECTS exert ATTRACTIVE FORCES on other non-root-OBJECTS

It follows that every morph/gram exerts an attractive force on every other morph/gram. This seems to present an unnecessarily complicated model of grammaticalization, in which one should in principle consider the semantic, morphosyntactic, and phonetic/phonological forces between every morph in the system under investigation. Indeed, such an analysis would certainly be more realistic and accurate than any generalization could be, but that kind of analysis is unnecessary if one can identify one or several *non-root attractors* whose attractive forces significantly outweigh the attractive forces of other non-root morphs. In other words, one can usefully focus an analysis on NON-ROOT ATTRACTORS only when their forces substantially interfere with root-attractor forces.

5.2 DIACHRONIC HYPOTHESIS: A PRE-KT AUXILIARY VERB AS A NON-ROOT ATTRACTOR. In this section I will argue that historically one of the para-stem morphs was an auxiliary verb, and that this auxiliary, by virtue of hosting pre-KT bound inflections or unbound adverbial morphs, can explain many of the idiosyncrasies in the para-stem.

5.2.1 *historical sources of para-stem morphs*. Several para-stem morphs are clearly historically derived from verbs, since the language retains the same form in a fully lexical verb whose meaning is a plausible predecessor. In other cases the existence of a source verb in the modern language is more ambiguous, or no such source has been identified. The sources of the DUAL /hlon/, NEGATIVE /poo/, and NEGATIVE MODAL /taq/ are exemplified in (46a-c) below. The lexical verb */hlôn*$_1$, *hlòn*$_2$/ 'go together, match' only occurs with the REFLEXIVE/PASSIVE prefix /-ki-/. (46d) shows a possible source of the NEGATIVE ASPECTUAL morph /beq/, although this is more speculative than the other three, on account of formal differences.

(46) a. *a-ki-hlon-uv-ee* 'they match' */hlôn*$_1$*, hlòn*$_2$*/*
3-REFL-match-PL-DECL

b. *a-poo-ee* 'he fails' */pòo*$_1$*, pòo*$_2$*/*
3-fail-DECL

c. *a-taq-ee* 'it is hard/solid' */tâq*$_1$*, tàq*$_2$*/*
3-hard-DECL.

d. *a-bey-ee* 'it is used up' */béy*$_1$*, bèy*$_2$*/*
3-used.up-DECL

(47) shows post-nominal morphs that correspond to the NEGATIVE ASPECTUAL /laay/, the EMPHATIC FOCUS /bow/, and the NEGATIVE MODAL /seq/. These forms are probably not direct *sources* of the para-stem morphs, but rather are derived from common ancestors with the respective para-stem morphs. In the case of /laay/, there is a probable source nominal (47d).

(47) a. *zaan-laay* 'in the middle of the night'
night-AMID

d. *laay* 'belly button'
navel

b. *zoong-seq* 'only a monkey'
monkey-ALONE

c. *boong-bow* 'only a cow'
cow-ONLY

No reasonable sources of the PERFECT /taa/, the EPISTEMIC /naa/, or the PLURAL /uu/ have been identified .Whatever the sources may have been, they were probably verbal or adverbial at some prior stage in the history of the language. This assertion is based upon the observation that word order is S O V in Kuki Thaadow and related languages; in the past the same word order was probably also present. In addition, all co-verb morphs with identifiable sources are derived from verbs. These facts lead to the conclusion that most[36] post-verbal morphology comes from the grammaticalization of S O V V > S O V Aux/Adv > S O V clitic/affix.

One more para-stem morph remains to be considered, the NEGATIVE /hiq/, which is responsible for potentiating positions for the DUAL and EPISTEMIC. Based on similarity to the COPULA /hii/, we can speculate that /hiq/ developed from */hii/ + NEG. This grammaticalization is represented in (48). Some post-nominal morphs also appear to be grammaticalizations from the COPULA /hii/, e.g. the DEMONSTRATIVE /hii/ and DETERMINER /hi/. Although this speculation cannot be confirmed or disconfirmed, it provides the basis for a far-reaching explanation of para-stem idiosyncrasies, and thus deserves consideration for that reason alone.

(48) a. **hii-??* > */hiq/*
BE-NEG NEG

5.2.2 */hii/-NEG auxiliary hypothesis.* Taking for granted the proposed source of /hiq/ above, one can further speculate that pre-KT */hii-NEG/ functioned as an auxiliary verb. Prototypical auxiliary verbs are verbs that (a) occur in the same position as a main verb, and (b) "carry at least some of the inflectional information (subject/object "agreement" and tense/aspect/mode marking) normally associated with verbs" (Payne 1997).

The */hii/-NEG auxiliary would have occurred clause-finally (i.e. S O V Aux), but may or may not have been prototypical with respect to being inflected. It is difficult to determine whether the auxiliary would have been inflected, since one cannot know whether the forms which can occur after /hiq/ in modern KT, e.g. the DUAL, EPISTEMIC, and PLURAL, would have been verb-bound inflections or unbound adverbials in pre-KT. Regardless of their status as bound inflection or adverbials, the */hii/+NEG auxiliary offered them a morphological or syntactic structural position.

5.2.3 */*hii*-NEG/ AUXILIARY AS A NON-ROOT ATTRACTOR.* Another argument for considering pre-KT */hii/+NEG as an auxiliary is that this view can explain the morphotactic interactions between NEGATIVE /hiq/ and the other para-stem forms, especially the potentiation of positions for the DUAL and EPISTEMIC. The advantage of analyzing /hiq/ as the modern KT reflex of a pre-KT */hii/-NEG auxiliary is that this is consistent with conceptualizing the formation as an attractor, which in turn explains the diverse issues of para-stem morphology in the modern system.

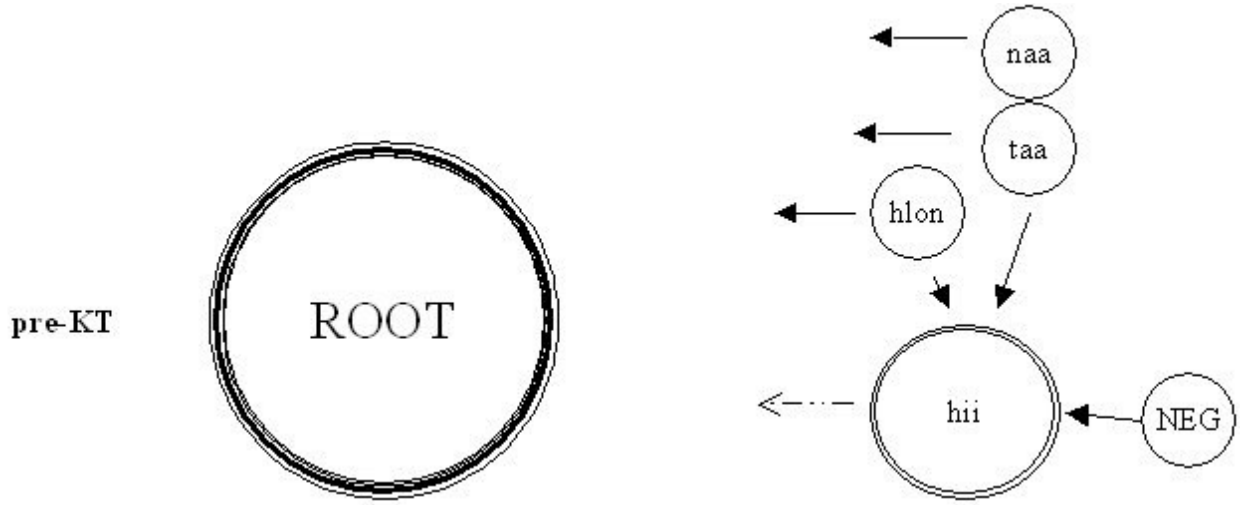
5.3 THE NON-ROOT ATTRACTOR MODEL CAN EXPLAIN PARA-STEM IDIOSYNCRASIES

5.3.1 *multipositionality and potentiation.* Recall that when NEGATIVE /hiq/ is present, the DUAL /hlon/ and EPISTEMIC /naa/ can occur in alternative positions, following /hiq/. For this reason, the NEGATIVE can be said to "potentiate" these positions, and this potentiation is responsible for what can be called the "multipositionality" of the DUAL and EPISTEMIC.

The diachronic explanation for this is that */hii/+NEG would have either been inflected for modality and number like a lexical verb, or would have structurally allowed for adverbials exponing these functions. The "inflection" might not have been the prototypical affixation, but must have been some form of dependence. What is crucial is that */hii/-NEG provided the structural potential for the *DUAL and *EPISTEMIC morphs/grams, whether they were more or less dependent in pre-KT.

Furthermore, as pre-KT */hii/+NEG grammaticalized with the verb root, this formation itself exerted attractive force upon the DUAL and EPISTEMIC. This explains why the DUAL and EPISTEMIC can occur in two positions only when /hiq/ is present. To visualize the grammaticalization of the system in the revised image schematic interpretation which allows for non-root attractors, consider the diagrams below:

D1: GRAMMATICALIZATION SCHEMATIC: PRE-KT

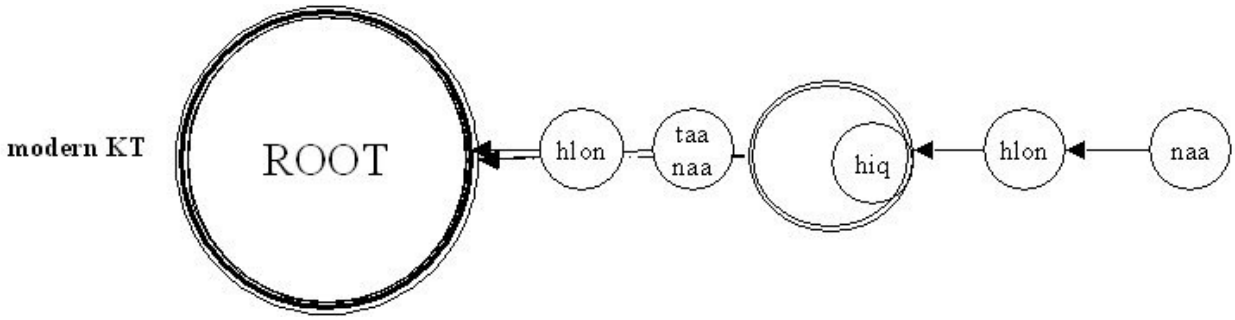


It is not possible to know with great detail what positional restrictions may have existed in pre-KT, and thus the spatial relations between the verb root, the /hii/+NEG formation, and other proto-morphs cannot be definitively represented in the image schema. For this reason the schema above depicts the */hii/+NEG formation and the other para-stem morphs in question as equidistant to the verb root. There is no reason to assume that there existed a fixed ordering between these morphs, which were likely to have been less dependent in pre-KT; conversely, there is no reason to assume that there were not some fixed or scopal ordering relations. This problem is not a failure with the image-schema, but rather a deficiency in the available data, which does not extend back into an historical scale. It is likely that comparative data can inform the picture.

What the diagram allows is a conceptualization of inter-morphemic relations in the course of grammaticalization. (D1) shows how the auxiliary-ATTRACTOR would have exerted an attractive force upon the DUAL, PERFECT, and EPISTEMIC, and how this force co-existed with a similar attractive forces exerted by the root-ATTRACTOR. Because there were two loci of attraction, the DUAL, PERFECT, and EPISTEMIC had the potential to "grammaticalize" with *both* the

root and the auxiliary. Here "grammaticalize" must be understood in frame terms, as the loss of independence due to attractive forces.

D2: GRAMMATICALIZATION SCHEMATIC: MODERN KT



The result of the co-existing forces in (D1) is the morphosyntactic fusion in (D2). As the auxiliary fused morphosyntactically, there remained two distinct spatial locations for both the DUAL /hlon/ and EPISTEMIC /naa/ morph-objects. The schematic (D2) is superficially counter-intuitive to the understanding of morphs as objects, since one object should not be in two places "simultaneously". One can easily get around this problem by employing distinct image-schemas for each grammaticalization. (D2) can thus be seen as a generalization over independent schematic representations.

5.3.2 *interaction between PERFECT and EPISTEMIC*. The non-root attractor model cannot explain or predict certain details of the modern system, yet the model offers a framework in which the patterns are comprehensible. For one, the model cannot explain why the PERFECT /taa/ and EPISTEMIC /naa/ formed a position class. It has been suggested (??) that prosodic/phonological factors are responsible for the development of position classes, and this might be the case here. The non-root attractor hypothesis also cannot offer an explanation for why the PERFECT failed to grammaticalize with the auxiliary.

The non-root attractor model does, however, offer a framework in which the failure for the PERFECT to grammaticalize with the auxiliary results from differential and opposing semantic, morphosyntactic, and phonological attractive forces. The model allows for conflicting attractive forces to be experienced by a given morph, since both the root-ATTRACTOR and non-root ATTRACTOR exert forces upon the morph.

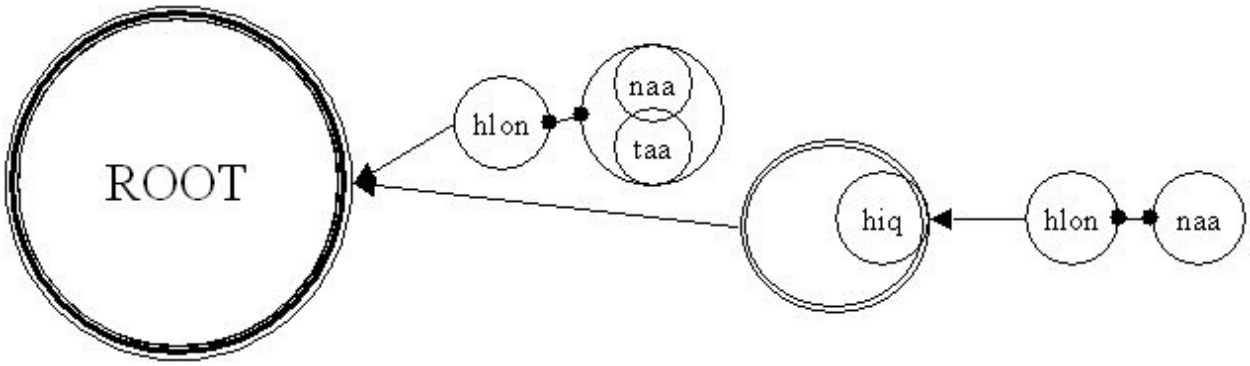
To wit, PERFECT TENSE/ASPECT is a more root-relevant semantic function than NUMBER agreement or MODALITY, and hence PERFECT /taa/ could have experienced a stronger attraction to the root than the other morphs. Even if all three experienced the same phonological attraction to the auxiliary-attractor, it would appear that the semantic difference resulted in morphosyntactic root-forces outweighing auxiliary-forces.

It is thus noteworthy that the non-root attractor model allows one to conceptualize the reason behind the differential morphotactic patterns of /naa/ and /taa/ as the result of historical processes. All things being equal, one would not expect the members of position class to exhibit the radically different morphotactics that are observed between the PERFECT and EPISTEMIC. Yet the existence of an auxiliary attractor allows for understanding how such a situation could develop.

5.3.3 *interaction between PERFECT/EPISTEMIC and DUAL.* Why does the presence of the PERFECT /taa/ require the DUAL /hlon/ to occur in (*p1*), even when the NEGATIVE /hiq/ potentiates the alternative position (*p5*) for the DUAL? Likewise, why does the occurrence of EPISTEMIC /naa/ in (*p2*) require (*p1*) DUAL, and why does the occurrence of the EPISTEMIC in (*p6*) favor (*p5*) occurrence of the DUAL in the absence of the PERFECT? (c.f. section *{3.2.2}*).

The answer to these questions can be found in another application of the idea of non-root attraction. Because any two morphs exert phonological and morphosyntactic forces upon each other, combinations of semantically non-interacting morphs in a morphological complex can form word-internal *sub-systems*, which are essentially mutually fused forms. If we conceptualize the morphotactic pattern as the morphosyntactic attraction/fusion of the DUAL with the EPISTEMIC and PERFECT, then the distributional restrictions fall out from the conceptualization. This is represented in (D3) below:

D3: GRAMMATICALIZATION SCHEMATIC: SUB-SYSTEMS



5.3.4 *other /hiq/-potentiated forms and DUAL /hlon/.* The modal and aspectual morphs that can only accompany the NEGATIVE /hiq/ in the para-stem are also good evidence for a */hii/+NEG auxiliary serving as a non-root attractor. These particles can be divided into two groups: [1] the simplex forms, which only occur post-verbally following /hiq/, and [2] the complex formations, which also occur in the co-verb.

[1] The formations /hiq-beq/ and /hiq-laay/, which are ASPECTUAL in function, probably derive from */hii/-NEG-/beq/ and */hii/-NEG-/laay/. Their dependence upon /hiq/ most likely means that they were attracted to the pre-KT auxiliary by virtue of their semantic involvement with NEGATION, which might also be seen as an attractive relation.

[2] The formations /hiq-taq-beq/ and /hiq-beq-seq/, which have MODAL functions, are interesting on two accounts: first, these formations are complex but not very transparent semantically; and second, the same formations without /hiq/ can occur in the co-verb, in which case they have scope over the verb event, with slightly different semantic forces (48). This pattern is not another instance of multipositionality enabled by the proto-auxiliary, because there are scopal differences between the positions. It is curious that only these two morphs can occur both in the co-verb stem and in para-stem (*p4*).[37]

(48) a. *a-pet-taqbeq-taay-ee* ‘he already truly bit it’ ≠ ‘he truly already bit’
3-bite-MOD-PERF-DECL

b. *a-pet-beqseq-taay-ee* ‘he already really bit it’ ≠ ‘he really already bit’
3-bite-MOD-PERF-DECL

These forms interact with the DUAL such that there exists gradience in the acceptability of the DUAL in (*p1*) and (*p5*), depending upon which of the above modal and aspectual morphs are present in (*p4*) (cf. section *{3.2.2}*).

The multiple attractor model offers a way of understanding how this complex, variable pattern might have arisen: phonological and morphosyntactic forces would have created biases for speakers to locate the DUAL in one position or the other, but they would not have necessarily led to categorical ungrammaticality in a position. In other words, the model allows for synchronic bistability in word-internal positioning of a morph because the forces exerted upon the morph in phonological, morphosyntactic, and semantic dimensions are not necessarily aligned.

5.3.5 *lack of multipositionality: /uu/, /bow/, and /poo/.* The morphemes /bow/ and /poo/ do not exhibit multipositionality because they constitute a position class with the NEGATIVE /hiq/. This suggests that historically, when the pre-KT ancestor of /hiq/ was an auxiliary, these morphs were incompatible with the auxiliary.

The fixed distribution of the plural is more difficult to account for. It is pertinent to note that post-nominally, the PLURAL and DUAL POSSESSOR markers occupy different positions, since the PLURAL nominal number marker /hɔɔ/ occurs on opposite sides of them (49). This might suggest that the plural is a more recent post-nominal and post-verbal grammaticalization. In that case, one must resort to differential epochs of grammaticalization to explain the fixed position of PLURAL /uu/: its fusion with the verb would have occurred too recently for it to have been differentially affected by root and auxiliary attraction.

(49) a. *na-uy-hɔɔ-uu* ‘your (pl.) dogs’
2POSS-dog-PL-PL.POSS

b. *a-uy-hlon-hɔɔ* ‘their (dual) dogs’
3POSS-dog-DUAL.POSS-PL

5.4 THE NON-ROOT ATTRACTOR ACCOUNTS FOR AMBIGUOUS MORPHOSYNTACTIC STATUS

There were several arguments for analyzing para-stem morphs as affixes rather than clitics. One of these was the existence of arbitrary gaps (potentiation, position classes) in the para-stem; the preceding discussion has shown how this situation might arisen from the presence of an auxiliary, modeled as a non-root attractor. The other two reasons for the affixal analysis were semantic non-compositionality, and idiosyncratic morphophonology.

Co-existing with these observations are patterns which suggest a conflicting analysis, in which the para-stem morphs are clitics. The DUAL /hlon/ in (*p1*) appears to mark a distinct phonological domain from the co-verb stem, and more importantly, the para-stem morphology is not available in a variety of syntactic contexts. In the following sections I will show that these apparently conflicting observations can be understood as the natural diachronic outcome of grammaticalization to separate attractors. One interesting consequence of this is that the model accounts for how morph with clitic-like properties can occur “inside of” morphs with affix-like properties.

5.4.1 *semantic non-compositionality.* The semantic opacity of the /hiq/-dependent morphemes (/laay/, /beq/, etc., c.f. *{3.4.2}*) is suggestive of affixation. These morphemes must be understood to have grammaticalized primarily under the influences of auxiliary-attractive forces. If this can be safely assumed, then the non-compositionality of these morphs is not anomalous

with respect to the clitic-like behavior of preceding morphs (i.e. DUAL, PERFECT, EPISTEMIC); that is, one should not necessarily be surprised if morphs preceding /hiq/ are clitic-like in some respects, because in pre-KT, these morphs would have been available in both a post-verbal position and a post-auxiliary position. These co-existing positions in pre-KT led to the situation in modern KT, in which material which is in some respects clitic-like occurs inside of affix-like material.

The semantic non-compositionality observed when the NEGATIVE /hiq/ occurs with the PERFECT /taa/ is more difficult to account for. However, the auxiliary hypothesis again offers a useful conceptualization. In pre-KT the verb and the AUX-NEG formation would have headed separate phrasal categories (i.e. VP vs. IP), in which case one might be less inclined to expect a scopal, compositional interaction between them: a constructional model might better describe their relation. Consider that under the right contextual conditions, the past completion implied by the PERFECT can be inferred from the literal meaning "is not (doing *x*)" of the AUX-NEG formation.

5.4.2 *para-stem sub-domain.* The non-root attractor hypothesis offers a basis for understanding why there appears to be a sub-domain within the para-stem phonological domain (cf. section *{2.3.5}*). It is possible that the negative ASPECTUAL /laay/ does not undergo vowel shortening before the PLURAL /uu/ like /naa/ and /taa/ merely because of its coda, and likewise, /hiq/ may not participate in contour anticipation because of its coda. However, another possibility is that these alternations fail to occur because /hiq/ and /laay/ were associated with a distinct phonological domain in pre-KT. This is consistent with the observation that there is a correlation between /hiq/-dependence, syllable-closure, tone, and morphophonological behavior. These observations can fall out naturally from conceptualizing the modern /hiq/-dependent forms as more dependent than the DUAL, PLURAL, AND EPISTEMIC in pre-KT--i.e. as subject to stronger attractive forces.

5.4.3 *syntactic restrictions.* The unavailability of para-stem morphology in certain syntactic contexts is suggestive of clitic-like behavior. What complicates the situation is that the DUAL /hlon/ and PLURAL /uu/ can occur in a variety of these contexts in which no other para-stem forms can. One stipulative explanation for this is that these occurrences are recent extensions. The fact that in two contexts--relative clauses and participial clauses--the DUAL and PLURAL are still restricted may speak to this explanation.

If the stipulation of recent extension is taken for granted, then the rest of the restrictions on para-stem morphology can be explained very sensibly: PERFECT and EPISTEMIC do not occur in these contexts because they were less dependent in pre-KT and thus not subject to syntactic operations on the verb. Likewise, the *AUX-NEG complex was independent from V and thus not subject to syntactic operations.

Hence the non-root attractor model aids in conceptualizing why there are restrictions on para-stem morphs in a variety of syntactic constructions. Furthermore, the model offers a schema for visualizing how this situation might have arisen. That is, how might a situation arise in which morphemes which are affix-like in their arbitrary gaps and semantic idiosyncrasies behave like they are not part of the verb-word in specialized syntactic constructions? The answer lies in the capacity of the attractor schema model to represent how the arbitrary gaps and idiosyncrasies would have arisen because of an auxiliary verb, a non-root attractor, which eventually fused with the verb. This fusion, of course, would only have occurred in syntactic contexts in which the auxiliary could have been present.

5.5 NON-ROOT ATTRACTION ACCOUNTS FOR TO RELEVANCE PRINCIPLE ORDERING CONTRADICTIONS. It not a trivial matter to explain how the auxiliary attractor hypothesis accounts for the apparent contradictions to the relevance principle. For example, take the position of the DUAL relative to the PERFECT or EPISTEMIC. The DUAL must always precede these morphs, which contradicts predictions made by the relevance principle, which holds that tense/aspect and modality should be closer to the verb root than number marking, on account of their higher relevance.

Recall that Bybee (1985) qualifies the predictions of the relevance principle by distinguishing between dependence and fusion, so as to exclude "cases in which some grams, because of their syntagmatic position or their low relevance to the verb, or both, become dependent on surrounding material but do not ever affix to the verb," even though she elsewhere states that the relevance principle should be expected to apply to independent grams as well:

> "The relevance principle applies here because it also applies to elements before they are bound, and while they are still movable in the clause. So the more a concept has to do with the content of the verb, the closer it will occur to the verb stem. Thus when these elements become bound to the verb stem, their order will be the same" (1985: 211)

It is odd and somewhat contradictory to contend that the ordering predictions of the relevance principle apply to affixes and to independent words, but not to dependent forms holding an intermediary position between these poles on a gradient of dependence. The reason these non-intuitive claims must be made in the first place lies in the traditional frame-based conception of grammaticalization in which the only force-exerting attractor is the lexical verb root. Such a conception cannot straightforwardly model the cases in which grams "become dependent on surrounding material".

The situation in Kuki Thaadow represents a case in which predictions of the relevance principle and determination of morphosyntactic status are confounded by the effects of a non-root attractor in the grammaticalization of the post-verbal morphology. This paper has traced out a way to conceptualize these effects within a revised understanding of grammaticalization. Non-root attractors can thus be considered another confound to the predictions of the relevance principle.

Exactly how the non-root attractor is responsible for the exceptions in this case is not possible to determine, but the story must go something like this: morphosyntactic and phonological forces exerted by the non-root attractor acted antagonistically to the root-ward forces exerted by the lexical verb root. These antagonistic forces were only exerted when the auxiliary was present, and thus in the course of fusion of the auxiliary-NEGATIVE complex with the verb, some morphs were "trapped" in locations in which their semantic functions were "out of place" with respect to the predictions of the relevance principle.

5.6 OTHER LANGUAGES WITH NON-ROOT ATTRACTORS. Although this paper has only considered evidence for one non-root attractor--an inflected auxiliary verb attractor in this case--in one language, the multiple attractor model can most likely be extended to other languages. This framework can be used to understand how other bizarre phenomena in templatic morphological systems arise from grammaticalization with multiple attractors. Potentially suitable cases include Hidatsa mood markers (discussed in Zwicky 1983), the potentiation of multipositionality of aspectual suffixes in Koasati by the presence of a fused auxiliary (observed in the Kimball 1991 grammar), mass blocking in Nimboran position classes (Inkelas 1993), inverted scope relations in Athabaskan (Rice 2000), and most likely many more.

6. Conclusion

Is morphosyntactic status or a cline of dependence meaningful in a multiple attractor model? Is the relevance principle relevant in such a model? I suggest that such concepts are not always descriptively useful. Prototypical morphosyntactic categories or a cline of dependence are not coherent analytic tools in certain circumstances. By taking a diachronic perspective upon relevance principle ordering predictions and upon categories such as "affix", "clitic", and "independent word" in Kuki Thaadow, this paper has shown how the presence of an auxiliary attractor should lead the analyst to expect that morphs will deviate substantially from the prototypes of the morphosyntactic categories, and to expect that the predictions of the relevance principle will be confounded. Furthermore, the cline of dependence that the traditional frame of grammaticalization employs to understand these deviations is subverted in languages in which there have been multiple loci of grammaticalization.

Are any categories useful for analyzing morphology? If there truly exist three dimensions of attractive force: semantic, morphosyntactic, and phonological, then the force-dynamic relations between any two forms should be independently describable in these three dimensions. In many languages the three dimensions are correlated, and there is no interference from other attractors. Yet this paper has argued that is not necessarily so when NON-ROOT ATTRACTORS are present. In that case, the commonsense understanding of morphosyntactic categories based upon prototypes is no longer applicable. The analyst cannot resort to categories; they must resort to describing multivalent interactions between multiple attractors and morphs in the three dimensions of semantics, morphosyntax, and phonology. Explicitly adding multiple attractors to our understanding of the historical processes that produce dependent morphology should enable us to do better comparative study and predictive modeling of language change.[38]

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[1] Kuki Thaadow (also, orthographically: Thado, Thadou, Kuki) is spoken in several states in eastern India (Manipur, Assam, Nagaland, Mizoram), and in Myanmar/Burma (Chin state and Sagaing Division). Kuki Thaadow (KT) comprises part of the Kuki-Chin-Naga subgroup of Kamarupan, a sub-branch of Tibeto-Burman. Kamarupan also includes Abor-Miri-Dafla and Bodo-Garo subgroups; the Kamarupan branch of proto-Tibeto-Burman is based more on geography than on comparative reconstruction (Matisoff 2003:8). Since there are very many languages in this area (~ several hundred), and since these languages have been in contact for a while, hierarchical models of genetic relatedness may be less applicable to the group. Kuki Thaadow has previously been described--albeit quite differently than here--by Krishnan (1980).

[2] Like other languages in the Tibeto-Burman branch of Sino-Tibetan, KT exhibits S O V word order in main clauses. With an oblique present, the preferred order is DO IO. KT has many of the patterns (1-5) correlated with OV languages (Greenberg, 1963):

(1) subject precedes object in declarative sentences
(2) postpositions
(3) possessors precede nouns (G-N)
(4) relative clauses precede nouns (except for internally-headed relative clauses)
(5) sentence-final question particles
*(6) modifiers precede head noun

One conspicuous exception (6) is that modifiers (i.e. adjectives, numerals) follow nominals in Kuki Thaadow; the expectation for OV languages is that modifiers precede nominals. This exception makes sense when one considers the lack of evidence for a lexical category of adjectives in KT. Most forms with adjectival semantics pattern in all ways like stative verbs. When used as nominal modifiers, these "adjectives" are comparable to participles. Given the OV syntax of the language and the absence of a basic adjective category, the noun-modifier order (i.e. noun--deverbal adjective order) does not seem so anomalous.

[3] This gloss of this combination differs from the gloss of (1a), but semantically the reading appears to be non-compositional and thus identical to (1a). The significance of this is discussed in section XX.

[4] Similarities between this use of "attractor" and the concept of an attractor in dynamic systems theory is not unintended; the root object is labeled as such because its location is the location of a point attractor for verb-dependent morphology on a diachronic time scale. In a sense, thinking of an object as an "attractor" is more intuitive than the also metaphoric use in the study of the behavior of dynamic systems, where location in space is a metaphor for the state of a system.

[5] Some post-verbal forms also appear bound post-nominally (cf. section 2.1.3 for examples), but the functions of the post-nominal forms are different enough from their post-verbal functions that they should be analyzed as distinct morphemes. Also, some of the post-verbal morphs are evidently derived historically from verb roots still in modern use. In these cases, the morphs are significantly bleached compared to their fully lexical counterparts: they are distinct morphemes. Hence, by the binding criterion, the post-verbal morphs are dependent.

[6] There do appear to be some templatic restrictions in the co-verb as well.

[7] "Dependent form" is more usefully conceptualized as a prototype.

[8] Or, "verb phrases," since the word-hood or phrase-hood of these formations cannot be assumed.

[9] Although the focus of this paper is verbal morphology, basic knowledge of the phonological system and tonological alternations will be useful to the reader. The IPA consonant system is present in Table A below. Note that (1) the coda consonant inventory is much more restricted than the onset inventory; (2) what was historically /k/ appears to have become /ʔ/ in coda position; (3) the labial and palatal glides can only occur in coda position; (4) the fricative system is asymmetric, lacking a voiceless labiodental fricative; (5) the voiced and aspirated velar onsets regularly spirantize. In the "orthography" column are several symbol substitutions that I will use for convenience. Table B shows the vowel system. Long and short phonemes exist for each vowel in the table.

Table A: ***Consonant inventory***	onsets			codas			orthography
voiceless unaspirated stops	*p*	*t*	*k*	*p*	*t*	*ʔ*	*ʔ = q*
voiceless aspirated stops	*pʰ*	*tʰ*	*kʰ ~ x*				*= ph, th, kh*
voiced stops	*b*	*d*	*g ~ ɤ*				
voiceless affricate		*ts*					
voiceless fricatives		*s ɬ*	*h*				*ɬ = hl*
voiced fricatives	*v*	*z*					
approximants		*l*		*w*	*l*	*y*	
nasals	*m*	*n*	*ŋ*	*m*	*n*	*ŋ*	*ŋ = ng*

Table B: ***Vowel system***	front	central	back
high	*i/ii*		*u/uu*
high-mid	*e/ee*		*o/oo*
low-mid	*ɛ/ɛɛ*		*ɔ/ɔɔ*
low		*a/aa*	

KT has three underlying tones: low /L/, falling /HL/, and high /H/ (1, 2), and on the surface there are six: [L], [HL], [H], [LH], and downstepped [ꜜHL] and [ꜜH]. The rising tone can occur when a /H/ tone syllable is uttered in isolation, because of an utterance-initial /L/ boundary tone (3a). If a high tone syllable is followed by another syllable, the rising tone is not realized due to a constraint against contour tones on non-final syllables (3b). The rising tone can also occur on an utterance-final (and non-initial) syllable via a low tone spreading (LTS) rule (4). In addition, LTS can be responsible for producing downstepped [ꜜHL] and [ꜜH]; the low tone in these cases can come either from a low tone (5) or falling tone (6). High tone spreading (HTS) applies to an underlying high tone followed by an underlying low tone (7).

(1). */kɛ̀ɛl/* /L/ 'goat'
/lôw/ /F/ 'field'
/zóong/ /H/ 'monkey'

(2).	*/gùup/*	/L/	'six'		
	/kôo/	/F/	'nine'		
	/ngáa/	/H/	'five'		
(3) a.	*/%L/ + /zóong/*		-->	*[zǒong]*	'monkeys'
b.	*/%L/ + /zóong/ + /kôo/*		-->	*[zóong kôo]*	'nine monkeys'
(4).	*/kèɛl/ + /ngáa/*		-->	*[kèɛl ngǎa]*	'five goats'
(5).	*/kèɛl/ + /zóong/ + /ngáa/*		-->	*[kèɛl ˈzóong ngáa]*	'a goat's five monkeys'
	/kèɛl/ + /kôo/		-->	*[kèɛl ˈkôo]*	'nine goats'
(6).	*/lôw/ + /zóong/ + /ngáa/*		-->	*[lów ˈzóong ngáa]*	'a field's five goats'
	/lôw/ + /kôo/		-->	*[lów ˈkôo]*	'nine fields'
(7).	*/zóong/ + /gùup/*		-->	*[zòong gûup]*	'six monkeys'

[10] Vowel shortening is also evidence for a lexical domain, but due to a greater degree of intra-domain irregularity in this process, discussion is reserved for section 3.x.x.
[11] There is at most one "jump" from L to H, or from H to L, such that there is only 1 H-tone peak in the tonal contour.
[12] This allomorphy is observed with the personal possessors of nominals, but in that context there are no past or reflexive morphs to complicate matters.
[13] The exceptions are probably due to semantic blocking.
[14] Actually, the future/irrealis /ding/, a para-stem morph which only occurs in certain contexts, also exhibits this irregular allomorphy. This supports the notion that para-stem belongs to a distinct phonological domain.
[15] Vowel shortening does not apply to verb roots but does apply to (some?) co-verbs. It thus may not be a good argument for independent para-stem and co-verb domains.
[16] The dual /hlon/ and emphatic focus /bow/ are the odd morphs out in these correlations: they do not participate in the morphophonological interactions with the declarative /ee/, and do not have glottal stop codas.
[17] The speaker would herself test out the pronunciation of each item. Even though the speaker understood the task demands, it was observed that she often had more difficulty producing some pauses than others. There may have been an interaction with tone in this task, in which case the results may be called into question.
[18] Zwicky (1977) distinguishes between three classes of clitics: simple clitics, special clitics, and bound words. In our case the post-verbal morphs whose statuses are ambiguous do not appear to be simple clitics (where an unaccented free morpheme is phonologically reduced and associated phonologically with a neighboring word) or special clitics (where an unaccented bound form is as a variant of a stressed free form with the same semantic function), since there are no corresponding full forms which occur in the same positions. Instead, these items, if not affixes, are "bound words" in the Zwicky (1977) subclassification--i.e. cases where a morpheme is always bound and always unaccented. Syntactic freedom among "bound words" is not as unusual.
[19] There does exist a construction in which para-stem morphs can occur with the copula, which appears to be functioning as a verb, i.e. the head of a clause, but this is not evidence of clitic-like selectivity. In a different construction, the clausal focus construction, in which the copula serves as an auxiliary verb or focus marker, most para-stem morphs are disallowed, while the number markers occur before the auxiliary.
[20] It is possible to view constructions as built up derivationally, but not necessary.
[21] This argument is made despite the fact that /naa/ is always preferred to occur after /hiq/, in (p6). The (p2) realization is not judged categorically ungrammatical like other atemplatic permutations of para-stem morphs (excepting the multipositional /hlon/).
[22] Curiously, the combinations of particles in (21c-d), i.e. /beq-seq/ and /taq-beq/, can also occur in the co-verb stem, in which case they have scope over only the verb event. These are not considered multipositional because of the scopal difference corresponding to the positional difference. It is possible to analyze the co-verb uses as the true first position of the para-stem. This is in line with the hypothesis that /hiq/ was historically an auxiliary verb.
[23] It is not clear whether these patterns should be considered potentiation or un-blocking, but it is also not clear that these two conceptualizations of the phenomenon are mutually exclusive. This question deserves further consideration in the multiple attractor model.

[24] The observation that /poo/ also potentiates epistemic /naa/ has been hard to reconcile with the treatment of /hiq/ in this paper. One possibility is that /poo/ was also an historical auxiliary on par with /hiq/. A different possibility is that the morphotactics of /poo/ have been analogized from those of /hiq/ by virtue of membership in the same position class.
[25] A full discussion of the syntactic and discourse factors is beyond the scope of this paper. It is sufficient to note that stem1 occurs in basic verb phrases, imperatives, open-proposition interrogatives, subject relatives, oblique relatives, and participial adjuncts, and that stem2 occur in event nominalizations, object relatives, clausal-focus constructions, adverbial clauses, (some) complement clauses, and close-proposition interrogatives.
[26] Although I have treated this form as simply a PERFECT marker, it may more appropriately be described as one of those TAM (tense/aspect/mood)-conflating forms that are not uncommon in languages, i.e. /taa/ is a so called "hypermorpheme" (Payne 1997:234).
[27] An alternative reading exists marginally (this has not been observed in spontaneous speech, only in directed elicitation), in which the PERFECT has scope over a NEGATION of the verb event. Because this reading controverts the expected scopal reading that mirrors order, it is not considered evidence of scopal activity.
[28] Here we are talking about *special clitics*: "clitics not partaking of the distribution of corresponding full forms," which function as constituents of S', rather than *simple clitics* (1983: 503): optional variants of full forms occur in the same positions as full forms. Note that the definition of "special clitics" in Zwicky and Pullum 1983 differs from that in Zwicky 1977.
[29] Albeit with some alteration in meaning, especially with the epistemic, in the imperative and interrogative contexts.
[30] An assumption behind this reasoning is that clitics can attach to material already containing clitics, but affixes cannot. In other words, affixes should not occur "outside" of clitics. This means that if any para-stem morph is analyzed as a clitic, subsequent morphs must also be analyzed as such, assuming that these forms are bound to preceding material.
[31] "Frame" here is used in the sense of Idealized Cognitive Model (Lakoff 1987), in that it is a collection of metaphoric and metonymic mappings, image schematic structures, and traditional propositional frames in the sense of Fillmore (1985).
[32] I avoid the terms agonist and antagonist, since this is precisely the misleading distinction responsible for the failure of concepts like 'clitic' and 'affix' to apply universally.
[33] Here I will note that in the future it may be found useful to conceptualize morphs in "orbitals" around a lexical root, in utterance, synchronic, and diachronic time.
[34] Actually, this is more accurately number "marking," than "agreement," since free deletion of the dual is possible if duality of the participant in question is contextually salient. Number marking should still be ordered after tense/aspect and modality functions because of lower relevance.
[35] Polarity is not mentioned in Bybee (1985), but one can safely assume that it is less relevant than aspect.
[36] The only problem with this assertion is the form /laay/, which clearly derives from a nominal. One might stipulate that this situation arose from an idiomatic copula-N construction, or through analogization from post-nominal use in relative/cleft clauses to basic verb phrases.
[37] This claim needs to be verified for the entire set of co-verb morphs, but most of the others have no been attested outside of the co-verb stem.

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