

Morphology is Syntax: A Syntactic Approach to Polysynthesis from the Perspective of Central Alaskan Yup'ik

1. Introduction

1.1 Background

Central Alaskan Yup'ik (CAY) is the mostly widely spoken native language of Alaska in terms of the number of speakers with roughly 10,000 speakers. It is one of the four Yupik languages (the others being Central Siberian Yupik, Naukan Yupik and Alutiiq). Together with the various Inuit languages, such as Inuktitut and Greenlandic, they form the Eskimo language family (Jacobson, 1995). The apostrophe is used in the spelling of Central Alaskan Yup'ik to denote it from Siberian Yupik but also to denote a long /p/.

1.2 Aims

Given the fact that CAY is a polysynthetic language, it is typically analysed in the framework of lexical morphology, and few syntactic operations are drawn upon. Influenced by the proposals of Distributed Morphology, my analysis for CAY will be quite novel, as it will treat bound morphemes in the same way as whole words in more analytical-type languages. If we adopt Baker's (1985) Mirror Principle (expressed in (1) below), we are claiming that morphology is a subcomponent of syntax, and so morphological operations are distributed across the syntax.

- (1) **the Mirror Principle** (Baker, 1985)
Morphological derivations must directly reflect syntactic derivations (and vice versa)

Under this view, morphology is syntax, and so morphological operations can and should be treated in the same way as syntactic operations resulting in a simpler grammatical system, and thus satisfying Occam's Razor.

In this paper, I focus only on the verbal extended projection and a possible syntactic analysis of a range of morphemes that interact with the verbal root.

Since there is almost no literature that takes such an approach to a language like CAY, much of what I propose will only be a first attempt at moving towards a morphology equals syntax type analysis for a polysynthetic language, and expectedly, there will be many holes in what I suggest. However, I hope this will open the way to an analysis for polysynthetic languages that unifies them with the commonly accepted analysis for non-polysynthetic languages.

In section 2, I provide a very brief sketch of CAY in order to familiarise the reader with this type of language, often understudied, and containing grammatical phenomena not commonly found in the most widely studied world languages, particularly Indo-European. In section 3, I begin my take at a syntactic analysis of a number of verb-interacting morphemes in an attempt to unify the analysis with that commonly employed for non-polysynthetic languages in order to move towards a more Minimalist grammar.

2. A grammatical sketch of Central Alaskan Yup'ik

2.1 Polysynthesis

Morphologically, CAY is both polysynthetic and agglutinative, meaning there is a high number of morphemes per word and these “morphemes [...] have a mechanical cohesiveness, with more or less transparent or clear-cut boundaries (segmentability)” (Miyaoka, 2012: 88):

- (2) angya-ge -m -ni
 boat -DUAL-1SG-LOC
 ‘in my two boats’

Miyaoka (2012:89) explains the polysynthetic nature of CAY being due to the “availability, and recursive occurrence, of a great number of highly productive suffixes (including transcategorial ones)”, and following Mithun (1999), employs the term “non-templatic” polysynthesis owing to the fact the ordering of suffixes is not fixed and different scope interpretations can be obtained by altering the order in which suffixes merged with a base.

Although the term polysynthesis is widely used in Eskimo linguistics, noun incorporation has been used much more recently, although, as Miyaoka argues, this term, in the strict sense, only refers to verbalising derivations, whereas polysynthesis is an umbrella term covering a wider range of grammatical constructions.

2.2 *Word classes*

Jacobson (1995) recognises only three classes of word in CAY: nouns, verbs and particles. Miyaoka (2012) includes particles, along with enclitics in a larger word class that he calls non-inflecting words. Particles include adverb-like words and conjunctions and are invariable in form, unlike nouns and verbs, which inflect. All other meanings that are traditionally associated with other word categories such as adjectives, prepositions and determiners are expressed by affixes which attach to a nominal or verbal root. Miyaoka (2012) distinguishes monomorphemic words and multimorphemic words, although the monomorphemic type (which are generally also monosyllabic), are typically enclitics, such as =*llu* ‘and’, but there exists one exceptional proclitic *am=* which roughly translates as ‘hurry’.

2.3 *Clausal structure*

A clause typically comprises two cores, one verbal and one made up of one or two nominal arguments, depending on the transitivity of the verb. The nominal arguments are indexed on the verb by inflectional means even if no overt external NPs are present.

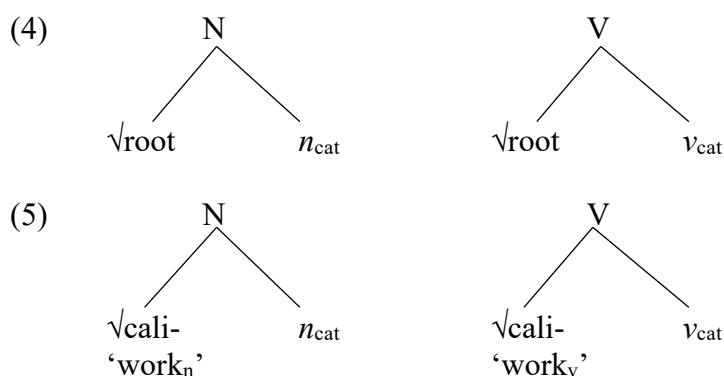
2.4 *Verb bases*

Taking a common root such as *cali-* (‘work’), we can see a number of morphemes can be suffixed to render different meanings (examples from Jacobson, 2012):

- (3) a. **cali** -u -q
work-IND-3SG_{INTRS}
‘he is working’
- b. **cali** -ssuun
work-INST
‘a tool’
- c. **cali** -sta
work-AGNT
‘a worker’
- d. **cali** -ur -tu -q
work-CONT-IND-3SG_{INTRS}
‘he keeps on working’

- e. **cali** -arqaq
work-to.be.done
'a chore to be done'
- f. **cali** -aq
work-PERF
'work done'
- g. **cali** -vik
work-place
'workshop'

It is clear from (3) that the root *cali-* can appear in both nominal and verbal derivations, so here I posit that *cali-* can acquire two categories: nominal and verbal. In terms of derivation then, we can say that the root merges with a categoriser before any affixes are added:



However, there exist a number of derivational suffixes that can be added to a root that determine the category overtly, which weakens the argument for a covert categoriser for all roots. These derivational suffixes can be nominal-elaborating _{NN}, verb-elaborating _{VV}, verbalizing _{NV}, nominalizing _{VN} illustrated in (6) (Miyaoaka 2012: 104):

- | | |
|--|---------------------|
| (6) -li- _{NV} 'to make (for someone)' | denominalising |
| +li- _{VN} 'one who/that (is/does)' | deverbalising |
| +pag- _{NN} 'big' | nominal-elaborating |
| -lngu- _{VV} 'to be tired of -ing' | verb-elaborating |

Note that the alternation between + and – before suffixes is used by Miyaoka to denote different phonological behaviours, although I will not address this issue as it is beyond the scope of this paper.

These categorised roots or derivationally derived stems are then ready to be passed to the next part of the syntactic derivation where the merging of further suffixes occurs.

2.5 *Affixation*

Miyaoke (2012) outlines how a stem selects for each additional suffix, but lists a number of restrictions on the stacking of suffixes. Put simply, a verbal root or a derived verbal stem can only be followed by a nominalising or verb-elaborating suffix, and a nominal stem or derived nominal stem can only be followed by a verbalising or nominal-elaborating suffix. Crucially, the head of the word is determined, not by the category of the stem, but by the rightmost nominalising or verbalising suffix (if present).

Following the final category-converting suffix, inflectional suffixes may be added. If the category is verbal, then such possible inflectional suffixes include those that denote mood, person and tense. The following example simplified from Miyaoke (2012: 106) illustrates this:

- (7) qayar -pa -li -qaa -sqe -ssaaqe-llru-aqa
 kayak-big-make-INTENSIFIER-AGNT.ask-but -PST-IND.1SG.3SG
 ‘I asked him to make a big kayak (but actually he has not made it yet).’

This section has provided a very brief insight into some of the grammatical features of CAY that are important for understanding what is to follow. Other relevant features will be introduced whenever necessary.

3. Towards a syntactic analysis of a CAY clause

In this section, I work through a number of syntactic derivations of CAY sentences. As mentioned in the introduction, I attempt to analyse CAY using syntactic operations commonly used in the analysis of non-polysynthetic languages, which will ultimately involve a movement-based approach to the linearisation of morphemes.

3.1 Postbases

Jacobson (1995) uses the term postbase to refer to morphemes which occur after the verbal or nominal stem, that is, the root plus any derivational suffixes, and the inflectional suffixes that encode categories such as person, number, mood and tense. One such postbase is *-yug-* which carries a desiderative meaning, and which I will gloss as DES. In (8), we see several examples of this postbase in simple clauses:

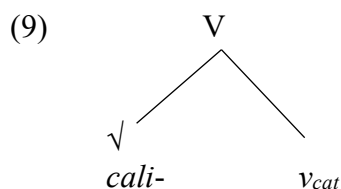
- (8) a. *cali -yug-tuq*
 work-DES-3sg
 ‘He wants to work.’
- b. *cali -yug-tua*
 work-DES-1sg
 ‘I want to work.’
- c. *cali -yug-tuten=qaa?*
 work-DES-2sg -ENCL_{INT}
 ‘Do you want to work?’

The initial /t/ on the inflectional number-person morpheme is phonologically inserted post-syntactically and will not be discussed here.

I will attempt to work through a derivation for (8a) and (8c) below.

3.2 Deriving a declarative clause

If we assume the root *cali-* in this case is acategorical, then first it should merge with a covert verbal categoriser as shown in in (9):



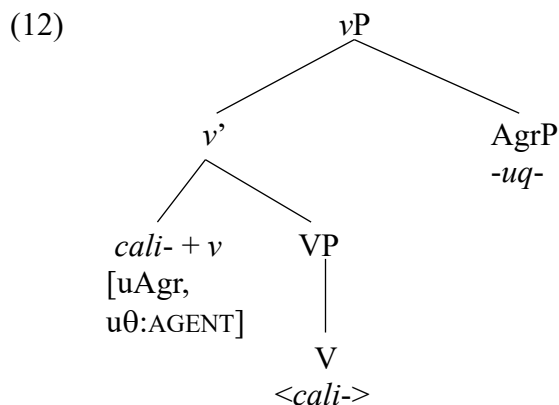
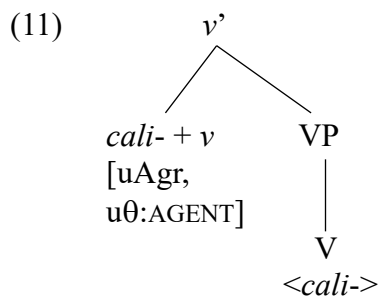
Now that we have the verbal root, the question centres around what is merged first: the desiderative morpheme *-yug-* or the number-person inflection. The simple answer would be to merge the morphemes in order of surface linearisation; the more complex answer would

involve some form of movement, likely head movement. If we work through the derivation for this, we see that the latter is the more logical answer.

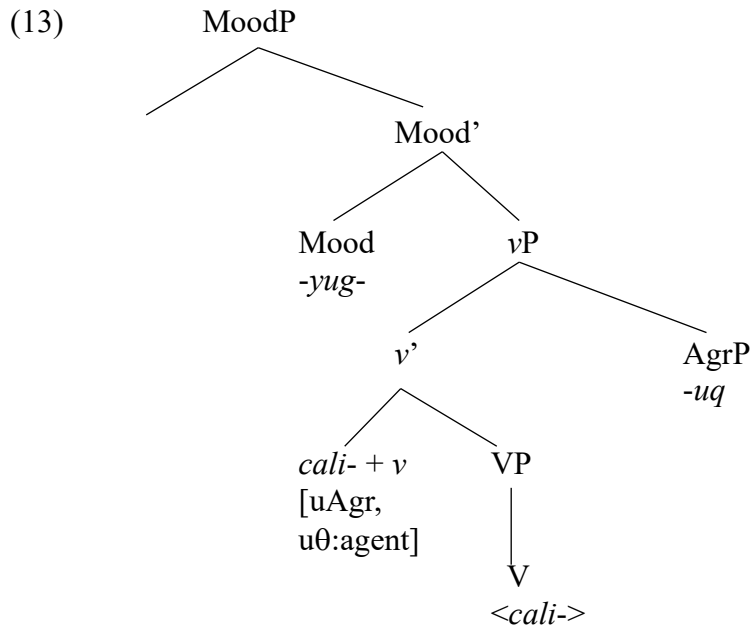
Since the clause is intransitive, no internal argument is present so we simply start with V:



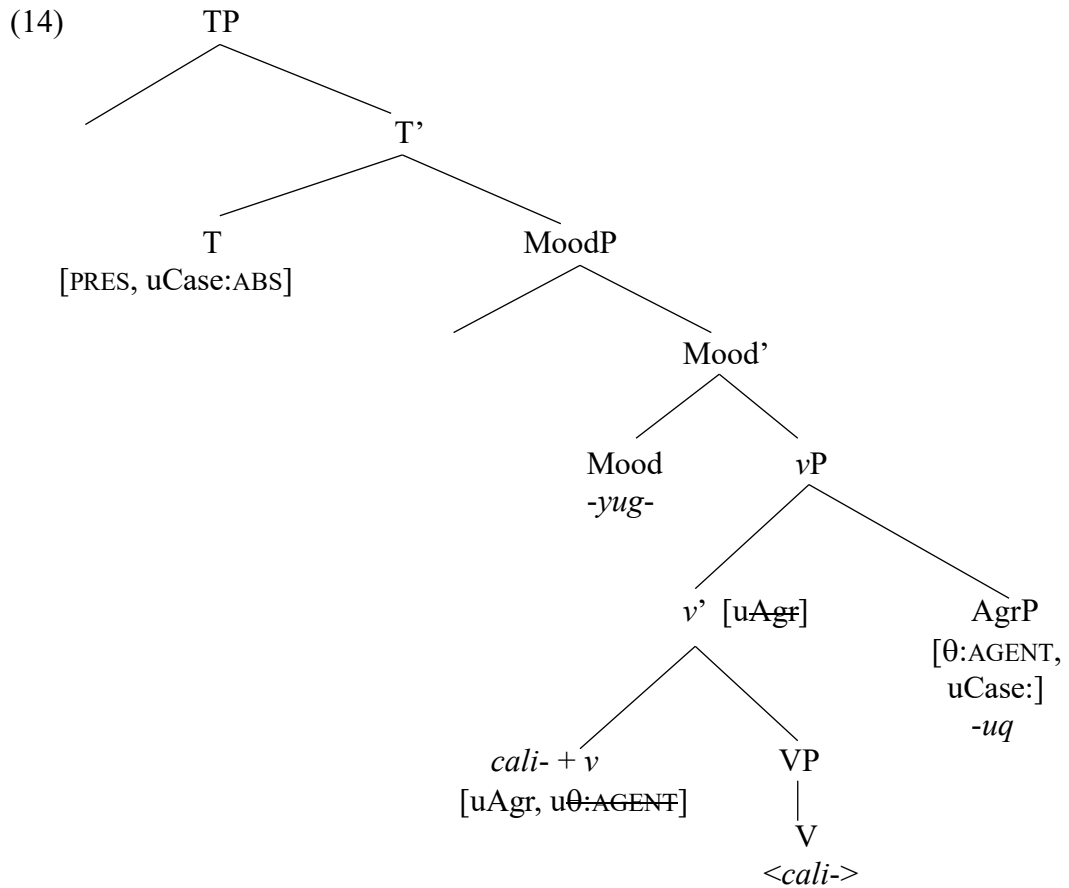
In order to obtain the external argument, which in this case is just an inflection, rather than an overt DP, V should merge with little *v* and move up. The inflectional morpheme denoting the subject is merged at [Spec, *v*P]. In this case, *v* assigns Agent theta-role to the subject morpheme. Since the subject morpheme is not a DP, the categorial selectional feature on *v* is problematic. The inflectional morpheme must be present to complete the clause and therefore must be selected. I propose the *v* has an unvalued agreement feature that must be satisfied, and I denote this as [uAgr]. The category of this morpheme remains unclear, but for the purposes of this analysis I will refer to it as AgrP, without delving into its composition.



The postbase morpheme *-yug-* expresses a desiderative meaning, so I posit this is merged as part of a MoodP projection:

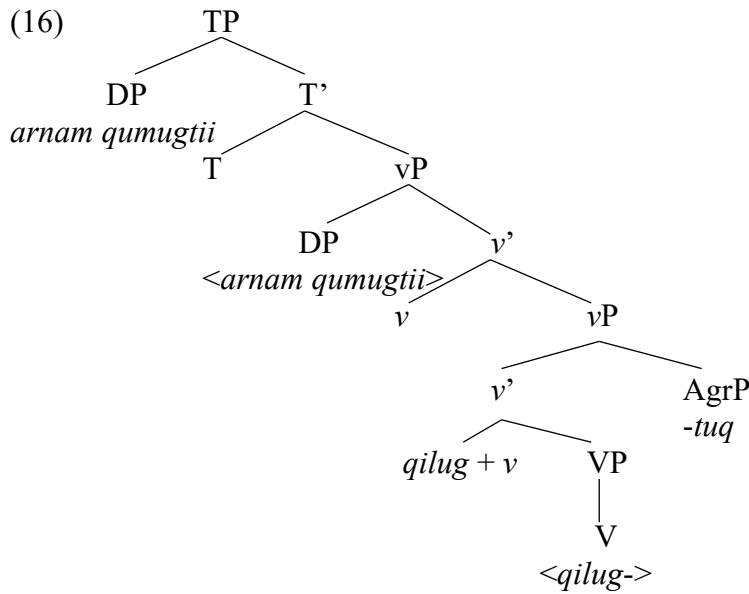


Next, MoodP merges with T, which is phonologically null since a clause in CAY lacking any tense morpheme carries present tense meaning. The TP projection is still required, however, since, as I will soon introduce, there exists an overt past tense morpheme (as well as a few other tense morphemes) in CAY that needs to have a place in which to sit. In a language like English, the T head can assign nominative case and has an EPP feature that triggers movement to [spec,TP]. Later when I discuss overt NP/DP arguments, we will see a similar situation in CAY.



In the case where an overt NP/DP subject is present in addition to the Agreement morpheme, an extra *vP* projection would be required to accommodate the NP/DP in [Spec,*vP*] of this additional projection. This NP/DP could then raise to [Spec,TP] to precede the verb.

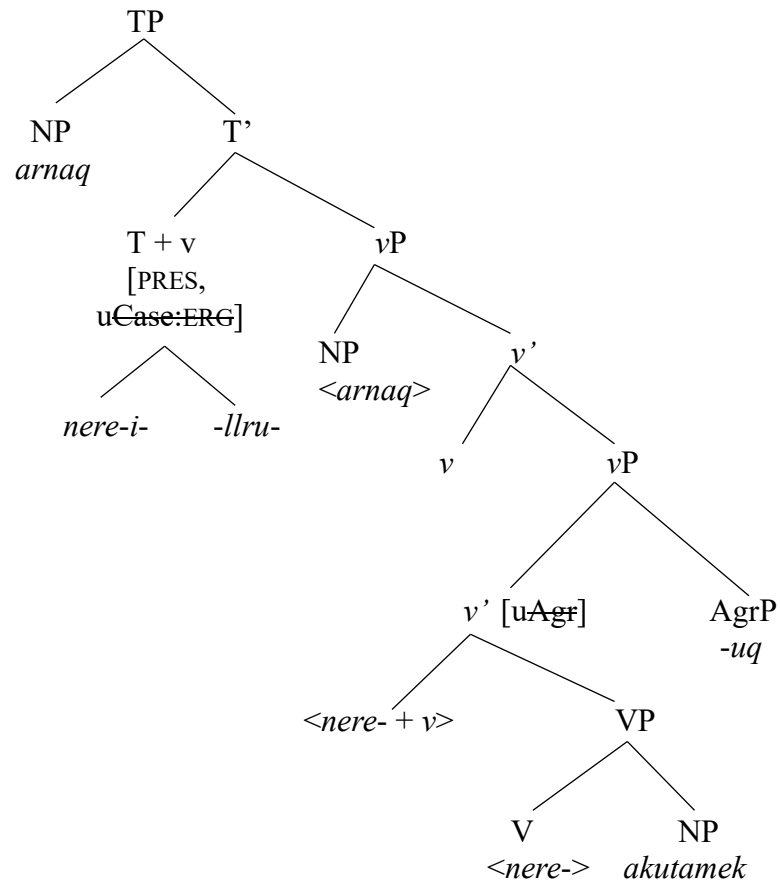
- (15) Arna -m qimugtii qilug-tuq (Jacobson, 1995: 94)
 woman-gen dog bark -3sg
 ‘the woman’s dog is barking’

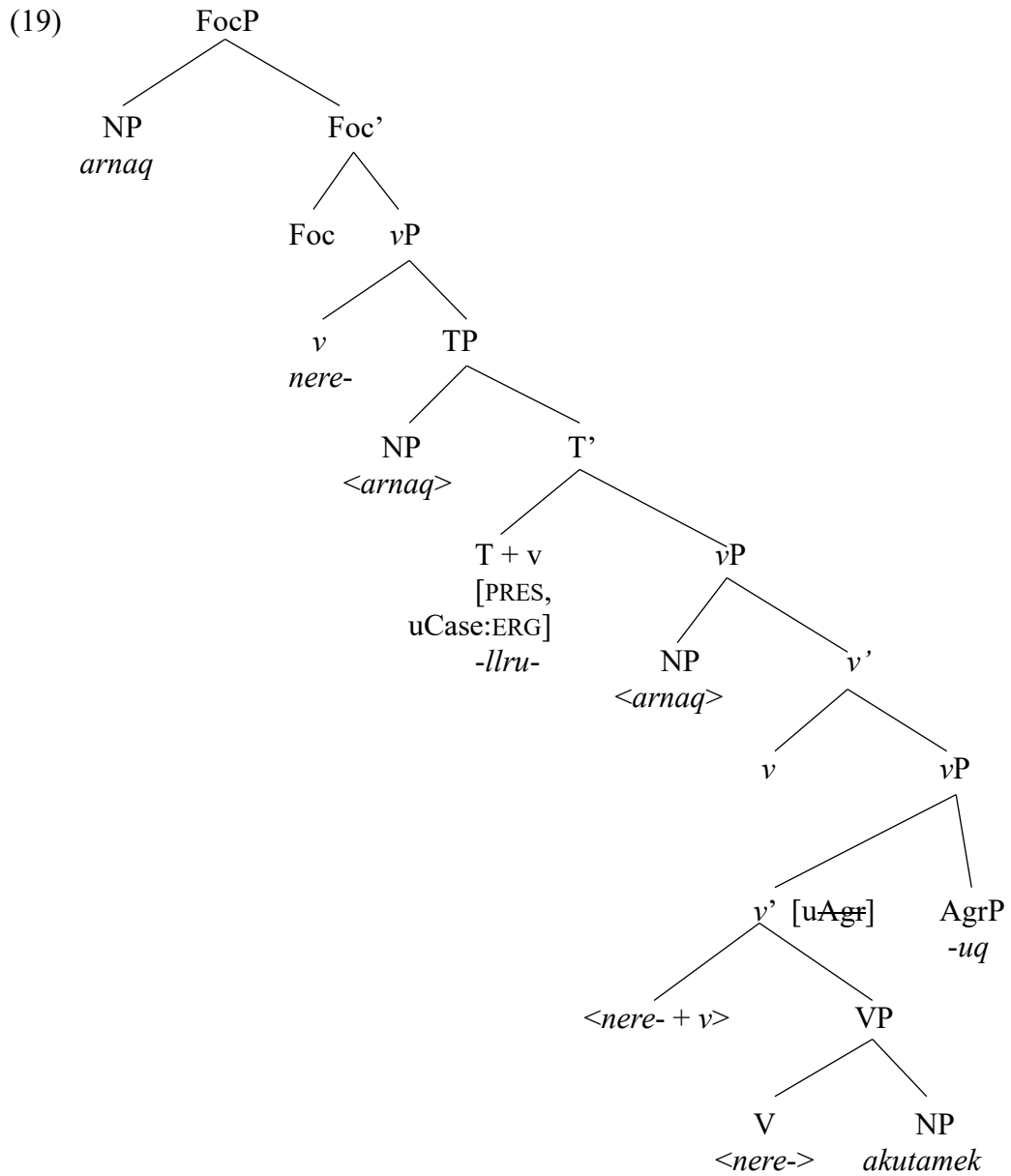


In order to obtain the final linearisation, the *v* needs to move leftwards. A potential landing site for this is [Spec,MoodP]. However, since there is the potential for an overt morpheme in T (for example, with past tense clauses), the *v* needs to move to the left of T, and so should thus move to a higher position. I cannot posit any successive cyclic movement of *v* through [spec,MoodP] as I have no evidence that it ever stops off in this position. Therefore, I propose *v* moves to the higher position in one movement. Where the verb root actually lands is an issue. We need to keep [Spec,TP] available as a final landing site for an external argument (subject) NP/DP. Therefore, a landing site is required between [Spec,TP] where an overt subject would sit and T head where the tense morpheme would sit. In order to get the verb in the correct position, then it seems there are only two viable options. The first is to adjoin it to T (analysis (18)); the other, which is more complicated, would to move the verb above TP into a further projection, say another *v*P, and then move the NP/DP external subject from [Spec,TP] to a higher projection, say [Foc,TP] (analysis 19). This could be justified since whenever CAY expresses an overt NP/DP subject, there is a greater focus on it than when the subject is just a verbal inflection. Note that I address the issue concerning the merging of the antipassive morpheme later; for now, I just keep attached to *v*.

- (17) arnaq nere-I -llru -uq akuta -mek
 woman eat -AP-past-3sg ice.cream-abs
 ‘The woman ate some ice cream’

(18)



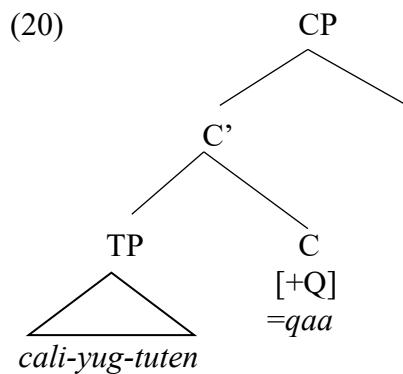


Although I will not address the issue here in detail, it is apparent that the AgrP verbal inflection is to the left of the overt object NP. To resolve this linearisation issue, one would have to posit rightward movement of the internal argument out of the VP.

The final stage would be to merge this derivation with C to type the clause as declarative. Since I will show this projection for an interrogative derivation, I leave this off the declarative derivation for reasons of simplicity and space.

3.3 Deriving an interrogative clause

Returning to (8c) above, we see an example of a simple intransitive interrogative clause in CAY. This involves the interrogative enclitic *=qaa*, which attaches after all other suffixes. The most logical analysis is that this enclitic sits in C head, which also contains a [+Q] feature that types the clause as interrogative. I skip over aspects of the earlier part of the derivation as it is identical to the one just established above with the exception that the subject is 2SG rather than 1SG.

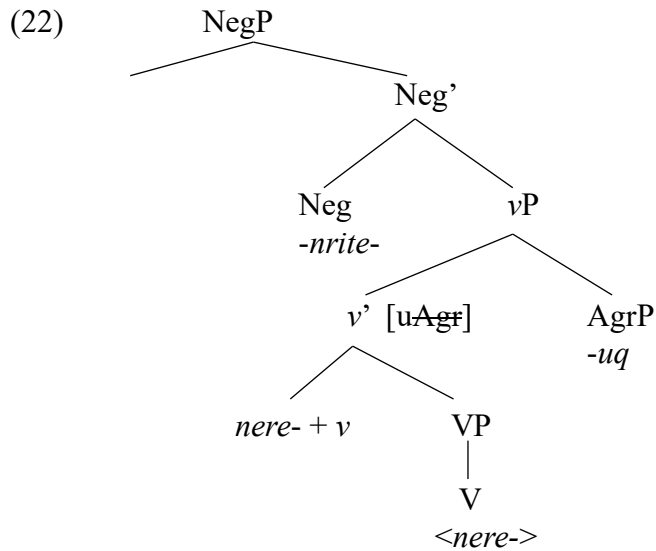


3.4 Negation

Following the same framework, we can generate a negative intransitive clause. The postbase morpheme *-nrite-* translates as ‘not to *V*’, examples of which are seen in (21) (from Jacobson, 1995: 25). The final consonant of the postbase drops before inflectional suffixes:

- (21) a. cali -nrit -uq
 work-NEG-3SG
 ‘he is not working’
- b. nere-nrit -uq
 eat -NEG-3SG
 ‘he is not eating’

Schematically, sentence (21b) can be represented as in (22):

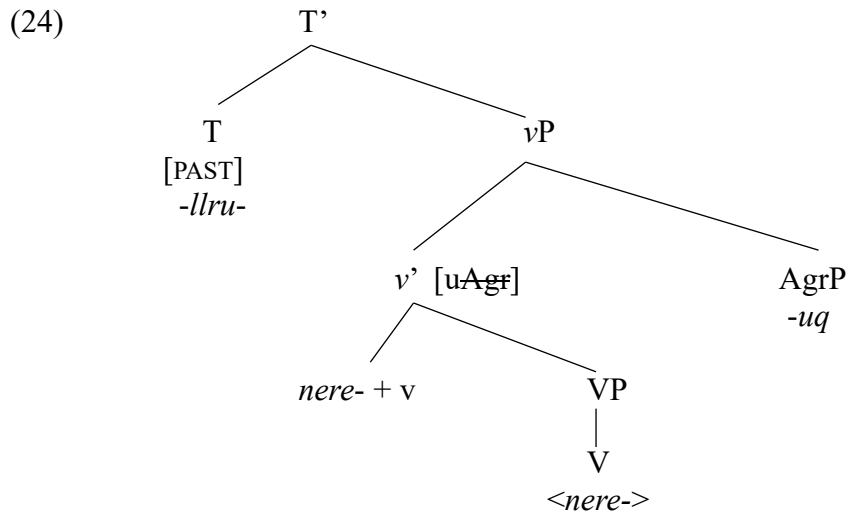


Other postbases which follow the same pattern of merging include *-yugnga-* ‘to be able to V’, *-(s)ciigate-* ‘to not be able to V’, *-lar-* ‘to regularly V’, which renders the English present simple (habitual) meaning, and the opposite of this: *-yuite-* ‘to never V’.

3.5 *The past tense morpheme*

The postbase morpheme *-llru-* expresses past tense. Example (23) illustrates this. Crucially, since this is an overt tense morpheme, this serves as evidence for head movement of the root morpheme to [Spec,TP].

- (23) *nere-llru-unga*
 eat -PST -1SG
 ‘I ate’



3.6 Transitive clauses

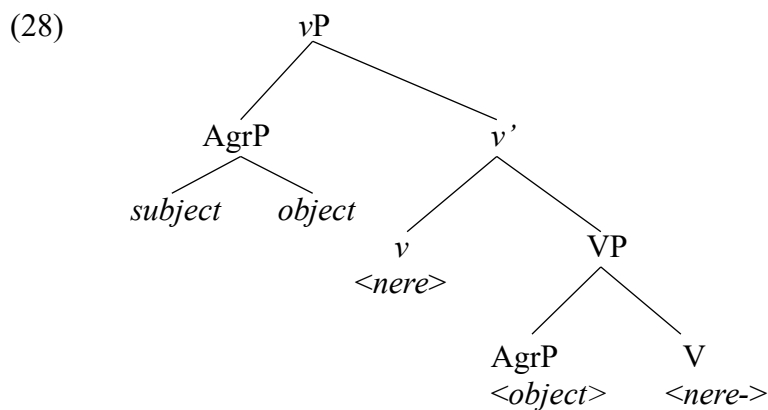
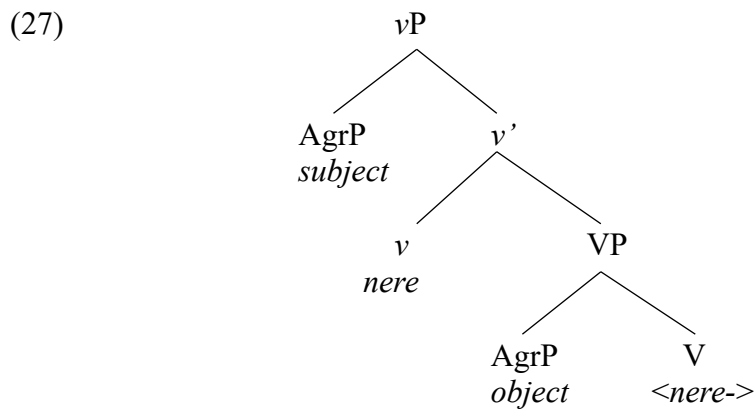
Transitive verbal inflections differ from those of intransitive inflections. Instead, the possessed absolutive nominal inflections are used on transitive verbs. In (25) we see the endings being used to mark a noun as possessive and in (26), we see the same endings used as a verbal inflection to mark number and person. Additionally, these endings incorporate the expression of a 3rd person object.

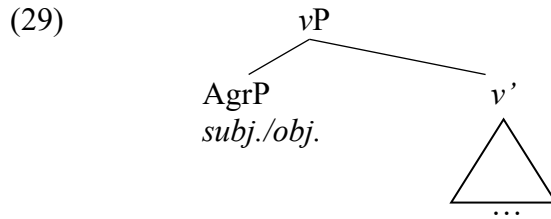
- (25) a. angy-aqa
 boat -1SG
 ‘my boat’
- b. angy-an
 boat-2SG
 ‘your boat’
- c. angy-aput
 boat -1PL
 ‘our boat(s)’

- (26) a. ner’-aqa
 eat -1SG
 ‘I am eating it’
- b. ner’-an
 eat -2SG
 ‘you are eating it’

- c. ner'-aput
 eat -1PL
 'we are eating it'

There is an issue of how both subject and object arguments are syntactically derived when both arguments are a single morpheme. Clearly, this is a case of fusion, which is the collapsing of multiple syntactic nodes into a single terminal node. This is a post-syntactic operation. According to Halle and Marantz (1993), for fusion to happen, both terminal nodes that are to be fused must be sisters, that is, the nodes for external argument (subject) and internal argument (object) should be sisters at the point of vocabulary insertion in order for a single morpheme to surface. One possible analysis is that the nodes that represent the subject and object arguments of the verb adjoin to each other and thus become sisters. This would then allow vocabulary insertion of a single morpheme post-syntactically. (27) shows the structure pre-movement of the object and (28) shows the position post-movement when adjunction of the argument nodes has occurred. Finally, (29) shows the fusion of the two nodes into a single terminal node.





The question remains about motivation for this type of movement. The usual motivation for fusion, or any type of movement, is features. In this particular type in transitive clause, the subject can be any person, whereas the object is always third person and can be either singular or plural. Therefore, the matching and merging of φ -features here seems the wrong approach. Since I have posited that these morphemic verbal arguments are AgrPs, it could be logical that they share some kind of agreement feature that allows them to collapse into one. I will not explore this issue any further here.

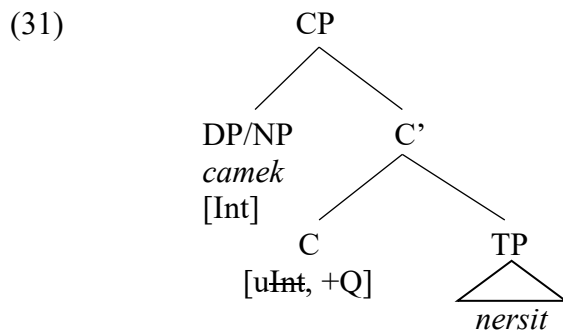
3.7 Content questions

We previously saw the inflections for indicative declaratives and polar questions. CAY employs a different set of inflections for content questions, and such predicates are said to be in the interrogative mood (Jacobson, 1995). The surface forms of these different inflections are not relevant to this present study nor are the grammatical cases that the various question words take on, e.g., the terminalis case and the ablative-modalis case. What I do explore here, however, is the syntactic derivation of the interrogative clause. The following example illustrates a simple interrogative clause in CAY (Jacobson, 1995: 52):

- (30) *camek ner-sit*
 what eat-2SG
 ‘what are you eating?’

We see that the question word is independent from the verb and is not incorporated in any way. In terms of the word *camek*, we can say this is a DP/NP. It is the object of the verb, so if we remain consistent with the analysis of transitive predicates above, this DP/NP must have merged in the structure with V and then undergone A'-movement. I posit that, just like in languages like English, the interrogative word raises to [Spec,CP]. A likely motivation for the

raising is an unvalued interrogative feature [uInt] on C (similar to [uWh] for English) as well as a [+Q] feature to type the clause as interrogative.



3.8 The half-transitive postbase

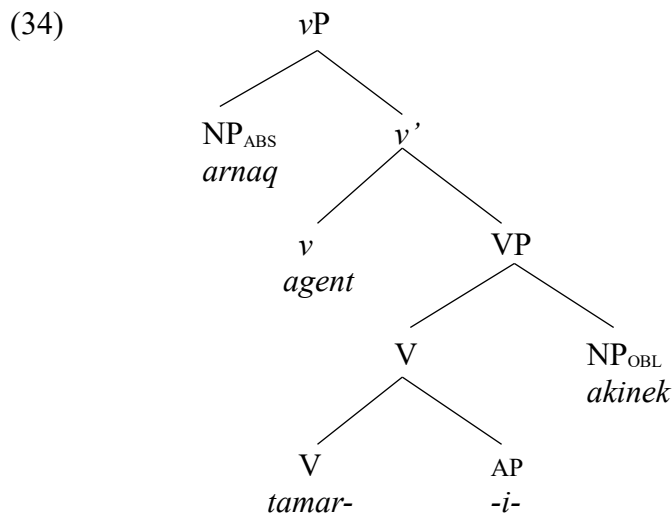
One final construction I explore is what Jacobson (1995:123) calls the “half-transitive” postbase. Despite the intriguing name, this is actually just a verb-elaborating postbase and is, in fact, the antipassive construction. This antipassive morpheme, -‘(g)i-, carries the meaning of ‘subject (from transitive is V-ing something’ and is used to change the valency of a verbal base. Some verbal bases are, by default, patientive and transitive, and must take the antipassive morpheme to become intransitive and agentive. The object argument of the verb appears in an oblique case and the subject can take an agent θ -role.

- (32) a. arnaq tama-llru-uq
 woman lose -PST-3SG
 ‘the woman got lost’
- b. arnaq tamar-i -llru-uq akinek
 woman lose -AP-PST-3SG money
 ‘the woman lost some money’

- (33) a. pai -guq
 babysit-3SG
 ‘he is staying home (with the children)’
- b. pai -gi-uq mikelngurnek
 babysit-AP-3SG children
 ‘he is babysitting children’

In the (a) examples above, the sole argument of the verb is interpreted as patientive, and so when an agentive interpretation is required, the antipassive morpheme is merged in. Another NP can then be present, but this can only be in an oblique case.

The issue here revolves around how the antipassive morpheme is merged into the structure and in what projection it sits. Basilico (2019) explores this issue with data from four different Eskimo languages including CAY. He proposes that the antipassive morpheme merges with *v* as its sister. In his own analysis, he employs VoiceP projection for the extended projection, but to be consistent with what I have proposed so far, I maintain the use of *v*P. Thus for (32b) we get:



This section has proposed a syntactic analysis of a number of morphemes that interact with the verb in the verbal extended projection, both in terms of when and where they are merged and any necessary movement operations that occur in order to result in surface linearisation. I have presented an analysis of both intransitive and transitive declarative clauses, two types of interrogative clauses: polar and content questions, as well as the insertion of the negative morpheme and mood and tense information.

4. Conclusion

Given the highly polysynthetic nature of Central Alaskan Yup'ik and other Eskimo languages, traditional analyses have mostly been carried out in the framework of lexical morphology. What I have attempted to do in this paper is begin to unify the analysis of this type of

language with non-polysynthetic languages in a mostly Minimalist framework. As I have shown, since this is a rather novel and relatively unexplored approach, there have been many challenges. Wherever possible I have proposed an analysis or, in some cases, a choice of more than one, in order to work towards my initial goal. Naturally, I have only scratched the surface, and indeed, much of what I have done has revealed more questions than it has solved. Nevertheless, I hope that what I have proposed will be challenged and thus lead to further work on both Central Alaskan Yup'ik and other Eskimo languages, as well as polysynthetic languages in general.

Word count: 3798

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