

As Above but Below: Karuk Directional Suffixes as Low Applicatives*

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1 Overview

- Karuk directional suffixes, previously analyzed as high applicatives, have some unexpected restrictions on which roots they occur with.
 - Directional suffixes cannot occur with telic roots.
 - Atelic roots are split between requiring a directional suffix and only optionally appearing with one.
- The inability to occur with telic roots falls out neatly from the framework of Ramchand (2008); in that system ResP, responsible for inherent telicity, and PathP, where directionals would be located, cannot co-occur.
- As PathP is very low in the VP, Karuk directional suffixes must then be a 'low applicative,' though they express a semantic relation between an event and individual expected only for high applicatives (cf. Pylkkänen, 2008). This is a different type of low applicative than considered by Pylkkänen (2008) and made available only through the PathP Ramchand (2008) provides.

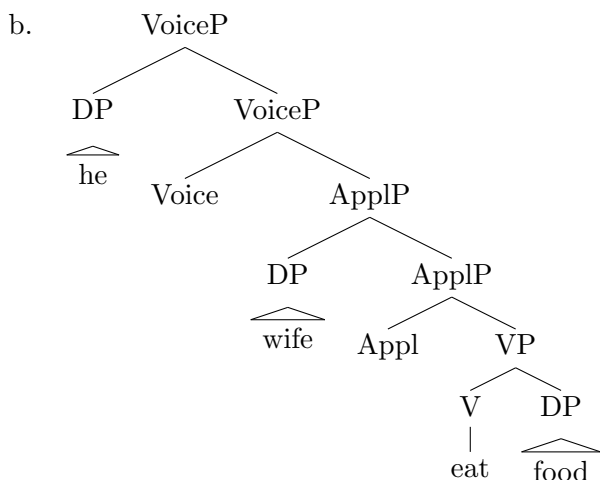
*My deepest thanks to the late Vina Smith for patiently and generously sharing her language with me. Thanks also to Line Mikkelsen, Andrew Garrett, Peter Jenks, Amy Rose Deal, Clare Sandy, and audiences at NELS 46 at Concordia University and the UC Berkeley Syntax and Semantics Circle for helpful discussion and feedback.

2 Theoretical Background

2.1 High vs. Low Applicatives

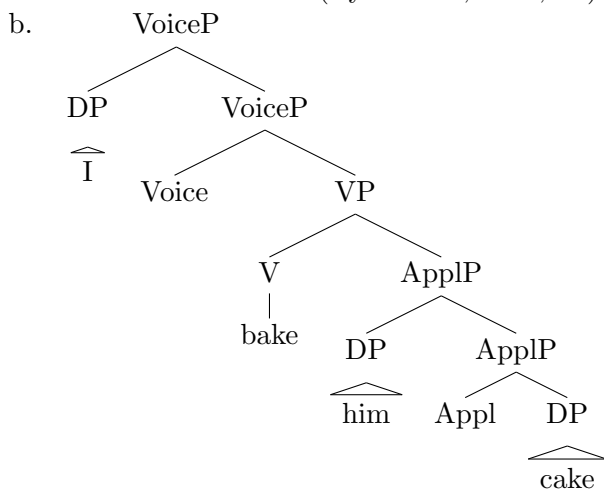
- (1) High applicatives: relation between event and individual; above VP (Pylkkänen, 2008, ch. 1, ex. 2a and 6a)

- a. N-ǎ-í-lyì-í-à m-kà k-élyá
 FOC-1SG-PRES-eat-APPL-FV 1-wife 7-food
 ‘He is eating food for his wife’ (Chaga)



- (2) Low applicatives: relation between two individuals, transfer-of-possession; within VP

- a. I baked him a cake (Pylkkänen, 2008, 6b)



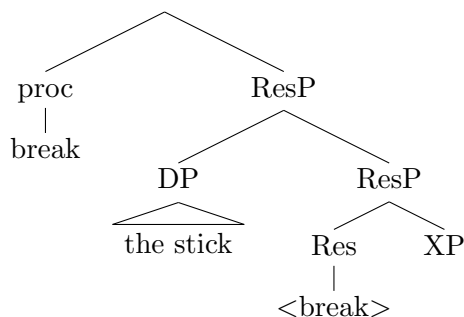
- Transitivity restriction: Low applicatives require an internal argument, so only high applicatives can appear with unergative verbs.

2.2 ResP and PathP in Ramchand (2008)

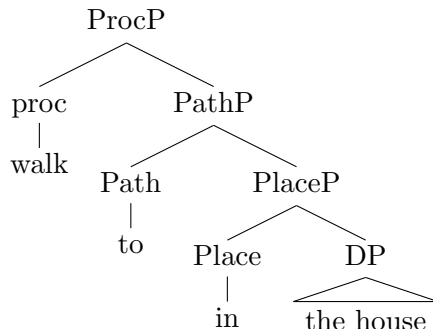
- Telic roots¹ have (at least) the structure in (3), while roots with directional semantics have (at least) the structure in (4)

¹Technically, Ramchand (2008) analyzes only Achievement verbs as having ResP, but I am generalizing it to all inherently telic verbs.

(3) ProcP adapted from (Ramchand, 2008, p. 114)



(4) ProcP adapted from (Ramchand, 2008, p. 114)



- Ramchand (2008)'s decomposition of the VP allows for either a ResP or a PathP as complement to Proc - not both.
- PathPs can be bounded or unbounded, resulting in telic or atelic verbs. The inability of ResP and PathP to combine is thus not due to both expressing telicity, as PathPs need not.

3 The Karuk Language

- Highly endangered language isolate² of Northern California (first lg. speakers <6).
- Comprehensive grammar, text collection, and lexicon published in 1957 (Bright, 1957) and expanded dictionary based on Bright (1957)'s lexicon in Bright & Gehr (2004)
- The present analysis is based on data gathered in fieldwork with Karuk elders from 2012 to the present and the online dictionary and text corpus maintained by the Karuk research group at UC Berkeley³.

Relevant Grammatical Features

- Pro-drop⁴

(5) xás ta'ítam u-'âanvath-vunaa-heen
and then 3SG>3-paint.face-PL-ANT

²Or Hokan language, if you're into that kind of thing.

³*Ararahih'úrîpîh*, the online Karuk dictionary and corpus (<http://linguistics.berkeley.edu/~karuk>) expands on the grammar, dictionary and text collection of Bright (1957) and the Bright & Gehr (2004) dictionary. It contains around 7300 dictionary entries, around 150 'texts' (including narratives and transcribed elicitation sessions) with 23000 words in 6000 clauses (as of January 2015) (Garrett et al., 2015)

⁴For the purposes of this paper I assume the PRONOMINAL ARGUMENT HYPOTHESIS (cf. Jelinek, 1984; Baker, 1991), which claims that the actual arguments of non-configurational languages are either the pronominal agreement affixes that attach to verbs (Jelinek, 1984) or null pronouns (Baker, 1991). In both, any expressed noun phrase is actually an adjunct merely co-indexed with one of the pronominal arguments.

'So then he painted their faces.'

(Julia Starritt, "Coyote Steals Fire", WB_KL-10:33, 1957)⁵

- Heavily suffixing verbs; Bright (1957, pp.91-115) describes 8 verbal derivational suffix positions.
- Optional tense morphology: verbs unmarked for tense can be interpreted as either past or present:

- (6) a. pi'êep pa-nani-'ákah vaa kaan **u-sxáay-tih**.
 long.ago the-1SG.POSS-father thus there 3SG-fish-DUR
 Years ago my father was fishing there,
- b. payêem naa káru kaan **ni-shxáay-tih**.
 now 1SG.PRON also there 1SG-fish-DUR
 and now I'm also fishing there. (Vina Smitb, 10/26/2014)

3.1 Karuk Directional Suffixes

- Around 50 directional suffixes (cf. Bright, 1957, pp.94-111), ranging from expressing only Path to expressing Path and Ground of varying specificity (Macaulay, 2004); (cf. Talmy, 1985)
 - Path only: *-sipriv* 'up'; *-iroopith* 'around'
 - Path and Ground: *-taku* 'onto a horizontal surface'; *-furuk* 'into an enclosure'; *-vara* 'in through a tubular space'; *-roovu* 'upriverward from here'; *-Ovrath* 'into a sweathouse'
- Most directional suffixes appear close to the root in suffix positions 2,3 and 4.
- The only suffix in position 1, *-va* 'Plural Action', in fact has variable order determined by scope; when it appears in position 1, it generally has conventionalized, noncompositional meaning (Garrett et al., 2015). It more generally prefers to follow directionals as in (7).

- (7) xás kun-ihy-**ívraath**-va ikmaháchraam
 then 3PL-shout-**into.sweathouse**-PL.ACT sweathouse
 'And they shouted into the sweathouse.'
 (Julia Starritt, "Coyote Goes to a War Dance", WB_KL-06:66, 1957)

- Thus, directional suffixes are generally adjacent to the root. I conclude from this that the directional suffixes combine directly with the root morphologically and syntactically.

3.2 Directional Suffixes as Applicatives

Excepting a few (e.g. *-ishrih* 'down'; *-sipriv* 'up'), directional suffixes introduce new arguments⁶:

- (8) a. kári xás **ú-kvip**
 and then 3SG-run
 'And he ran.' (Mamie Offield, "Coyote's Journey", WB_KL-05:77, 1957)

⁵Glossing conventions: 3SG - 3rd Person Singular Subject Agreement (and so on for all person-number combinations); 3SG>3 - 3rd Person Singular Subject and 3rd Person Object Agreement; APPL - Applicative; ANT - Anterior Tense; AS.MOT - Associated Motion; DUR = Durative Aspect; PER - Perfect; PL.ACT - Plural Action; *PROSP* - Prospective Aspect. Source codes are in the format (Speaker, Title of Text, Text Identifier: Sentence Number, Year of Publication) for data drawn from the corpus, and in the format (Speaker, Date of Elicitation) for data from my fieldwork.

⁶The root *ikvip* in (8) surfaces as its allomorph *ikvirip* when followed by derivational suffixes.

- b. xás xôoxhirak u-kvírip-**ma**
 then Martin's.Ferry 3SG-run-**to**
 'And he ran to Martin's Ferry.'
 (Julia Starritt, "Coyote Goes to a War Dance", WB_KL-06:58, 1957)
- c. xás vúra yúruk u-kvírip-**rup**
 then INTENS downriver 3SG-run-**downriverward**
 'And so he ran downriver.'
 (Julia Starritt, "Coyote Goes to a War Dance", WB_KL-06:57, 1957)

Potential confound: Applied objects need not be expressed (cf. Macaulay, 2004)

- (9) xás vúra u-kvírip-**rup**
 then INTENS 3SG-run-**downriverward**
 'And so he ran downriver.'
 (Julia Starritt, "Coyote Goes to a War Dance", WB_KL-06:57, 1957)
- (10) xás ú-kfuuk-**furuk**.
 and 3SG-crawl-**into.an.encoded.space**
 'So he crawled in.'
 (Julia Starritt, WB_KL-04:126, 1957)

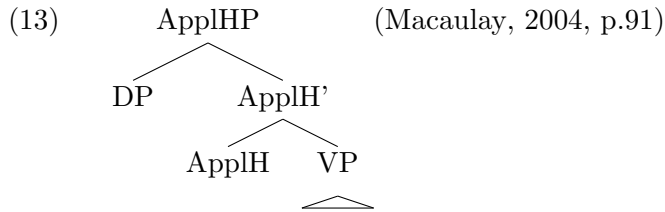
These suffixes are still applicatives:

- Karuk allows pro-drop of arguments, so the null hypothesis is that applied objects, as arguments, are allowed to be dropped.
- Some languages (e.g. English) have a null applicative head, but overtly realized applied objects. Karuk is just the inverse; the applicative head is expressed, but the applied object need not be.
- Interpretation of locative expressions differs when there is no applicative (cf. Garrett & Mikkelsen, 2015):

- (11) a. chavúra kaanvári u-thívruuh-**ma**
 eventually around.there 3SG-float-**to**
 'Eventually he floated to that vicinity.'
 (Chester Pepper, "Coyote's Journey", WB_KL-03:99, 1957)
- b. káru pá-paa úuth **u-thívruuh-tih**
 and the-boat out.in.water 3SG-float-DUR
 'And the boat is floating out in the water.'
 (Julia Starritt, "Responses to Pictures", WB_KL-92:69, 1957)
- (12) a. xás kun-ihyí-**vraath**-va ikmaháchraam
 and 3pl-shout-**into.sweathouse**-PL.ACT sweathouse
 And they shouted into the sweathouse.
 (Julia Starritt, "Coyote Goes to a War Dance", WB_KL-06:66, 1957)
- b. pa-mu-táat iinâak **ú-hyiv** ka'íruu!
 the-his-mother inside 3sg-shout INTERJ
 Inside his mother shouted, "Stop it!"
 (Lottie Beck, "The Kidnapped Child," WB_KL-61:40, 1957)

Macaulay (2004) analyzes the applicative directional suffixes as high applicatives (cf. Pykkänen, 2008), because they can occur with unergative verbs (as in (8b,c))

Macaulay (2004)'s structure:



4 Distribution of Suffixes

Unsurprisingly, the suffixes generally only combine with verb roots denoting motion events or fictive motion events (generally of the emanation type, (cf. Talmy, 1999)).

Macaulay (2004)'s analysis fails to predict some striking distributional properties of these suffixes. Motion or fictive motion denoting roots can be divided into three classes based on their ability to combine with the suffixes:

- v- roots: must combine with a directional suffix
- v roots: optionally combine with a directional suffix
- v# roots: never combine with a directional suffix

v-	v	v#
<i>arih-</i> 'go, jump, move quickly'		<i>ipak</i> 'to come back, return'
<i>va-</i> 'go'		<i>vâaram</i> 'leave, go away, go'
		<i>ipvâaram</i> 'go back, go home'
		<i>uum</i> 'arrive'
		<i>ipma</i> 'return'
		<i>ahoo</i> 'arrive, walk, go'
	<i>voor</i> 'crawl'	
	<i>ikfuk</i> 'climb, crawl'	
	<i>ikpuh</i> 'swim'	
	<i>thivruh</i> 'float'	
	<i>ikvip</i> 'run'	
	<i>ikxip</i> 'fly'	
	<i>ishkak</i> 'jump'	
<i>vêeh-</i> '(object) to stick, project'	<i>ihya</i> '(long object)	
<i>iyur-</i> 'to put, stick (long object)'	to stand, project'	
<i>it-</i> 'look'		<i>mah</i> 'find, see'
	<i>thitiv</i> 'hear'	

- *arih-*:

- Described (as with other v- roots) by Bright & Gehr (2004) as bound, needing to occur with derivational affixes.
- No examples in corpus with *arih-* appearing alone; all 91 examples with directional suffix.

- (14) *xás káruk u-'árih-roov*
and upriver 3SG-move-upriverward
'And he traveled upriver.'
(Nettie Ruben, "Coyote Trades Songs", WB_KL-07:2, 1957)

- *ipak*:
 - 49 examples in corpus, never with directional suffix. No derivatives in Bright (1957).

- (15) xás mú-taat u-’ipak
 and 3SG.POSS-mother 3SG-come.back
 ‘Then his mother came back.’
 (Julia Starritt, ”The Bear and the Deer”, WB_KL-32:52, 1957)

Trends

- All three classes include transitive and intransitive roots.
- v roots often encode Manner.
- **v# roots often have telic translations**

5 Testing for Telicity

- Conventional tests for diagnosing telicity or achievement/accomplishment status (*For/in* time adverbials test, complement of *finish* and *stop* tests) (cf. Dowty, 1979) are inconclusive for Karuk.
 - Potential time adverbial test: monoclausal structure with durative verbs, biclausal structure with achievements⁷

- (16) a. xás vúra uum **xára** tá kun-íp-vit
 and INTENS 3.PRO **long.time** PER 3PL-ITER-paddle
 And they paddled for a long time.
 (Mamie Offield, ”Coyote’s Journey,” WB_KL-05:132, 1957)
- b. íkiich vúra **xára** vúra tá ni-krii
 maybe INTENS **long.time** INTENS 1sg-live
 Maybe I have lived a long time.
 (Vina Smith, VS-29:42, 2010)
- c. xás vúra **xára** u-’áhoo.
 and INTENS **long.time** 3SG-walk
 And he traveled a long time.
 (Julia Starritt, ”Coyote’s Journey”, WB_KL-04:51, 1957)

- (17) a. xás **xára** xás axmáy u-’ipak pa-pikchah ...
 and **long.time and** suddenly 3SG-arrive the-picture ...
 And after a long time, one day the picture arrived (Lit. And it was a long time, and suddenly the picture arrived.)
 (Violet Super, ”Violet’s Picture,” VSu-02:8, 2004)
- b. púyava vúra tá **xára** **kári xás** pa-’apurúvaan u-mah
 so INTENS PER **long.time and then** the-sorcerer 3SG>3-find
 So after a long time, then the devil found her. (Lit. So it was a long time, and then the sorcerer found her.)
 (Mamie Offield, ”The Devil and the Girl”, WB_KL-64:35, 1957)

⁷Thanks to Andrew Garrett for bringing this pattern to my attention.

- So far I have been unable to replicate these data with my current consultant. Further, in some cases no translation difference accompanies the structural difference, making this at best an unclear test that requires too much interpretation:

- (18) a. ... púya hûut kumá'ii p-**eekxáram xás** u-vaaram-ôo-tih
 ... so how because.of COMP-**night** and 3SG-go-PL.ACT-DUR
 .. Say, why does she always go off in the evening?
 (Nettie Ruben, "The Story of Bear", WB_KL-40:17 , 1957)
- b. ... púya hûut kúth p-**eekxáram** u-vaaram-ôo-tih
 ... so how because.of COMP-**night** 3SG-go-PL.ACT-DUR
 ... Say, why does she always go off in the evening?
 (Nettie Ruben, "The Story of Bear", WB_KL-40:19 , 1957)

- The complement of 'stop' test likewise gives unclear results:

- (19) a. t-óo skáxishrih p-oo-'ímaah-tih
 PER-3SG stop COMP-3SG-see-DUR
 He quit looking at it.
 (Sonny Davis, 3/20/2016)
- b. t-óo skáxishrih p-oo-'úumu-tih
 PER-3SG stop COMP-3SG-arrive-DUR
 He stopped where he's going.
 (Sonny Davis, 3/20/2016)
- c. kúnish vaa uum t-óo skáxishrih p-oo-'úumu-tih
 sort.of thus 3.PRO PER-3SG stop COMP-3SG-arrive-DUR
 He didn't get to go where he wanted to go.
 (Sonny Davis, 3/20/2016)
- d. t-óo skáxishrih p-oo-'ípak-tih-eesh payêem
 PER-3SG stop COMP-3SG-return-DUR-PROSP now
 He stopped coming back.
 (Sonny Davis, 3/20/2016)

- Telicity can be diagnosed through the default interpretation of verbs unmarked for tense (i.e. 'tenseless' verbs):
- The default temporal interpretation of tenseless verbs is conditioned by their Aktionsart, such that bounded events (i.e. telic and punctual events) are interpreted as located in the past, and unbounded in the present (Smith et al., 2007; Mucha, 2013).

- (20) a. **The Bounded Event Constraint** (Smith et al., 2007, p. 45)
 Bounded events are not located in the present.
- b. **The Simplicity Principle of Interpretation** (Smith et al., 2007, p. 60)
 Choose the interpretation that requires the least information added or inferred.

- For Smith et al. (2007), past is simpler than future, so bounded events, unable to be interpreted in the present, are interpreted in the next simplest tense, the past.

The default interpretation of Karuk tenseless verbs also exhibits a pattern whereby some verbs are interpreted in the past and some in the present. Tested motion verbs interpreted as past are also those identified as $v\#$ above; expected telic non-motion roots are also interpreted as past:

- (21) EM: u-’ípak
 3SG-come.back
 VS: He came back.
 (Vina Smith, 11/29/2014)
- (22) EM: u-’áhoo
 3SG-walk
 VS: He came.
 (Vina Smith, 11/29/2014)
- (23) EM: u-pvâaram
 3SG-go.back
 VS: He left.
 (Vina Smith, 11/29/2014)
- (24) EM: u-mah
 3SG>3-see
 VS: He seen it.
 (Vina Smith, 11/29/2014)
- (25) EM: u-’iv
 3SG-die
 VS: He died.
 (Vina Smith, 11/29/2014)

Expected activity verbs and v roots are interpreted as present:

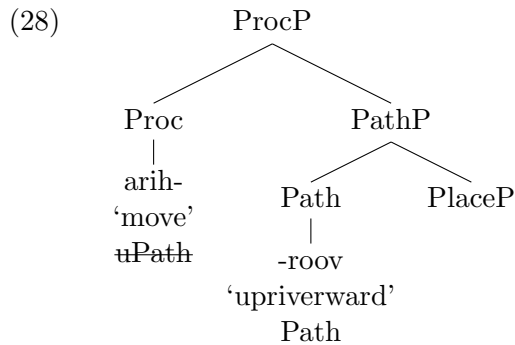
- (26) EM: u-kvip
 3SG-run
 VS: He’s running.
 (Vina Smith, 11/29/2014)
- (27) EM: u-mnish
 3SG-cook
 VS: Cooking.
 (Vina Smith, 11/29/2014)

v# roots are interpreted as past, so must be telic. v roots are interpreted as present, so must be atelic.

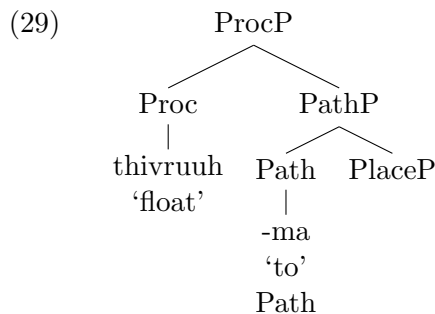
- **A high applicative analysis of the directionals offers no prediction that telic roots should be unable to combine with the suffixes.**

6 A Ramchandian Analysis

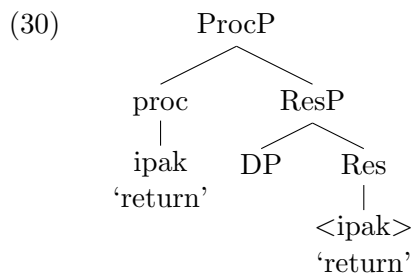
- Structure of v- root *arihroov*:



- Having an uPath feature on the root allows for the root to necessarily combine with a directional suffix using standard downward selection⁸; a high applicative analysis would require upward selection.
- Structure of v root *thivruuhma*:



- Structure of v# root *ipak*:



7 Karuk High Applicatives

- Karuk also has standard high applicatives. In this discussion I focus on *-kir* ‘instrumental,’⁹ though there is also a benefactive *-ihi*.

To be a true high applicative in Karuk, an applicative must not only combine with unergative verbs, but also

⁸Uninterpretable features are not used in Ramchand (2008), but neither is any way given to ensure obligatory selection of the type needed for the v- roots.

⁹The meaning of *-kir* is in fact much more general than just ‘instrumental’, and even includes some apparently directional uses. I leave a more full working out of its meaning and relation to the directionals to future work.

- combine with $v\#$ roots
- be unable to combine as the only affix with v - roots

- *-kir* can appear on unergative and $v\#$ verbs:

(31) pa-pírish vúra u-’áhoo-**kir**
 the-plant INTENS 3SG>3-go-APPL
 ‘He just went around through the bushes.’
 (KS, ‘Pygmy Owl and Wildcat’)

- Though *-kir* often appears to add Path semantics to a verb, it has clearly non-Path meanings as well:

(32) ásxaay u-píychaa-**kiri**-tih
 green.wood 3SG-spoil.luck-APPL-DUR
 He spoiled his luck with green wood.
 (Chester Pepper, “Medicine for the Return of Wives”, WB_KL-52:20, 1957)

- On the basis of examples like (32), *-kir* appears to be a more generalized applicative.
- Of 18 attested verbal derivatives of *-kir*, not one has a v - root. Many have v roots: *imúskir* ‘to admire’; *ikpúuhkir* ‘to swim to’
- Note also that *-kir* is a position 4 suffix, like several of the directionals.
- Karuk thus not only has a different type of low applicative, it also contrasts that low applicative with canonical high applicatives.

8 Issues

- Though expected to be telic and patterning with telics in the default temporal interpretation test, a few roots nonetheless rarely combine with directionals:

(33) *imkar* ‘to drown’ = *iv* ‘to die’ + *-kar* ‘into, across water’
 a. ... káruk úuth t-u-’íim-kar
 upriver out.in.water PER-3SG-die-into.water
 ... he drowned in the river upriver.
 (Nettie Ruben, “Coyote’s Journey”, WB_KL-01:110, 1957)

- It hardly seems as if *-kar* actually indicates a path here - the dying event takes place in the water, but not on a path moving into the water.
- PathP in Ramchand’s system is not a semantically vacuous position - only elements which actually denote paths can occupy it. If *-kar* doesn’t denote a path in (33), perhaps it is not acting as a Path head and doesn’t restrict the verb from having a ResP.
- Potentially, *-kar* can *underassociate* its Path feature, though only if the requirement in (34-a) is loosened in some way. Doing so would allow for any directional to underassociate and thus combine with the telic roots, however, which is not the observed pattern.

(34) *Underassociation* (Ramchand, 2008, p. 98)
 If a lexical item contains an underassociated category feature

- a. that feature must be independently identified within the phase and linked to the under-associated feature, by Agree;
 - b. the two category features so linked must unify their lexical-encyclopedic content.
- At this point, I must say that *-kar* is polysemous, with one *-kar* bearing a Path feature and one lacking this feature (expressing only location, in water rather than into water.)
 - *ahoo* ‘come, walk,’ though otherwise not occurring with directionals, can occur with the directional *-ka* ‘onto’ when an associated motion suffix *-ar* is also present:

(35) ... tá na-’ûuri páykuuk pa-ni-’ahoo-n-k-ôo-ti yiiv
 PER 1SG-be.tired.of there COMP-1SG-walk-AS.MOT-**onto**-PL.ACT-DUR far
 ... I’m tired of going by the far way yonder.
 (Julia Starritt, “Coyote Marries His Own Daughter”, WB_KL-16:31, 1957)

- This makes intuitive sense - the associated motion suffix introduces a new stage of the event (making punctual events durative), and then the directional can predicate over that new stage. How to capture this intuition structurally or semantically is an open question, however.

9 Conclusions

- Karuk Directional applicatives are syntactically within VP, despite qualifying as high applicatives semantically (as they denote a relation between an event and individual rather than transfer-of-possession between two individuals) and by appearing with unergatives. Thus, low syntactic position does not necessarily correlate with low applicative transfer-of-possession semantics, once structural possibilities like PathP are considered.
 - Karuk directional applicatives constitute a new type of low applicative not considered in Pylkkänen (2008) that is only licensed by the existence of PathP within VP in Ramchand (2008)’s system.
- Karuk directional suffixes offer striking confirmation of the complementarity of ResP and PathP built into Ramchand (2008)’s system.
- A question yet to receive a satisfactory answer is why ResP and PathP are complementary; Ramchand (2008) offers no deep explanation.
- A natural explanation could be that the addition of PathP creates a telic stem, which ResP could not then be subsequently added to (and vice versa).
- In fact, several of the $v\#$ roots (*vâaram*, *uum*, *iipma*), appear to contain a fossilized directional *-ma*:
 - None of these words can be exhaustively morphologically analyzed, however, and *vâaram* and *uum* both do not ever surface with a final *a* as words which clearly have *-ma*, so synchronically at least these verbs cannot be said to include the directional.
 - However, Ramchand (2008) explicitly claims that not all PathPs are telic, and Karuk data like (36) confirm this:

(36) EM: Crystal u-’árih-roov
 C. 3SG-move-upriverward
 VS: Crystal is walking up the river.
 (Vina Smith, 11/29/2014)

- In (36), a root with a directional (a PathP) is interpreted as present, meaning it is atelic.
- Path and Result, however, can be seen as both encoding scalar change, with Result encoding only a two-point scale (cf. Rappaport Hovav & Levin, 2010).
- Can their complementarity be derived from the fact both Result telicity (as in *ipak* ‘arrive’) and Path (as in the directionals) denote scalar change? Is there a restriction on how many different scales a single verb can express?
 - Say, following Kennedy & Levin (2008), that “directed motion verbs ... encode measure of change functions over scales that measure directed motion along a path.” (p. 26).
 - At least by principles of semantic composition alone, there does not appear to be a reason such a measure of change function cannot be predicated of an event that also has a measure of change function over a two-point scale (as might be expected of a verb like ‘arrive’) - two such functions can seemingly combine by Event Identification (cf. Kratzer, 1996) without either of their scales interfering with the other.

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