On the Karuk Directional Suffixes*

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0. Introduction

This paper takes a look at the complex set of directional suffixes in Karuk, a Hokan language of northern California.[1] My goal is to provide a first pass at characterizing the rather diverse syntax and semantics of these suffixes. To this end, I begin by providing a taxonomy of the suffixes according first to whether they are applicative or not, and second, according to certain characteristics of the argument added. I then turn to the issue of accounting for the syntax of sentences containing these suffixes, appealing to the separationist aspect of Distributed Morphology (DM; see, e.g., Halle and Marantz 1993, Harley and Noyer 1999) to suggest a way to account for the fact that the suffixes combine lexical and functional information in single monomorphemic forms. The kinds of arguments which have been made in favor of separationism are based on various types of mismatch between form and function in morphology, and the combination of lexical and functional meanings found in the Karuk suffixes provides a new kind of mismatch to add to that set of arguments.

1. The Data

Karuk actually has a variety of ways of indicating location, direction, and other oblique case notions. A few of these (bare nominals, postpositions, etc.) appear in the examples used in this paper. I focus here, though, on the directional suffixes.

Karuk is a polysynthetic language, with a number of derivational suffix "slots" after the verb. Bright, in his 1957 grammar of the language, numbers them out from the verb stem as illustrated in the table in (1).

* I am grateful to William Bright, Claudia Brugman, Vivian Lin, Joe Salmons, Becky Shields, and the audience at BLS 30 for discussion of the material in this paper. Naturally all wild claims are my own responsibility.

[1] The set of suffixes considered actually marks more than just direction—in fact, they mark a variety of semantic categories—but I will call them "directionals" here just for ease of reference.

(1) Karuk verbal derivational suffix template (Bright 1957:91-115)

	SUFFIX CLASS							
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
V	*-va* plural action	5 suf-fixes	38 directional suffixes	21 suf-fixes	*-ahi* essive	*-na:* plural	*-tih* dura-tive	*-ač* diminu-tive

As the table in (1) shows, suffix class 1 consists of only one member, *-va* 'plural action'.[2] Class 2 consists of five suffixes with various meanings, and class 3 contains what Bright calls the "directional suffixes." There is, though, one suffix in class 2 which also has directional meaning: *-taku* 'on or onto a horizontal surface' (in class 2 because it can combine with directional suffixes from class 3). In addition to these suffixes, there are also several in class 4 whose meanings fit semantically and functionally with this set (although they tend to have more generic meanings than the suffixes of classes 2 and 3). The table in (2), then, provides the entire list of what I will call the directional suffixes, broadly defined.[3]

(2) Karuk directional suffixes (Bright 1957:94-110)

Pos	Form	Meaning	Form	Meaning
2	-taku	'on/onto a horizontal surface'		
3	-mu	'to there'	-ra:	'to here'
	-rupu	'from here downriver-ward'	-ra:	'to here from downriver'
	-unih	'from here downhillward'	-ra:	'to here from downhill'
	-ura:	'from here uphillward'	-faku	'to here from uphill'
	-rô:vu	'from here upriverward'	-várak	'to here from upriver'
	-sip(riv)	'up to the height of a man or less'	-iš(rih)	'down from the height of a man or less'
	-kaθ	'from here across a body of water'	-rina	'to here from across a body of water'
	-kara	'horizontally toward the center of a body of water'	-ríPa:	'horizontally away from the center of a body of water'

[2] See Bright (1957:92-93) for further discussion; I am simplifying somewhat here.
[3] The zero before some of the suffixes is Bright's notation for a harmonizing vowel. Also note that I have replaced his use of 'thither', 'hither', and 'hence' with 'to there', 'to here', and 'from here', respectively.

Pos	Form	Meaning	Form	Meaning
	-kara	'into one's mouth'	-rúPa:	'out of one's mouth'
	-rámnih	'in/into a container'	-ríšuk	'out of a container'
	-vara	'in through a tubular space'	-kiv	'out through a tubular space'
	-rúprih	'in through a solid'	-rúpraṽ	'out through a solid'
	-fúruk	'into an enclosed space'	-rúPuk	'out of an enclosed space'
	-Øvrin	'in opposite direction'	-tunva	'toward each other'
	-várayva	'here and there within an enclosed space'	-Øθuna	'here and there in an open area'
	-kírih	'into or onto fire'		
	-ku	'onto a vertical surface'		
	-kúrih	'into (water)'		
	-paθ	'around in a circle'		
	-raṽ	'in, into'		
	-rip	'off, out' [RARE]		
	-ruprin	'through' [RARE]		
	-suru	'off, away'		
	-Øvra:	'over' [RARE]		
	-Øvraθ	'into a sweathouse; over'		
	-Øvruk	'down over the edge'		
4	-ara	'with' [INSTRUMENTAL]		
	-e:p	'away from [a person]'		
	-ihi	'for' [BENEFACTIVE]		
	-kiri	'in, on, by way of, by means of'		
	-ko:	'to'		
	-rih	'up' [RARE]		
	-sař	'along with'		
	-uk	'to here'		
	-úniš	'to, at, about'		

From the table in (2) we can observe that some of the suffixes in class 3 come in pairs, but that this is not true of all of them. A few of the suffixes from the table are illustrated in (3)–(5):[4]

[4] Abbreviations used in this paper are as follow: ANT – anterior; ANTIC – anticipative; DIM – diminutive; DUR – durative; EMPH – emphatic; FUT – future; HAB – habitual; IMP – imperative; IT – iterative; LOC – locative; PART – participial; PERF – perfective; PL – plural; SG – singular.

(3) xás ʔuváttakar
xas ʔu-váta-kara
and 3SG-walk.on.a.log-horizontally.toward.the.center.of.a.body.of.water
'And he walked out into the river on it' [T1, line 75, pp. 174-175]

(4) čími váripi pá:hak
číMi va-rip-i pá:h-ak
ANTIC go-out-IMP boat-LOC
'Get out of the boat!' [T3, line 179, pp. 186-187]

(5) paʔíppahak ʔíp kú:k ʔuppá:θmat
pa=ʔípaha-ak ʔíp kú:k ʔu-pá:θ-mu-at
the=tree-LOC near.past to 3SG-throw-to.there-PAST
'he threw it at the tree' [Bright 1957:140]

(3) shows *-kara* 'horizontally toward the center of a body of water'. In (4) we see a nominal corresponding to the source argument ('boat'), marked with a locative case suffix. (5) provides an example with a verbal suffix (*-mu*), a nominal suffix (*-ak*), and a postposition (*kú:k*), all marking the same thematic role (goal).

2. Analysis

In this section I first provide a classification of the suffixes, and then go on to explore ways we might account for them using some of the mechanisms of DM.

2.1. Classification of the Suffixes

As a first step towards understanding the use of these suffixes I have sorted them according to whether or not they add an argument. The class of suffixes which do add an argument can then be further sorted. This is shown in (6):[5]

(6) Classification of directional suffixes
I. Directionals: do not add argument
II. Applicatives: add argument
A. Simple applicatives (Path)
B. Applicative + object (Path + Ground): add and conflate argument
1. Applicative + object; category of ground generically specified
2. Applicative + object; ground as medium generically specified
3. Applicative + object; ground specified
C. Applicative + object (Path + Ground): add/conflate deictic argument

An equals sign indicates attachment of a clitic to its host. The source of examples from Bright's (1957) texts is noted in the format: Text number, line number, page number(s).

[5] For discussion of similar suffixes in the related language Atsugewi, see Talmy (1985).

Before discussing details, I should point out that these categories are not mutually exclusive; that is, several of the suffixes fall into more than one category. Note also that the categories do not correspond to position class.

2.2. The Directionals

I begin with what I will call the true directionals.[6] (7) lists this set of suffixes and (8) provides examples:

(7) I. Directionals

-iš(rih)	'down from the height of a man or less'		
-sip(riv)	'up to the height of a man or less'		
-kiri	'in, on, by way of, by means of'		
-paθ	'around in a circle' [→ -iro:piθ / ___ -va]		
-unih	'down from a considerable height'		
-ura:	'up to a considerable height'		
-rih	'up'	-Øvra:	'over'
-suru	'off, away'	-Øvraθ	'over'

(8) a. xás taʔíttam ʔukrî:šrihe:n
xas taʔítam ʔu-ikriv-išrih-ahe:n
and so 3SG-sit-down.from.the.height.of.a.man.or.less-ANT
'And so he sat down' [T7, line 26, pp. 188-189]

b. taʔíttam kunípvi:tšurahe:n
taʔítam kuní-ip-vit-suru-ahe:n
so 3PL-IT-paddle-off-ANT
'So they paddled off' [T3, line 159, pp. 174-175]

c. yané:kva passa:mváro: ʔuvúrunihtih
yané:kva pa=sa:mváro: ʔu-vuř-unih-tih
he.saw.that the=creek 3SG-flow-down.from.considerable height-DUR
'There was a creek flowing down.' [T3, line 65, pp. 172-173]

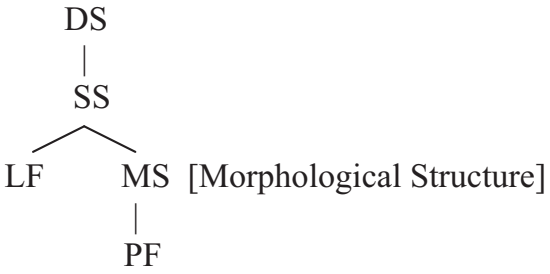
In (8a) we see *-išrih* 'down from the height of a man or less'. In (8b) we find *-suru* 'off', and in (8c) *-unih* 'down from a considerable height'.

2.3. Distributed Morphology Interlude

The second set of suffixes are all applicative; that is, they add an argument to the valence of the verb. The rest of this paper is devoted to exploring the syntax and semantics of this set, and the framework that I situate this in is Distributed Morphology. Very briefly, DM proposes that the structure of the grammar is as in (9):

[6] These correspond to what Talmy (1985) calls "satellites."

(9) Structure of the Grammar in DM (Harley and Noyer 1999)



One of the core aspects of DM is that it is a separationist theory, and this becomes important to the discussion below. Separationism is the position that the form and the meaning of morphemes are handled by different parts of the grammar—that is, it rejects the traditional definition of "morpheme" as the minimal unit of sound and meaning. This is contrary to most other theories of morphology, which we can characterize as "morpheme-based" (following Aronoff 1994:8), and which involve what Anderson (1992:48) refers to as "classical" morphemes (that is, morphemes in the traditional sense).[7]

Separationism is realized in DM as follows: D-structure and S-structure manipulate terminal nodes which consist solely of features. At MS a number of operations on these terminal nodes—merger, fusion, fission, etc.—may occur. At that point vocabulary insertion takes place, inserting phonetic content in the terminal nodes. Note that there is no lexicon in DM; rather, meanings are distributed across the terminal nodes, the vocabulary entries, and an encyclopedia. Vocabulary entries are semantically underspecified, containing just enough featural information for insertion in the appropriate places. This gets filled out by information in the encyclopedia.

2.4. The Applicative Suffixes

Returning to the suffixes, we now consider the applicatives. The first category is the simple applicatives: these transitivize an intransitive verb or add a third argument to a transitive. I follow Talmy in characterizing the semantics of this class as 'Path', defined as "the variety of paths followed, or sites occupied, by the Figure object" (1985:129).[8] See (10) and (11):

[7] See Anderson (1992, especially chapter 3; §3.2 "Problems with Morphemes") for a convincing catalog of mismatches between form and meaning which he argues suggest the correctness of separationism. The applicatives that I discuss in this paper add a new type of data to this catalog.

[8] *-ara* 'with' is an exception to the characterization of these as marking Path, in which case perhaps it should not be included with the set of suffixes under discussion after all. I include it because it is so clearly applicative in its function.

(10) IIA. Simple applicatives ((almost all) Path)

-ara	'with'	-raṽ	'in, into'
-ihi	'for'	-rip	'off, out'
-kiri	'in, on, by way of, by means of'	-ruprin	'through'
		-saf̃	'along with'
-ko:	'to'	-suru	'off'
-paθ	'around' [→ -iro:piθ / ___ -va]	-úniš	'to, at, about'
		-Øvra:	'over'

(11) a. ʔáppa p̄amútra:x tá kuníšpa:tsur
ʔápap pa=mu-átrax tah kuńišpat-suru
on.one.side the=his-arm PERF 3PL-break-off
'They pulled off his arm on one side' [T9, line 38, pp. 192-193]

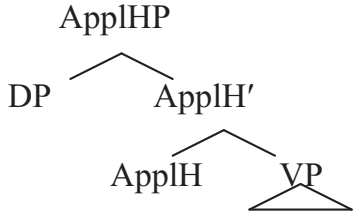
b. nu: páy pe:θívθa:ne:n ʔitaharâ: ñupíhiro:piθvutih
nú: pay pa=iθívθa:ne:n ʔitáhara-an nuʹ-p-ʔih-iro:piθ-va-tih
we this the=earth ten-PART 1PL-IT-dance-around-PL.ACT-DUR
'We dance around this earth ten times' [T9, line 23, pp. 192-193]

c. tî: kanvínnaxsunači
tî: káńʹ-vírax-suru-ač-i
let 1SG>3SG-lick-off-DIM-IMP
'Let me lick it off [the rock]!' [T14, line 24, pp. 200-201]

(11a) contains *išpat*, an intransitive verb meaning 'break', and (11b) contains *ʔih*, likewise intransitive and meaning 'dance'. In each case, addition of an applicative suffix transitivizes the verb. (11c) contains a transitive verb, 'lick', to which a third argument is added with *-suru* (although in this case the argument is unexpressed, because it is known from the immediately preceding context).

(12) illustrates a proposed structure for this type of applicative:

(12) "High Applicative" structure:



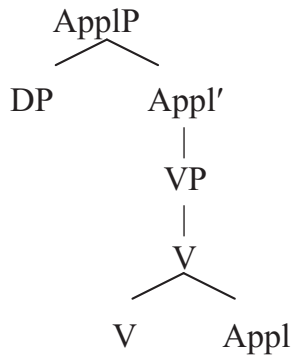
Recent literature on applicatives has argued for a distinction between "high applicatives" and "low applicatives."[9] A high applicative head merges with VP, while a low applicative merges with a DP object. Although Karuk lacks the kinds of syntactic tests (e.g., passivization) used for other languages to establish the type of an applicative, the very fact that the applicative suffixes can attach to

[9] See, e.g., McGinnis (2001), Pylkkänen (2001).

intransitive verbs (both unergative and unaccusative) provides the evidence needed to conclude that they are high applicatives. (Because there is no low applicative in Karuk I refer to these simply as "applicatives" from this point on.)

In Karuk, then, the applicative head lowers and undergoes morphological merger with the verb at MS, resulting in a structure like that shown in (13).[10] Once merger has taken place, Vocabulary insertion can insert the appropriate suffix.

(13) Merger of applicative morpheme with verb:



The next set of suffixes in this category is a bit more complicated. These are the applicatives which mark location and/or direction, and in addition specify something about the added argument. That is, the semantic elements of Path and Ground are conflated in single lexical items. There are three such types; the first specifies the general category of the added argument, as shown in (14):

(14) IIB-1. Applicative + object; category of ground generically specified

a. Location

-ku	'on a vertical surface'
-ramnih	'in a container'
-taku	'on a horizontal surface'

b. Goal

-fúruk	'into an enclosed space'
-ku	'onto a vertical surface'
-kúrih	'into cavity or aperture'
-ramnih	'into a container'
-taku	'onto a horizontal surface'

[10] I assume that this operation is of the type that Embick and Noyer (2001) call Lowering, although nothing critical rests on this claim.

c. Source
-e:p ‘away from a person’
-rišuk ‘out of a container’ -rúPuk ‘out of an enclosed space’

d. Dispersed
-Øθuna ‘here and there in an open area’
-várayva ‘here and there within an enclosed space’

These suffixes mark location, goal, source, and a category I call “dispersed.” In each case, the suffix marks not only the thematic relation (‘in’, ‘on’, ‘out of’), but also a generic description of the physical characteristics of the ground (‘vertical surface’, ‘a container’, etc.). Consider next the examples in (15):

(15) a. yánava ʔitráhyar ʔakvá:t kunʔirukû:ntako:
yánava itráhyar akva:t kunʔ́iru-kû:r-taku-o:
he.saw.it ten raccoon 3PL-PL-sit-on.horizontal.surface-HAB
‘He saw ten raccoons sitting [in a tree]’ [T4, line 8, pp. 176-177]

b. ʔíppaha k̄unʔirukû:ntako:
ʔípahA-ak kunʔ́iru-kû:r-taku-o:
tree-LOC 3PL-PL-sit-on.horizontal.surface-HAB
‘They (raccoons) were sitting in a tree’ [T5, line 4, pp. 180-181]

c. xás ʔutfúnnukva
xas ʔu-it-fúruk-va
and 3SG-look-into.an.enclosed.space-PL
‘So he looked in [to the sweathouse]’ [T4, line 124, pp. 178-179]

d. kári xás kunitfúnnukva pe:kmaháčra:m
kári xas kunʔ́it-fúruk-va pa=ikmaháčra:m
and.then 3PL-look-into.an.enclosed.space-PL the=sweathouse
‘And they looked into the sweathouse’ [T5, line 95, pp. 182-183]

(15a) and (b) illustrate the use of *-taku* ‘on a horizontal surface’. In (15a) we see that it can be used without further specification of the type of horizontal surface involved (and in this case, from context we know that it is the branch of a tree), while (15b) shows that the additional argument can be further specified, in this case with a locative case-marked noun ‘tree’. (15c) and (d) show a parallel pair with *-fúruk* ‘into an enclosed space’.

In the second subcase of this category, the suffix indicates direction plus the medium (or perhaps better the shape of the medium) through which the action

takes place.[11] As in the first subcase, the medium is only generically specified. These suffixes are given in (16), with examples in (17):

(16) IIB-2. Applicative + object; ground as medium generically specified

a. 'In' + medium	-rúprih	'in through a solid'
	-vara	'in through a tubular space'
b. 'Out' + medium	-kiv	'out through a tubular space'
	-rúpraṽ	'out through a solid'
c. Other + medium (?)	-Øvruk	'down over the edge of something'

(17) a. xás ʔumθavitrû:prihva
xas ʔu-imθavit-rúprih-va
then 3SG-club-in.through.a.solid-PL.ACT [T1, line 136, pp. 166-167]
'He almost clubbed through them [the yellowjackets]'

b. xás ʔámta:p kíč ʔúkpu:pvar ʔapma:n
xas ámta:p kič ʔu-ikpup-vara apma:n
and dust just 3SG-rise.in.a.puff-in.through.a.tubular.space mouth
'And just dust puffed into his mouth' [T4, line 76, pp. 178-179]

(17a) shows *-rúprih* 'in through a solid', used without further specification of the medium. (17b) shows *-vara* 'in through a tubular space' with the noun 'mouth' describing the kind of tubular space through which the dust moves.

The third type of applicative suffix marking locative and/or directional arguments includes a specific *type* of argument, as shown in (18) and (19):

(18) IIB-3. Applicative + object; ground specified

a. Goal + object

-kara	'horizontally toward the center of a body of water'	-kúrih	'into water'
		-tunva	'towards each other'
-kara	'into one's mouth'	-Øvraθ	'into a sweathouse'
-kírih	'into or onto fire'		

b. Source + object

-ríPa:	'horizontally away from the center of a body of water'
-rúPa:	'out of one's mouth'
-Øvrin	'in opposite direction'

[11] See Talmy (2000:27) for discussion of the semantics of 'through'.

(19) a. pihnê:fič tuvô:ruvraθahe:n
pihnê:fič t=ʔu-vô:r̃-Øvraθ-ahe:n
coyote PERF-3SG-move.slowly-into.a.sweathouse-ANT
'Coyote has come into the sweathouse' [T2A, line 10, pp. 168-169]

b. xás ʔá:s ʔúska:kurih
xas ʔá:s ʔu-iškak-kúrih
and water 3SG-jump-into.water
'So he jumped into water' [T5, line 32, pp. 182-183]

(19a) illustrates the use of *-Øvraθ*. (19b) shows that the added argument can be doubled by a noun with the same meaning as is carried by the suffix.

There appear, then, to be three possibilities for sentences which contain a verb marked by one of these suffixes: first, no overt manifestation of the added argument, as in (19a), where the suffix is the only element which contributes the meaning 'sweathouse'. We also find doubling of the added argument, as in (19b), where the suffix means 'into water' and is redundantly specified by the noun *ʔá:s* 'water'. Finally, when the added argument is only generically specified, a more specific version can be added for clarification. In (15d) the suffix provides the general type of argument intended, in this case 'an enclosed space', and the NP 'sweathouse' is used to specify what type of enclosed space is meant.

The obvious next question is whether the structure provided in (12) will account for this set of suffixes as well as for the simple applicatives. Doubling of the object is optional for the suffixes of category IIB (that is, the applicatives which add and conflate an argument), indicating that the object which is semantically fused with the applicative component of the suffix is the actual object, and any overt DP functions as an adjunct. Further evidence that such overt DPs are adjuncts comes from the possibility of multiple doubling, as in (20):

(20) kári xás ʔi:nâ:k ʔuvô:nfuruk ʔikmaháčra:m
kári xas ʔi:nâ:k ʔu-vô:r̃-fúruk ikmaháčra:m
and.then indoors 3SG-crawl-into.an.enclosed.space sweathouse
'Then he crawled into a sweathouse' [T5, line 93, pp. 182-183]

In this example the suffix means 'into an enclosed space'. The sentence also contains a word meaning 'indoors', as well as a noun specifying the goal as a sweathouse. Thus the goal is triply marked in this sentence: by the suffix, by the locative 'indoors', and by the DP. This shows that at a minimum the language does allow doubling of the material added by the suffix (because even if we treated one of the two non-suffixal elements as the locative argument in such cases we would still have doubling by the other non-suffixal element).

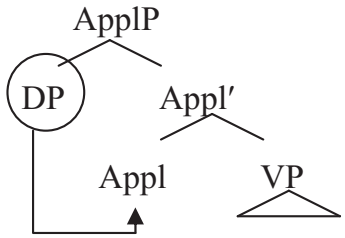
Based both on the optionality of overt locative arguments and on the evidence from multiply marked examples, I conclude that the doubled and further specified objects are adjuncts rather than the realization of the argument added by the

suffix. That is, I propose is that the suffixes of set IIB (those which conflate the applicative with the argument) fit into the same underlying structure as do the suffixes of set IIA (the simple applicatives), shown above in (12).

The difference between the types is that the suffixes of category IIB undergo merger and fusion with the DP argument before vocabulary insertion. Fusion is an operation which "takes two terminal nodes that are sisters under a single category node and fuses them into a single terminal node" (Halle and Marantz 1993:116). Given this description of the process, merger must take place first to combine the DP and applicative head under a single node. These two steps are sketched out in (21) and their result is shown in (22). In these schematizations, "*f*" stands for the features which would characterize each element before vocabulary insertion (I return to this topic below).

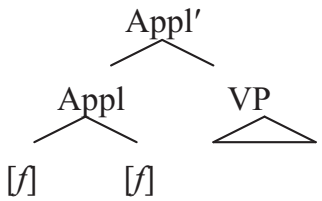
(21) a. Merger
$_{\text{ApplP}}$[DP $_{\text{Appl}'}$[Appl → $_{\text{Appl}'}$[$_{\text{Appl}}$[Appl DP

b. Merger schematized



c. Fusion
$_{\text{Appl}}$[Appl DP → $_{\text{Appl}'}$[$_{\text{Appl}}$[[*f*] [*f*]

(22) Result of merger and fusion



An alternative to this approach might be to relax the sisterhood requirement on fusion, allowing adjacency to be a sufficient condition for fusion. This would simplify the process under consideration to a single step. However, since there is so little literature on fusion, I will proceed under the assumption that merger does have to take place before fusion can operate. The resolution of this question does not significantly affect the basic idea proposed here.

If merger fails to take place, fusion is bled and simply cannot occur. In this case the DP can be filled with an overt nominal and the applicative head (if there is an appropriate one available) must be drawn from category IIA—that is, the applicatives which do not include information on their associated argument. But if merger and fusion do take place, the resulting fused applicative head is lowered and suffixed to the verb.

It would be legitimate to ask at this point whether it would be simpler to say that these are lexical items with complex semantics and be done with it. There are two ways to respond to this question. First, if one adopts the kind of approach to morphosyntax current in many theories in which functional elements are manipulated by the syntax, a fusion approach is the only way of combining the functional material in these suffixes with the lexical material which they undeniably contain. Second, and more theory-neutrally, I think we would be missing a significant generalization if we treated these as semantically and syntactically opaque. The applicative suffixes form a set, and to treat the simple applicatives (my category IIA) differently than the applicatives which fuse with some specification of the argument (my category IIB) would overlook the similarities across the sets.

2.5. A Digression on Hand-Waving

There are several issues that I am glossing over, a few of which I address here.

First, if we adopt the analysis of applicatives proposed in sources like Pylkkänen (2001) and McGinnis (2001), important details remain to be dealt with, such as the checking and possible movement of DPs. The argument introduced by the applicative head checks its Case on *v*, which is not a problem for intransitives, but gets complicated if there is a theme argument in addition to the applicative argument. One possible solution is found in the proposals of Gerdts and McGinnis (2003), in which there are more sites for merger of a high applicative head than the one shown in (12), but I leave specific resolution of this aside.

Second, the issue of the "appropriate" features for the DP and the applicative is one that should be taken seriously. Consider Halle and Marantz's comment:

> The morphosyntactic features [at the levels of DS, SS, and LF] are drawn from a set made available by Universal Grammar… The semantic features and properties of terminal nodes created at DS will also be drawn from Universal Grammar and perhaps from language-particular semantic categories or concepts. (1993:121)

The features for the applicative heads are fairly easy to deal with. Various linguists have made proposals over the years for universal categories along these lines. To take one example, another separationist morphologist, Robert Beard, has argued for a universal set of what he calls Grammatical Category Functions (Beard 1995). This is a set of 44 primitive grammatical functions which are expressed by case and adpositions in the world's languages, and is intended to be

exhaustive and universal.[12] Beard acknowledges that it is preliminary, but says that "at most one or two additional functions" (1995:206) might need to be added. The meanings that the applicative heads contribute in Karuk fall nicely into Beard's categories (despite the fact that they are verbal suffixes and he only considers instances of case and adpositions).

However, what universal features characterize a DP which must be filled with a vocabulary entry meaning 'sweathouse'? There are two ways we could answer this question. On the one hand, in the quote just given, Halle and Marantz suggest that some language-particular semantic categories might be included in the set of features found in terminal nodes. If 'sweathouse' is culturally salient enough to be lexicalized into a directional suffix, perhaps we could just posit a feature [+sweathouse]. On the other hand, if that seems too far-fetched, another aspect of DM might be invoked to handle the problem. Recall that vocabulary entries are underspecified in DM. That is, they only contain sufficient features to get inserted in the right places. An alternative to having a feature [+sweathouse] would be to have more general features for, say, buildings, or structures built by humans, maybe with particular functions designated as well. The vocabulary entry would match on these general features, and then the encyclopedia would fill in the language-particular cultural information that the specific structure is a sweathouse.

2.6. Applicatives with Deictic Arguments

Returning now to the set of Karuk directionals, the final set is IIC, directionals which add and conflate a deictic argument. These are listed in (23) and exemplified in (24):

(23) IIC. Applicative + object (Path + Ground): add & conflate deictic argument

1. Goal + away (distal)	-mu	'to there'
2. Goal + here (proximal)	-ra:	'to here'
	-uk	'to here'

3. Goal + here (proximal) + direction

-faku	'to here from uphill'
-ra:	'to here from downhill'
-ra:	'to here from downriver'
-rina	'to here from across a body of water'
-várak	'to here from upriver'

[12] Cf., however, Wierzbicka's much more restrictive Natural Semantic Metalanguage, a "common core" (1997:24) of semantic primitives that all languages are claimed to share. For a description of this theory's temporal and spatial primitive notions, see Goddard and Wierzbicka (2002:66-71).

4. Source + here (proximal) + direction

-kaθ	'from here across a body of water'	-rupu	'from here downriverward'
		-unih	'from here downhillward'
-rô:vu	'from here upriverward'	-ura:	'from here uphillward'

(24) a. tî: kú: k̄aníkfu:kmi
tî: ku:k kán-ikfuk-mu-i
let to.there 1SG-crawl-to.there-IMP
'Let me crawl to it' [T1, line 55, pp. 164-165]

b. va: vúra ʔô:k nupθivrúhuke:š
vá:h vúrA ʔô:k nu-p-θivruh-uk-aviš
so EMPH here 1PL-IT-float-to.here-FUT
'We'll float back to here' [T3, line 154, pp. 174-175]

c. xás paʔíššaha tuvú:nfak
xas pa=ʔíšahA t-ʔu-vuř-faku
and the=water PERF-3SG-flow-to.here.from.uphill
'And the water flowed away downhill' [T4, line 81, pp. 178-179]

d. čavúra ʔô:k ʔiθivθané:nʔa:čip tó :pθívru:hvarak
čavúrA ʔô:k iθívθa:ne:n-ʔá:čip t=ʔu-p-θivruh-várak
finally here world-center PERF-3SG-IT-float-to.here.from.upriver
'Finally he floated back downriver here to the center of the world'
[T1, line 83, pp. 164-165]

These suffixes are yet more complex than the ones we have seen before. First, note that there is only one (24a) which indicates a location away from the speaker; this is the (relatively) simple *-mu* 'to there'. *-mu* is similar to the suffixes of class IIB, in that it both marks goal and simultaneously expresses the argument 'there'. It is different, though, in that the goal is specified with reference to the location of the speaker or subject. There are two suffixes which mark the parallel category 'to here', *-ra:* and *-uk*. The latter is the more common of the two; in fact, I have yet to find any textual examples with the former.

The second thing to note is that the rest of the suffixes mark both a deictically determined source or goal *and* a direction. For example, *-faku* adds 'to here' and the direction 'from uphill'; *-várak* adds 'to here' and 'from upriver'.

The syntactic possibilities for sentences containing these suffixes are the same as they are for the other suffixes; that is, they can occur alone (24c), entirely doubled (as in (24a)), with just the deictic argument doubled (24b), or with the deictic argument doubled *and* further specified ((24d), where we have both 'here' and 'world-center' specified as goal).

Most of the suffixes of this set could be given an analysis which conflates an applicative head ('to' or 'from'), a deictic locative argument ('here' or 'there'),

and a direction (e.g., 'downhillward'). However, the two which mean 'to here from across a body of water' and 'from here across a body of water' (*-rina* and *-kaθ*, respectively) suggest that an even more complex analysis is required. These include the applicative head and deictic location, but in addition include a second applicative notion ('across') and a second specification of ground ('a body of water'). Under the analysis proposed here, we would have to posit two applicative heads, with repeated merging and fusion of the heads and arguments. This pushes the analysis to the limits of credibility, but it could be done. The complexity of the data could be argued to justify a correspondingly complex analysis in such cases.

3. Conclusion

To sum up, this paper has provided a survey of the directional suffixes of Karuk, broadly defined. I have taken a general look at their semantics, although a truly detailed examination awaits further study. I have also looked at the syntax of sentences which contain these suffixes, and have found that they fall into two broad classes: those which merely describe a Path (meaning directional and locative notions, for the most part), and those which increase the valence of the verb. Among the latter set we find simple applicatives, which allow an argument to be added to the clause containing the verb, and more complex items which encode both the directional or locative meaning plus something about the applicative argument as well. As we saw, this can be a generic category or a precise specification of the ground argument.

The last type, in which we find conflation of the functional element with some highly specific lexical element, provides—I argue—powerful evidence for the correctness of the separationist hypothesis: that the form and the meaning of morphemes are best dealt with separately in the grammar. This is significant because the Karuk suffixes are derivational, and separationism, while fairly widely accepted in approaches to inflection, is less often appealed to in approaches to derivation (although see Beard 1998).

Furthermore, the examples of fusion that I have found in the literature are few, but always involve fusion of two elements of the same category, for example functional heads or clitic arguments. In Karuk, as I have shown, we have a somewhat different possibility: a situation in which a lexical and a functional head fuse to form single monomorphemic items. Separationism allows for a systematic account of suffixes which simultaneously encode the functional notion of Path (for example, 'into') and a highly specific lexical notion, Ground (for example, 'sweathouse'), as are found in the Karuk data.

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