

State and Change of State in Kakataibo: The Role of Root Semantics

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1. Introduction

- It is typically assumed that verb meanings consist of an “event structure” constraining the events described by the verb, consisting of (a) a template built from basic event-denoting predicates (e.g. via functional light v or a heads; Marantz 1997) and (b) idiosyncratic roots filling in real world meanings (e.g. manner, state; Rappaport Hovav and Levin 1998). Consider the case of change of state verbs AND DERIVATIONALLY RELATED FORMS:

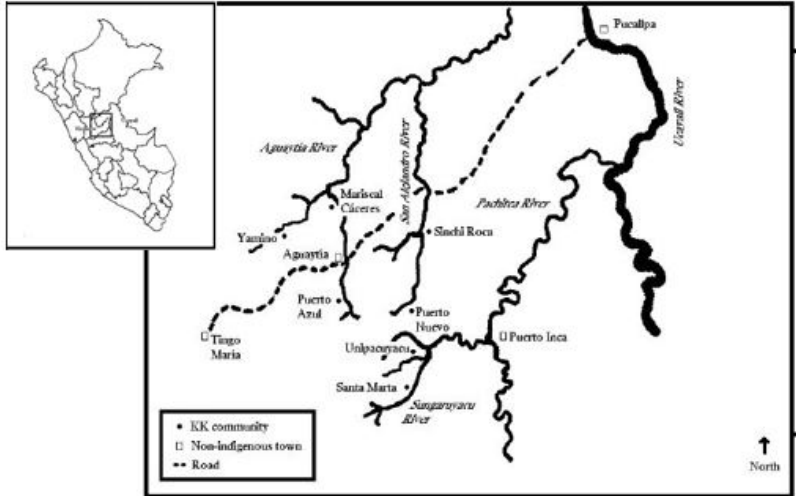
- (1)
- a. **Simple state:** The rug is flat $\approx [_{aP} \text{the rug } [_{a'} a \sqrt{\text{flat}}]]$
 - b. **Inchoative:** The rug flattened $\approx [_{vP} \text{the rug } [_{v'} -en_{\text{become}} \sqrt{\text{flat}}]]$
 - c. **Causative:** John flattened the rug $\approx [_{vP} \text{John } [_{v'} v_{\text{cause}} [_{vP} \text{the rug } [_{v'} -en_{\text{become}} \sqrt{\text{flat}}]]]]$
 - d. **Result state:** The rug is flattened $\approx [_{aP} \text{the rug}_i [_{a'} a [_{vP} t_i [_{v'} -en_{\text{become}} \sqrt{\text{flat}}]]]]$

- The template defines the verb’s lexical aspect, argument structure, regular derivational morphology, and templatic entailments of causation and change; the root determines the verb’s idiosyncratic morphological shape and kind of state.
- An underexplored question (though see Dowty 1979, Goldber 1995, Wechsler 2005, a.o., for related discussion) is whether there is a clean divide between meanings encoded by roots and templates, e.g. is BECOME only introduced templatically?
- Presumably, if templates determine grammatical behavior semantically, roots should not entail such meanings, Embick’s (2009) “Bifurcation Thesis for Roots” (BTR) and Arad’s (2005) “Root Hypothesis” (also Borer 2005, Dunbar and Wellwood 2016).
- **Case study from the change lexical entailment in change of state verbs:** Change of state verbs are standardly assumed to have the same templatic structure as in (1), with the change entailment coming from the same templatic source across all verbs. This makes the following two predictions:
 - **Morphological:** Any change-of-state root should appear in all the templates in (1), having simple stative, inchoative, causative, and result state forms, modulo individual lexical idiosyncrasy.
 - **Semantic:** An entailment of change entailment should only be present when there is templatic material to introduce it like v_{become} as in (1b-c), but not in (1a), i.e. all such roots should have simple stative forms entailing no change.

- In a broad typological survey, Beavers et al. (2017) show that the morphological prediction is incorrect, based on a distinction between two classes of roots:
- (2)
- a. Root describing Dixon’s (1982) property concept (hence “**PC roots**”): Roots for dimension (e.g. *large, small*), age (e.g. *old*), value (e.g. *bad, good*), color (e.g. *white, black*), physical property (*cool, dirty*), speed (*fast, slow*), and human propensity (*angry, calm*)
 - b. Roots of Levin’s (1993) entity specific change-of-state (*burn, freeze*), cooking (*cook, bake*), breaking (*break, crack*), bending (*bend, fold*), killing (*kill, murder*), destroying (*destroy, ruin*), calibrated change-of-state (*go up, go down*), and inherently directed motion verbs (*come, go*) (hence “**result roots**”)
- PC roots generally show simple stative forms but result roots lack them.
 - Beavers et al. propose that result roots lack simple stative forms because there is an entailment of change in their roots, ruling them out in simple stative contexts, thus contrasting with PC roots and violating the semantic restriction of the BTR.
 - However, determining whether this semantic distinction between PC and result roots holds can only be determined with in-depth language-by-language investigation.
 - We do this for Kakataibo, replicating and expanding on Beavers et al.’s morphological contrast for the language, and furthermore showing that PC and result roots also differ in their semantics in the way predicted by Beavers et al. (2017).
 - **Conclusion:** Change of state verbs in Kakataibo fall into two classes, those that lack a lexical entailment of change (the property concept roots) and those that have one (the result roots). The existence of the latter class falsifies BTR.

2. Kakataibo Basics

- Kakataibo (ISO 639-3 code ‘cbr’) is a Panoan language spoken by approximately 1500 people (Frank 1994) along the Aguaytía, San Alejandro and Sungaruyacu rivers in the Peruvian Amazonic regions of Ucayali and Huánuco.
- This research focuses on the San Alejandro dialect (see also Zariquiey 2011a for a description of the Lower Aguaytía dialect of Kakataibo). The data comes from a corpus of approximately 22 hours of naturally occurring texts analyzed at the morpheme level (Valle 2014a) sponsored by ELDP. Elicited examples complement this corpus.



Map 1. Kakataibo native communities (Zariquiey 2011:59)

- Kakataibo is a highly agglutinative, and almost exclusively suffixing (excepting body-part prefixes). However, the highest morphological complexity is found in the verb, as shown in Figure 1. Affirmative clauses require slots 8, 9 and 10 to be filled. Slot 4 – Valency changing houses the *-mi* 'causative', *-o* 'factitive', *-t* 'reflexive', among others.

Figure 1. Kakataibo verbal template

-1	1	2	3	4	5	6	7	8	9	10	
Body-part	Verb root	Transitivity	Directional	Associated movement	Valency changing	Mood	Aspect1	Time	Aspect 2	3p	Affectiveness
									Nominalizer		
									Switch reference		

- Constituent order is dependent on both syntactic and information structural constraints. There are two syntactic requirements, which can be overruled in connected speech, though:
 - a) having the main clause verb in final position, and
 - b) second-position clitics for validationality, evidentiality, and subject pronouns.

(3) _____ 2CL _____ V

- Within this template (3), AOV/SV constituent orders occur in out-of-the-blue sentences, but it varies according to information structure requirements, e.g. focus (Valle 2014b) and topic. Verbal arguments are usually dropped in connected speech and their overt presence responds to information structural constraints as well.

(4) charaxaka sasa biaxa.¹
charax=*n*=*ka*=*a* sasa bis-*a*-*x*-*a*
king.fisher=*A/S*=*VAL*=*3A/S* fish catch-PFV-*3-N.PROX*
‘A kingfisher caught the fish.’

(5) anun kuriki ‘atəkēbaēxáxi.
a=*nun* kuriki ‘*a-tēkēn-bait-ēxan-x-i*
3=INST money do-ITR-DUR-REC.PST-*3-PROX*
‘(They) made money again with that.’

- As for grammatical relations, Kakataibo shows a morphological split-alignment (Valle 2009; cf. Zariquiey 2011a): ergative for nouns (*A* marked by =*n*; *S/O* marked by \emptyset); accusative for pronouns (*A/S* =*n* and *O* \emptyset). However, it shows an accusative profile throughout the grammar.

(6) chunanká ‘unpax ‘aia.
chuna=*n*=*ka*=*a* ‘unpax ‘*a-i-a*
spider.monkey=*A/S*=*VAL*=*3A/S* water do-IPFV-*N.PROX*
‘The spider monkey is drinking water’

(7) chaxuka ‘abati.
chaxu=*ka*=*a* ‘abat-*i-i*.
deer=*VAL*=*3A/S* run-IPFV-*PROX*
‘The deer is running’.

- Complex system of switch reference (Figure 2), and pervasive use of clausal nominalizations (Valle and Zariquiey n.d.): *-kē* ‘non-future NMLZ’, *-ti* ‘future NMLZ’, *-a* ‘remote past NMLZ’, *-ai* ‘present non-habitual NMLZ’.

Figure 2. Switch-reference suffixes

Same subject		Different subjects		Argument to argument	
<i>-kin</i>	<i>A/S</i> > <i>A:SE</i>	<i>-kēbetan</i>	<i>A/S</i> ≠ <i>A:(SE?)</i>	<i>-kēxun</i>	<i>O</i> > <i>A:PE</i>
<i>-i</i>	<i>A/S</i> > <i>S:SE</i>	<i>-kēbē</i>	<i>A/S</i> ≠ <i>S:(SE?)</i>	<i>-kē</i>	<i>O</i> > <i>S:PE</i>
<i>-xun</i>	<i>A/S</i> > <i>A:PE</i>	<i>-nun</i>	<i>A/S</i> ≠ <i>A/S:FE</i>	<i>-kētia</i>	<i>A/S/O</i> > <i>O:PE</i>
<i>-a</i>	<i>A/S</i> > <i>S:PE</i>	<i>-mainun</i>	<i>A/S</i> ≠ <i>A/SÜO</i> ≠ <i>O:SE</i>	<i>-ia</i>	<i>A/S/O</i> > <i>O:SE</i>
<i>-tankēxun</i>	<i>A/S</i> > <i>A:PE</i>				
<i>-tankē</i>	<i>A/S</i> > <i>S:PE</i>				
<i>-nuxun</i>	<i>A/S</i> > <i>A:FE</i>				
<i>-nu</i>	<i>A/S</i> > <i>S:FE</i>				

¹ Abbreviations: 1 ‘first person’, 3 ‘third person’, *A* ‘subject of transitive verb’, CAUS ‘causative’, DUR ‘durative’, EMPH ‘emphatic’, FACT ‘factitive’, INDF.PRO ‘indefinite pronoun’, INST ‘instrument’, INTR ‘intransitive’, IPFV ‘imperfective’, ITR ‘iterative’, NEG ‘negation’, NFUT.NMLZ ‘non-future nominalizer’, N.PROX ‘non-proximante’, PFV ‘perfective’, PL ‘plural’, POSS ‘possessive’, PROX ‘proximate’, REC ‘recent’, REFL ‘reflexive’, *S* ‘subject of intransitive verb’, SE ‘simultaneous event’, TR ‘transitive’, UP ‘up’, VAL ‘validational’.

-tana A/S>A/S:SE
-ana(n)
A/S>A/SÙO≠O:SE

3. Roots – The Basic Morphological Facts

- There is a morphological distinction in Kakataibo, like other languages discussed in Beavers et al. (2017), between PC and result roots. This was determined by looking at translation equivalents of the set of PC and result root meanings given in Beavers et al. (full list given below).
- In particular, PC roots have simple stative forms (8), usually adjectival or nominal, with inchoatives often labile with them (9) and causatives (10) and result state forms (15)-(16) derived from them. Result roots lack simple stative forms and instead are categorically basic verbs (13)-(14).

PC unmarked simple state

- (8) chunanka tuná ‘ikë.
chuna=n=ka=a tunan ‘ikë
spider.monkey=A/S=VAL=3A/S black be.IPFV.3
‘A/the spider monkey is black.’

Derived inchoative

- (9) uninka tunania.
uni=n=ka=a tunan-i-a
Kakataibo.person=A/S=VAL=3A/S black-IPFV-N.PROX
‘A/the man is becoming black.’

Derived causative (-o 'factitive')

- (10) uni yubéka tunoia.
uni yubě=n=ka=a tunan-o-i-a
Kakataibo.person sorcerer=A/S=VAL=3A/S black-FACT-IPFV-N.PROX
‘A/the sorcerer made (it) black.’

Derived result state (inchoative)

- (11) uninka tunankë ‘ikë.
uni=n=ka=a tunan-kë ‘ikë
Kakataibo.person=A/S=VAL=3A/S black-NFUT.NMLZ be-IPFV-3
‘A/the man is blackened.’

Derived result state (causative)

- (12) uni yubéka tunonkë ‘ikë.
uni yubéka tunan-o-kë ‘ikë
K.person sorcerer=A/S=VAL=3A/S black-FACT-NFUT.NMLZ be-IPFV-3
‘A/the sorcerer made (it) blackened.’

Result root underived causative

- (13) nunkana pëi tēkēni.
 nu=n=ka=na pëi tēkēn-i
 1PL=A/S=VAL=3A/S leaf snap-IPFV
 ‘We snap the leaf’

Result root derived inchoative (-mēt 'reflexive')

- (14) pëika tēkēmēti.
 pëi=ka= a tēkēn-mēt-i-i
 leaf-VAL=3A/Ssnap-REFL-IPFV-PROX
 ‘A/the leaf snaps.’

Result root derived state (causative, -kē 'non-future nominalizer')

- (15) pëika tēkékē ‘ikē.
 pëi=ka=a tēkēn-kē ‘ikē
 leaf-VAL=3A/S snap-NFUT.NLMZ be.IPFV.3
 ‘A/the leaf is bent (by something/someone)

Result root derived state (inchoative, -mēt 'reflexive' + -kē 'non-future nominalizer')

- (16) pëika tēkēmēkē ‘ikē.
 pëi=ka=a tēkēn-mēt-kē ‘ikē
 leaf-VAL=3A/S snap-REFL-NFUT.NLMZ be.IPFV.3
 ‘A/the leaf is bent (by itself)

Table 1. PC roots

Root	Word class	Simple state	Inchoative	Causative	Result state (inchoative)	Result state (causative)
large/big/enlarge	Adjective	ani / cha	ani / cha	ani-o / cha-o	ani-kē / cha-kē	ani-o-kē / cha-o-kē
small/shrunk/shrink	Adjective	chukúmat	chukúmat	chukúmat-o	chukúma-kē	chukúma-o-kē
long/lengthen	Adjective	chadkēt	chadkēt	chadkē-o	chadkēt-kē	chadkēt-o-kē
wide/widen	Adjective	anacha	anacha	anacha-o	anacha-kē	anacha-o-kē
tall/height/heighten	Adjective	bënsit	bënsit	bënsit-o	bënsit-kē	bënsit-o-kē
aged/age	Adjective	xëni	xëni	xëni	xëni-kē	xëni-o-kē
bad/worse/worsen	Adjective	‘aidama	‘aidama	‘aidama-o	‘aidama-kē	‘aidama-o-kē
good/improved/improve	Adjective	upit	upit	upit-o	upit-kē	upit-o-kē
white/whiten	Adjective	uxu(a)	uxu(a)	uxu(a)-o	uxu(a)-kē	uxu(a)-o-kē
black/blacken	Adjective	tunan	tunan	tunan-o	tunan-kē	tunan-o-kē
cold/make cold	Adjective	masi	masi	masi-o	masi-kē	masi-o-kē
hot/heat up	Adjective	xana	xana	xana-o	xana-kē	xana-o-kē
dry/dry	Verb		ëd-ki	ëd-ka	ëd-ki-kē	ëd-ka-kē
wet/wetten	Adjective	chabat	chabat	chabat-o	chabat-kē	chabat-o-kē
straight/straighten	Adjective	puntët	puntët	puntët-o	puntët-kē	puntët-o-kē
hard/harden	Adjective	inru	inru	inru-o	inru-kē	inru-o-kē
soft/soften	Adjective	bachu	bachu	bachu-o	bachu-kē	bachu-o-kē
tight/tighten	Verb		sën-ki	sën-ka	sën-ki-kē	sën-ka-kē

clean/clean	Adjective	upit	upit	upit-o	upit-kē	upit-o-kē
smooth/smooth	Adjective	dibat	dibat	dibat-o	dibat-kē	dibat-o-kē
sharp/sharpen	Verb (tr)		xēto-rakat	xēto	xēto-rakat-kē	xēto-kē
sweet/sweeten	Noun	bata	bata	bata-o	bata-kē	bata-o-kē
strong/strengthen	Noun	kuin	kuin	kuin-o	kuin-kē	kuin-o-kē
calm/calmed	Verb (intr)		tanti	tanti-o/mi	tanti-kē	tanti-o/mi-kē
scared/scare	Verb (tr)		ratu-t	ratu	ratu-t-kē	ratu-kē
sick/sicken	Verb		akúmat	akúmat-o	akúmat-kē	akúmat-o-kē
sad/sadden	Verb (tr)	madat dina-n	madat dina-n	madat dina-n-mi	madat dina-n-kē	madat dina-n-mi-kē
hurt/hurt	Verb (tr)		tēa-akat	tēa	tēa-akat-kē	tēa-kē
tired/tire	Verb (intr)	bama	bama	bama-mi	bama-kē	bama-mi-kē
embarrassed/embarrass	Verb (intr)	katēt	katēt	katēt-mi	katēt-kē	katēt-mi-kē
worried/worry	Verb	dina-n	dina-n	dina-n-mi	dina-n-kē	dina-n-mi-kē

Figure 3. Result roots

Root	Word class	Simple state	Inchoative	Causative	Result state (inchoative)	Result state (causative)
burned/burn	Verb (tr)		nēn-mēt	nēn	nēn-mēt-kē	nēn-kē
decayed/decay, rotten/rot	Verb (intr)		chēki	chēki-mi	chēki-kē	chēki-mi-kē
swollen/swell	Verb (intr)		paparu	paparu-mi	paparu-kē	paparu-mi-kē
grown/grow	Verb (intr)		kani	kani-o	kani-kē	kani-o-kē
flowered/flower	Noun		ua	ua-o/mi	ua-kē	ua-o/mi-kē
withered/wither	Adjective	kacha	kacha	kacha-o/mi	kacha-kē	kacha-o/mi-kē
fermented/ferment	Verb (intr)		rēi	rēi-mi	rēi-kē	rēi-mi-kē
tarnished/tarnish	Verb		tērē-ki	tērē-ka	tērē-ki-kē	tērē-ka-kē
cooked/cook	Verb (tr)		ʼa-ru-akat	ʼa-ru	ʼa-ru-akat-kē	ʼa-ru-kē
boiled/boil	Verb		kua-ki	kua-ka	kua-ki-kē	kua-ka-kē
broken/break	Verb		tu-ki	tu-ka	tu-ki-kē	tu-ka-kē
cracked/crack	Verb		tu-ki	tu-ka	tu-ki-kē	tu-ka-kē
crushed/crush	Verb (tr)		chaka-t	chaka	chaka-t-kē	chaka-kē
shattered/shatter	Noun		dani-ut-(rakat)	dani-o-pat	dani-ut-(rakat)-kē	dani-o-pat-kē
split/split	Verb		tēkē-t	tēkē-n	tēkē-t	tēkē-n
torn/tear, ripped/rip	Verb		tu-ki	tu-ka	tu-ki-kē	tu-ka-kē
snapped/snap	Verb (tr)		tēkēn-mēt	tēkēn	tēkēn-mēt-kē	tēkēn-kē
bent/bend	Verb (tr)		kapun-mēt	kapun	kapun-mēt-kē	kapun-kē
folded/fold	Verb (tr)		kuēdtaran-mēt	kuēdtaran	kuēdtaran-mēt-kē	kuēdtaran-kē
wrinkled/wrinkle	Adjective		churi	churi-o	churi-kē	churi-o-kē
dead/killed/kill	Verb (intr)		bama	rētē	bama-kē	rētē-kē

murdered/murder	Verb (tr)	rētē-akat	rētē	rētē-akat-kē	rētē-kē
drowned/drown	Phrase	bakami ki	bakamio	bakami ki-kē	bakami-o-kē
destroyed/destroy	Adjective	madat	madat-o	madat-kē	madat-o-kē
go up (ascended/ascend)	Verb	‘i-ru	‘a-ru	‘i-ru-kē	‘a-ru-kē
go down (fallen/fall)	Verb	nipakēt	nipat	nipakēt-kē	nipat-kē
come/came	Verb (intr)	u	u-mi	u-kē	u-mi-kē
gone/go	Verb (intr)	kwan	kwan-mi	kwan-kē	kwan-mi-kē
go in (entered/enter)	Verb (intr)	asin	asin-mi	asin-kē	asin-mi-kē
go out (exited/exit)	Verb (tr)	piku-t	piku	piku-t-kē	piku-kē
returned/return	Verb (tr)	maya-t	maya	maya-t	maya-kē

- This justifies a basic morphological distinction between the two types of roots (below we discuss further morphological distinctions between them).
- Now, in principle this could just be a fluke of Kakataibo (just as Embick 2004 suggests occurs in English as well). However, there are two reasons to think this is not the case. First, the same pattern recurs across languages in Beavers et al.’s sample for the same root meanings. So there is a typological tendency. Second, as we demonstrate next, there are correlating semantic properties confirming a distinction.

4. Semantic Predictions

4.1. *Property concept roots* (color, age, dimension)

- Consistent with the predictions of Beavers et al., PC roots also have several semantic properties suggesting that largely conform to the predictions of the BTR. In particular, when asserting that an entity has the relevant property with a simple stative form there is no entailment that there has been a prior change into that property.

Dimension

(17) báinka ani ‘ikē ‘aibika uini abi ni
bain=ka= ani ‘ikē ‘aibi=ka=a uini a=bi ni
hill=VAL=3A/S big be.IPFV.3 but=VAL=3A/S INDF.PRO 3=EMPH nor

Diosabi ni uni yubé anioima.
Diosa=bi ni uni yubē=n ani-o-i-i=ma
god=EMPH nor K.person sorcerer=A/S=EMPH big-FACT-IPFV-PROX=NEG
‘The hill is big, but nobody nor God nor a sorcerer made it big.’

Color

(18) ‘ókanka tuná ‘ikē ‘aibika
‘ók=an=ka=a tunan ‘ikē ‘ai=bi=ka=a
tapir=A/S=VAL=3A/S black be.IPFV.3 then=EMPH=VAL=3A/S

uini abi tunóma ‘ikë.
uini a=bi tunan-o=ma ‘ikë
INDF.PRO 3=EMPH black-FACT-NEG be.IPFV.3
‘The tapir is black, but nobody made it black.’

- This is true even for the verbal basic states as well (19), suggesting that although these are verbs they nonetheless are purely stative:

Verb

(19) madika ëdkikë ‘ikë ‘aibika
madi=ka=a ëd-ki-kë ‘ikë ‘ai=bi=ka=a
sand=VAL=3A/S dry-INTR-NFUT.NMLZ be.IPFV.3 then=EMPH=VAL=3A/S

uini abi ëdkakëma ‘ikë.
uini a=bi ëd-ka-kë=ma ‘ikë
INDF.PRO 3=EMPH dry-TR-NFUT.NMLZ=NEG be.IPFV.3
‘The sand is dry but nobody dried it.’

- All of this is crucially distinct from derived stative forms, which are deverbal (based on the causative or the inchoative form), and in these cases denying that a change occurred is not possible (20)-(22). This is again consistent with the BTR: being derived from verbal forms that entail a change, this entailment is inherited by the stative form.

(20) # ‘asa xoka bënsiokë ‘ikë
‘asa xo=ka bënsit-o-kë ‘ikë
manioc bone=VAL=3A/S thin -FACT-NFUT.NMLZ be.IPFV.3

‘aibika uini abi bënsiõima
‘ai=bi=ka=a uini a=bi bënsit-o-i=ma
then=EMPH=VAL=3A/S INDF.PRO 3=EMPH thin-FACT-A/S>S:SE=NEG

‘íáxa.
‘i-a-x-a
be-PFV-3-N.PROX
‘The manioc stem is thinned but nobody made it thin.’

(21) # taíka chadkëokë ‘ikë
tain=ka=a chadkë-o-kë ‘ikë
arrow.stick=VAL=3A/S thin-FACT-NFUT.NMLZ be.IPFV.3

‘aibika uini abi chadkëoima
‘ai=bi=ka=a uini a=bi chadkë-o-i=ma
then=EMPH=VAL=3A/S INDF.PRO 3=EMPH thin-FACT-A/S>S:SE=NEG

‘iáxa.

‘i-a-x-a

be-PFV-3-N.PROX

‘The tree (used to make arrows) stem is thinned but nobody made it thin.’

- (22) # taíka puntëokë ‘ikë
 tain=ka=a puntët-o-kë ‘ikë
 arrow.stick=VAL=3A/S straight-FACT-NFUT.NMLZ be.IPFV.3

‘aibika uini abi puntëoima
 ‘ai=bi=ka=a uini a=bi puntët-o-i=ma
 then=EMPH=VAL=3A/S INDF.PRO 3=EMPH straight-FACT-A/S>S:SE=NEG

‘iáxa.

‘i-a-x-a

be-PFV-3-N.PROX

‘The tree (used to make arrows) stem is straightened but nobody made it straight.’

- A second piece of evidence that PC roots do not entail change by themselves is that their verbal forms admit restitutive modification with *again*. It is a well known fact in English that *again*-type modifiers have two readings with PC roots, the restitutive or the repetitive, the former that the state held before and now holds again, and the latter that the event happened before and now is happening again, something presumed to follow from different scopes of *again* over the event structure (Dowty 1979):

- (23) a. John flattened the rug again, and it had been flat before.
 [_{vP} John [_{v' V}_{cause} [_{vP} the rug [_{v' -en}_{become} [\surd flat again]]]]]]]]
- b. John flattened the rug again, and he had done that before.
 [[_{vP} John [_{v' V}_{cause} [_{vP} the rug [_{v' -en}_{become} \surd flat]]]]]] again]

- The fact that a restitutive reading is possible at all suggests that the root itself does not entail change --- if it did then even at the lowest attachment point of the modifier it would still outscope and thus entail the repetition of a change.
- Kakataibo *again*-modification is morphologically marked in the verb, but allows both readings with PC roots:

- (24) [Context: Spider monkey starts off black. Then, it is made to change colors. Then turns black back again.]
 chunaka tunatëkënia.
 chuna=ka=a tunan-tëkën-i-a
 spider.monkey=VAL=3A/S black-AGAIN-IPFV-N.PROX
 ‘The spider monkey has turned black again.’

- (25) [The spider monkey starts off black. Then, a sorcerer makes it white. Then, another sorcerer makes it black back again.]

bësi uni yubëka chuna tunamitëkënia.
 bësi uni yubët=ka=a chuna tunan-mi-tëkën-i-a
 other man sorcerer=VAL=3A/S spider.monkey black-CAUS-AGAIN-IPFV-N.PROX

‘Another sorcerer made the spider monkey black again.’

- (26) [The papaya starts off sweat. Then, scientists make it non-sweat. Then, other scientists make it sweat back again.]

nonpuchaka ain bata batotëkëaxa.
 nonpucha=ka=a ain bata bata-o-tëkën-a-x-a
 papaya=VAL=3A/S 3.POSS sweet sweet-FACT-AGAIN-PFV-3-N.PROX

‘They have sweetened the papaya again.’

- Taken together, the evidence suggests that PC roots do not entail a change, and that morphologically, although they differ in their basic stative category on an idiosyncratic basis, nonetheless conform to the predictions of the BTR.

4.2. Result state roots (break, cook)

- Result roots are crucially distinct in a systematic way from PC roots, having patterns that violate the BTR. First and foremost, these roots generally do not admit readings in which the change-of-state was not entailed to happen, evidenced by the fact that when used statively (crucially though with a derived stative form, since there is no simple stative), cancellation of this change is not possible.

- (27) *naëka nënkë ‘ikë ‘aibika
 naë=ka=a nën-kë ‘ikë ‘ai=bi=ka=a
 dig=VAL=3A/S burn-NFUT.NMLZ be.IPFV.3 then=EMPH=VAL=3A/S

uini abi nënkëma ‘ikë.
 uini a=bi nën-kë=ma ‘ikë
 INDF.PRO 3=EMPH burn-NFUT.NMLZ=NEG be.IPFV.3
 ‘The farm is burnt but nobody burnt it.’

- (28) *ñu nami tëakë ‘ikë ‘aibika
 ñu nami tëa-kë ‘ikë ‘ai=bi=ka=a
 thing flesh cut-NFUT.NMLZ be.IPFV.3 then=EMPH=VAL=3A/S

uini abi tëakëma ‘ikë.
 uini a=bi tëa-kë=ma ‘ikë
 INDF.PRO 3=EMPH cut-NFUT.NMLZ=NEG be.IPFV.3
 ‘The meat is cut but nobody cut it.’

- Similarly, *again*-modification is also possible, but not on a restitutive reading. NB: for these roots the intuition that they require a prior change is so intuitively strong that it was difficult to get speakers to consider alternatives. Hence we constructed contexts that would try to make such readings plausible, though the contexts themselves are admittedly a bit fantastical.

(29) [A baby was born with a knife on its body. Then, doctors take the knife off the baby. Then, the doctors stab again the baby with a knife.]

ka chichikanē chachitēkēaxa.
 =ka=a chichika=nē chachi-tēkēn-a-x-a
 =VAL=3A/S knife=INST stab-AGAIN-PFV-3-N.PROX
 ‘He stabs again (the baby) with a knife.’

(30) [The man picks up the banana, which is edible. Then, a wizard makes the banana inedible. Then, the man fries the banana and makes it edible again.]

uninka nodi sasakatēkēnia.
 uni=n=ka=a nodi sasa-ka-tēkēn-a-x-a
 man=A/S=VAL=3A/S banana fryTR-AGAIN-PFV-3-N.PROX
 ‘The man fried the banana again.’

(31) [The man picks up the papaya, which is edible. Then, a wizard makes the papaya inedible. Then, the man cooks the papaya and makes it edible again.]

uninka nonpucha ‘arutēkēa.
 uni=n=ka=a nonpucha ‘a-ru-tēkēn-a-x-a
 man=A/S=VAL=3A/S papaya do-UP-AGAIN-PFV-3-N.PROX
 ‘The man cooked the papaya again.’

- Taken together, these data suggest a major split between Kakataibo PC and result roots: the former seem to have a simple stative reading with no entailment of change in them, while the latter are disassociable from an entailment of change. To analyze this in a way supporting the BTR we would be forced to say that restitutive attachment is idiosyncratically ruled out:

(32) a. * $[_{VP} \text{uninka} [_{V'} \nu_{\text{cause}} [_{VP} \text{nodi} [_{V'} \nu_{\text{become}} [\sqrt{sasa} \text{-tēkēn}]]]]]]$
 b. $[[_{VP} \text{uninka} [_{V'} \nu_{\text{cause}} [_{VP} \text{nodi} [_{V'} \nu_{\text{become}} \sqrt{sasa}]]]]] \text{-tēkēn}]$

- However, the same roots are also semantically exceptional in at least two other languages (English, as in Koontz-Garboden and Beavers 2016, and Kinyarwanda, as in (Jerro 2017). Thus there is a cross-linguistic tendency arguing against this lexical stipulation.
- A simpler analysis is that restitutive scope *is* allowed, but that the root itself entails change-of-state, and thus even on restitutive scope the reading ends up repetitive, exactly as suggested by Koontz-Garboden and Beavers (2016).

4.3 Exceptional Roots

- That said, there are some interesting deviations from this cross-linguistic trend in Kakataibo not attested in the other two languages. There are a set of result roots that seem to allow denial of a change and also allow restitutive modification despite having as their basic form a causative or inchoative verb and lacking a simple state:

(33) [The stone was never alive. Then, it was brought to life. Then, I kill it.]

maxákana rětékēa.
maxat=ka=na rětē-těkēn-a
stone=VAL=1A/S kill-AGAIN-PFV
'I killed the stone again'

(34) [The zombie is already dead, then comes to life. I kill it.]

kana zombie rětētěkēni.
=ka=na zombie rětē-těkēn-i
=VAL=1A/S zombie kill-AGAIN-IPFV
'I kill the zombie again.'

(35) [The desert starts off dry. Then, it is made non-dry. Then turns dry again.]

madin papanka ědkitěkēnia.
madi=n papa=n=ka=a ěd-ki-těkēn-i-a
sand=POSS father=A/S=VAL=3A/S dry-INTR-AGAIN-IPFV-N.PROX
'The desert is getting dry again.'

- There is a simple explanation for these data: these roots have the same underlying event structure as change-of-state verbs derived from PC roots, yet for idiosyncratic reasons they are lexicalized directly as change-of-state verbs rather than as simple states. This predicts that restitutive attachment will yield a restitutive reading.

5. Causative/Inchoative Alternations at the PC/Result Root Contrast

- PC roots are further distinguished from result roots with regard to the causative/inchoative morphological alternation they show.
- PC roots have inchoative forms that are labile with the simple stative term and the causative is derived from the inchoative via factitive suffix *-o*, as illustrated in (8), (9) and (10) above.
- However, result roots behave differently and fall into three groups according to their markedness with regard to the form of the inchoative/causative:
 - Result roots with the causative unmarked and the inchoative derived via reflexive *-t* (see also Figure 3 above). The unmarked causatives are centered on cooking-breaking-bending-killing roots, which describe events that typically have a cause.

(36)	Causative result root		Derived inchoative	
	<i>chaka</i>	‘crush’	<i>chaka-t</i>	‘crush-REFL’
	<i>‘a-ru</i>	‘do-UP, cook’	<i>‘a-ru-akat</i>	‘do-UP-REFL, cook-REFL’
	<i>rětë</i>	‘kill’	<i>rětë-akat</i>	‘kill-REFL’
	<i>nën</i>	‘burn’	<i>nën-mët</i>	‘burn-REFL’
	<i>kapun</i>	‘bend’	<i>kapun-mët</i>	‘bend-REFL’

- Result roots with the inchoative unmarked and the causative derived via *-mi* ‘causative’. This kind of result roots mostly occurs with human propensity, entity-specific change-of-state, and inherently directed motion roots, i.e. roots that describe events typically occurring without a cause. This pattern of use of valency-adjusting morphology in these two kinds of result roots is explained by a markedness constraint based on the presence or lack thereof a cause (Haspelmath 1993).

(37)	Inchoative result root		Derived causative	
	<i>chëki</i>	‘decay’	<i>chëki-mi</i>	‘decay-CAUS’
	<i>u</i>	‘come’	<i>u-mi</i>	‘come-CAUS’
	<i>asin</i>	‘go in’	<i>asin-mi</i>	‘go in-CAUS’
	<i>kwan</i>	‘go’	<i>kwan-mi</i>	‘go-CAUS’
	<i>paparu</i>	‘swell’	<i>paparu-mi</i>	‘swell-CAUS’

- Result roots with equipollent forms for the inchoative and causative derived via either of the intransitive/transitive valency-adjusting suffixes *-ki/-ka* or *-t/-n*. These roots do not have a specified transitivity value and cannot function as stems (e.g. cannot directly attach verbal Slots 8 ‘Aspect 2’, 9 ‘3p’ and 10 ‘Affectiveness’, see Figure 1)

(38)	Inchoative		Causative	
	<i>kua-ki</i>	‘boil’	<i>kua-ka</i>	‘boil’
	<i>tu-ki</i>	‘break’	<i>tu-ka</i>	‘break’
	<i>tëkë-t</i>	‘split’	<i>tëkë-n</i>	‘split’
	<i>so-t</i>	‘sit’	<i>so-n</i>	‘sit’

- This last class of equipollent verbs amounts to approximately 16% of the (n = 871 verb roots, see Nichols, Peterson, and Barnes 2004, Haspelmath et al. 2014), which suggests a preference for this transitivity type within the language, and suggests a language-specific tendency that overrides the morphological contrast between PC and result state roots in Kakataibo.
- The key point is that PC and result roots differ in their basic lexicalization: PC roots lexicalize as stative forms and result roots as verbs, suggesting again a root-class based distinction not expected by the BTR. Still further, additional root-subclass distinctions within the class of result roots further influences which verb in the paradigm is unmarked and which is marked, suggesting still further that root semantics matters grammatically.

6. Conclusions

- We have shown that in Kakataibo PC and result state roots behave differently with regard to the morphological prediction based on BTR (Embick 2009, a.o).
- This, in turn, supports the findings of Beavers et al.'s (2017) who find a cross-linguistic divide between PC and result roots, where the former have simple stative forms whereas the latter lacks them, leading to various concomitant additional grammatical generalizations based on root semantics.
- This adds cross-linguistic weight to the idea that there are systematic classes of violations of the BTR, suggesting that in event structural approaches roots can carry the same sorts of meanings as templates and even have consequences for regular morphological processes.
- That said, Kakataibo does show some deviations from the patterns discussed in Beavers et al. (2017) and Haspelmath (1993) for certain roots, though idiosyncratic lexicalizations and language-specific tendencies could account for them.

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References

- Arad, Maya. 2005. *Roots and Patterns: Hebrew Morpho-Syntax*. Dordrecht: Springer.
- Beavers, John et al. 2017. Two Types of States: A Cross-Linguistic Study of Change-of-State Verb Roots. Paper presented at the LSA annual meeting.
- Borer, Hagit. 2005. *In Name Only (Vol. 1)*. Oxford: Oxford University Press on Demand.
- Dowty, David. 1979. *Word Meaning and Montague Grammar*. Dordrecht: Reidel.
- Embick, David. 2004. "On the Structure of Resultative Participles in English." *Linguistic Inquiry* 35: 355–92.
- . 2009. "Roots, States, and Stative Passives." In *Abstract for Root Workshop*, University of Stuttgart.
- Frank, Erwin. 1994. "Los Uni." In *Guía Etnográfica de La Alta Amazonía*, eds. Fernando Santos and Federica Barclay. Quito: FLACSO/IFEA, 133–237.
- Goldber, Adele. 1995. *Constructions: A Construction Grammar Approach to Argument Structure*. Chicago: University of Chicago Press.
- Haspelmath, Martin. 1993. "More on the Typology of Inchoative/causative Verb Alternations." In *Causatives and Transitivity*, Amsterdam/Philadelphia: John Benjamins, 87–121.
- . 2014. "Coding Causal-Noncausal Verb Alternations: A Form-Frequency Correspondence Explanation." *Journal of Linguistics* 50: 587–625.
- Jerro, Kyle. 2017. Change-of-State Verb Roots in Kinyarwanda. Paper presented at the LSA annual meeting.
- Koontz-Garboden, Andrew, and John Beavers. 2016. Proceedings from the 34th West

- Coast Conference on Formal Linguistics *Change of State Verbs and the Semantics of Roots*. eds. Cole Brendel et al. Summerville: Cascadilla Proceedings Project.
- Marantz, Alec. 1997. *No Scape from Syntax: Don't Try Morphological Analysis in the Privacy of Your Own Lexicon*. Philadelphia.
- Nichols, Johanna, David A. Peterson, and Jonathan Barnes. 2004. "Transitivizing and Detransitivizing Languages." *Linguistic Typology* 8(2): 149–211.
- Rappaport Hovav, Malka, and Beth Levin. 1998. "Building Verb Meanings." In *The Projection of Arguments: Lexical and Compositional Factors*, eds. Miriam Butt and Wilhelm Geuder. Stanford, CA: CSLI Publications, 97–134.
- Valle, Daniel. 2009. "El Sistema de Marcación de Caso En Kakataibo." Universidad Nacional Mayor de San Marcos.
- . 2014a. "A Documentation of Cashibo-Cacataibo of San Alejandro (Pano) with a Focus on Information Structure." <http://elar.soas.ac.uk/deposit/0315>.
- . 2014b. "Focus Marking in Kakataibo (Panoan)." *Oklahoma Working Papers in Linguistics* 1: 55–78.
- Valle, Daniel, and Roberto Zariquiey. "Clausal Nominalizations in Kakataibo (Panoan)." In *Nominalization in South American Languages*, eds. Masayoshi Shibatani and Roberto Zariquiey.
- Wechsler, Stephen. 2005. "Resultatives under the 'Event-Argument Homomorphism' Model of Telicity." In *The Syntax of Aspect*, eds. Nomi Erteschik-Shir and Tova Rapoport. Oxford: Oxford University Press, 255–73.
- Wellwood, Alexis. 2016. "States and Events for S-Level Gradable Adjectives." In *SALT* 26, , 166–84.
- Zariquiey, Roberto. 2011a. "A Grammar of Kashibo-Kakataibo." La Trobe University.
- . 2011b. "Aproximación Dialectológica a La Lengua Cashibo-Cacataibo (Pano)." *Lexis* XXXV(1): 5–46.