Ditransitive Verbs and the Nature of Root Meaning: Evidence from Kinyarwanda
John Beavers (U. Texas), Kyle Jerro (U. Essex), and Andrew Koontz-Garboden (U. Manchester)

Event structural approaches (e.g. Dowty 1979) assume verb meanings decompose into an event template defining the event's broad temporal contours and an idiosyncratic root filling in a verb's real world details. Harley (2003) decomposes ditransitives into causal head *v* with a manner root modifier and functional complement defining possession or co-location (see also Pylkkänen 2008):

(1)   a. John threw Kim the ball. $\approx [_{vP}$ John $[_{v'} v+\sqrt{\text{throw}} \; [_{PP}$ Kim $[_{P'} P_{have}$ the ball $]\,]\,]\,]$

    b. John threw the ball to Kim. $\approx [_{vP}$ John $[_{v'} v+\sqrt{\text{throw}} \; [_{PP}$ the ball $[_{P'} P_{loc}$ to Kim $]\,]\,]\,]$

A common assumption is that templatic meanings such as possession and co-location are only introduced by functional heads, never roots (Embick's 2009 "Bifurcation Thesis"). Beavers & Koontz-Garboden (2017) instead show that the templates in (1) are highly unspecified and the root fills in templatic details like possession and co-location. However, the limited availability of English indirect object (IO) templates might suggest language-specific idiosyncrasy and not a broader pattern. We examine ditransitives in Kinyarwanda, where IOs correspond to applied objects (AO) of (low) applicative *–ir* (Kimenyi 1980), which applies to more roots and thus clearly reflects a templatic head. Even here the verb's meaning depends on roots in ways that defy Bifurcation.

Unlike English IOs, *–ir* AOs occur with any transitive change-of-state verb. However, the role is that of a beneficiary and not a recipient. Recipients are only licensed with a limited class of roots ($\approx$ translation equivalents of English ditransitives), though a beneficiary reading is also possible:

(2)   *N-a-men-ey-e/-juguny-iy-e/-gabur-iy-e*　　　　　　　*igikombe Nkusi.*
　　　1SGS-PST-break-APPL-PFV/throw-APPL-PFV/serve-APPL-PFV cup　　　Nkusi

　　　'I broke a cup for Nkusi.' (cp. **I broke Nkusi a cup*)　　(Nkusi benefits, need not receive)
　　　'I threw/served Nkusi a cup/someone a cup on Nkusi's behalf.'(Nkusi benefits *or* receives)

Still, AOs/IOs generally cannot be inanimate unless intepreted as animate (e.g. *Kigali* for "The Kigali Office") and asymmetrically c-command the object (data omitted), suggesting an equivalence. Unlike *to* variants, non-applied Kinyarwanda verbs rarely allow goal/recipient/beneficiary XPs:

(3)   *N-a-menny/juguny/gabuy-e*　　　*igikombe (*Nkusi).*
　　　1SGS-PST-break/throw/serve-PFV cup　　　Nkusi

　　　'I broke/threw/served a cup.'

Yet with ditransitive roots it is implicit, and its role depends on the root — the cup must end up elsewhere with *ku-jugunya* 'throw' or have a recipient with *gu-fungurira* 'serve'. A few roots allow AOs with no overt *–ir* (recipient for *gu-ha* 'give', goal for *gu-siga* 'leave'). The effect of adding *–ir* is root contingent; with *gu-ha* it adds a new benefactive; with *gu-siga* the goal becomes a recipient:

(4)   a. *N-a-ha-ye*　　　*Ben igi-tabo/N-a-h-er-eye*　　　*Nkusi igi-tabo Ben.*
　　　　　1SGS-PST-give-PFV Ben 7-book/1SGS-PST-give-APPL-PFV Nkusi 7-book　Ben
　　　　　'I gave Ben the book/I gave Ben the book for Nkusi'

    b. *Nkusi y-a-siz-e*　　　*igi-tabo i　Kigali/y-a-sig-iy-e*　　　*Ben igi-tabo.*
　　　　　Nkusi 1S-PST-leave-PFV 7-book 19 Kigali/1S-PST-leave-APPL-PFV Ben 7-book
　　　　　'Nkusi left a book in Kigali/Nkusi left Ben a book.'

In sum, the effects of *–ir* are partly root-contingent: the AO role depends on the root (2), certain roots entail implicit participants that *–ir* realizes (3), and whether *–ir* adds an argument (2), (4a), realizes an implicit one (3), or modifies an overt one (4b) is root contingent. Crucially, that roots

introduce possession and co-location — templatic notions also entailed by functional heads like by Harley's P heads and Kinyarwanda *–ir* — means roots entail templatic meaning, contra Bifurcation.

We start by assuming (1), save that Kinyarwanda has just one P-head that takes just a theme, explaining prototypical monotransitivity. Following Beavers (2011:31), we divide changes-of-state into dyadic changes where the theme's result state is defined in relation to another participant (goal or recipient) and non-dyadic changes where the state is non-relational. We further assume all changes can have a beneficiary, i.e. the outcome of any event can benefit someone. Thus the P-head (5a) is like the state-denoting root assumed for change-of-state verbs (5b), albeit relating the theme to an implicit participant with role R' (goal or recipient, i.e. the non-theme in dyadic change):

(5) a. $[\![P]\!] = \lambda y \lambda e[theme'(y,e) \wedge \exists z[R'(z,e)]]$ b. $[\![\sqrt{\text{mena}}]\!] = \lambda y \lambda e[theme'(y,e) \wedge breaking'(e)]$

Ditransitive roots (6a,b) compose with *v* in (6c) by rule (6d) and define the agent's manner plus further refine the role of the implicit non-theme as a recipient or goal (Beavers & Koontz-Garboden 2017:74) (where $rg(e,P) = \iota z[P(e) \to R'(z,e)]$, i.e. *rg* picks out the R' participant z of P for e):

(6) a. $[\![\sqrt{\text{fungurira}}]\!] = \lambda P \lambda x \lambda e[serving'(x,e) \wedge recipient'(rg(e,P),e)]$
 b. $[\![\sqrt{\text{jungunya}}]\!] = \lambda P \lambda x \lambda e[throwing'(x,e) \wedge goal'(rg(e,P),e)]$
 c. $[\![v]\!] = \lambda P \lambda x \lambda e[causer'(x,e) \wedge P(s)]$ d. $\lambda P \lambda x \lambda e[[\![v]\!](P,x,e) \wedge [\![\sqrt{\text{root}}]\!](P,x,e)]$

Composing (5) with its theme DPs and then the (modified) *v* and its causer DP (plus $\exists$-binding e) derives the following for (3) as canonical change-of-state, caused motion, and caused receiving:

(7) a. $\exists e[causer'(\mathbf{I}',e) \wedge theme'(\mathbf{c}',e) \wedge breaking'(e)]$
 b. $\exists e[causer'(\mathbf{I}',e) \wedge theme'(\mathbf{c}',e) \wedge \exists z[R'(z,e)] \wedge throwing'(\mathbf{I}',e) \wedge goal'(rg(e,P),e)]$
 c. $\exists e[causer'(\mathbf{I}',e) \wedge theme'(\mathbf{c}',e) \wedge \exists z[R'(z,e)] \wedge serving'(\mathbf{I}',e) \wedge recipient'(rg(e,P),e)]$

Applicative *–ir* in (8) applies between *v* and the state-phrase, adding an argument with role B' (recipient or beneficiary, i.e. animate(-like) non-themes in changes-of-state), giving (9) for (2).

(8) $[\![\text{–}ir]\!] = \lambda P \lambda r \lambda e[B'(r,e) \wedge P(e)]$
(9) a. $\exists e[causer'(\mathbf{I}',e) \wedge B'(\mathbf{n}',e) \wedge theme'(\mathbf{c}',e) \wedge breaking'(e)]$
 b. $\exists e[causer'(\mathbf{I}',e) \wedge B'(\mathbf{n}',e) \wedge theme'(\mathbf{c}',e) \wedge \exists z[R'(z,e)] \wedge throwing'(\mathbf{I}',e) \wedge goal'(rg(e,P),e)]$
 c. $\exists e[causer'(\mathbf{I}',e) \wedge B'(\mathbf{n}',e) \wedge theme'(\mathbf{c}',e) \wedge \exists z[R'(z,e)] \wedge serving'(\mathbf{I}',e) \wedge recipient'(rg(e,P),e)]$

In (9a) the root-supplied change is non-dyadic, so Nkusi's role cannot be recipient and thus must be beneficiary. In (9b,c) the change is dyadic, opening up the possibility of Nkusi being conflated with z and thus interpreted as a recipient (the intersection of R' an B'). In (9c) this changes nothing save naming z, while in (9b) the implicit goal now becomes a recipient (albeit still a goal since it is a motion verb). If Nkusi is instead interpreted as distinct from z he will thus be a beneficiary, explaining the ambiguity in (2). Lexical ditransitives as in (4) we assume involve a specialized null applicative *–∅* lexically selected by each root, with the R'-role filled in by the root. For $\sqrt{\text{siga}}$ *–ir* can substitute for *–∅*, converting the goal to a recipient (cp. (9c)). With $\sqrt{\text{ha}}$ the role is already a root-selected recipient. Alternating *–∅* with *–ir* would be non-contentful, violating Jerro's (2016:57) Applicativization Output Condition that applied verbs must have monotonically stronger readings than non-applied equivalents. Thus the only possibility is for *–ir* to add a beneficiary.

Thus Kinyarwanda ditransitive roots entail possessional and co-locational meaning otherwise found in templatic heads, suggesting the incorrectness of Bifurcation. That these roots entail these meanings we ultimately suggest follows from their idiosyncratic content: the manners they name are only definable in terms of possession and co-locational meanings. Furthermore, these data also fundamentally support the conclusion of Marten (2003) and Jerro (2016) that Bantu applicatives do more than just add wholly new arguments into event structures, but interact with root meanings to also modify thematic roles of existing arguments or give expression to implicit event participants.

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