The syntax and event semantics of serial verb constructions in Igbo (Benue Congo)

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1. Introduction

SVCs: informal characterization (Veenstra & Muysken 2018)

- only one grammatical subject;
- at most one shared grammatical object;
- one specification for tense/aspect;
- only one possible negator;
- **no intervening coordinating conjunction.**

(1) Adé mú ìwé wá. *Yorùbá*
Ade take book come
'Ade brought a/the book.'

General objectives:

- What subtypes of SVCs in natural languages?
- What is the syntax and event semantics of SVCs?

Main goal: Detailed comparison of two SVC-types in Igbo (Niger Congo):

i **-OBJ-Sharing** (2-a) ≈ multi-event
ii **+OBJ-sharing** (2-b) ≈ sequential

(2) a. Úchè gbùrù ọ̀kụ́kọ̀$_i$ síé ya$_i$. Igbo
Uche kill chicken cook it
'Uche killed the chicken and cooked it.' **-OBJ-sharing**
b. Úchè gbùrù ọ̀kụ́kọ̀$_i$ síé ___.
Uche kill chicken cook
'Uche killed and cooked the chicken.' **+OBJ-sharing**

– Different syntax ⇒ different event semantics
– +OBJ-sharing SVCs ⇒ novel event-compositional procedure: ***force-unified event extension***

2. Event semantics

- **Complex Events: Compositional Mechanisms**

i e-**MOD**(dification): **1agent, 1force, 1event**
$\exists e \exists f\ [P_1(e,f)\ \&\ P_2(e,f)]$

⇒Double predication over a single event

ii **Force-extension** ($<_f$): **1agent, 1force, 2events**
$\exists e_1 \exists f\ [\ \exists e_3\ [e_1<e_3\ \&\ net(e_3)=f\ \&\ P_1(e_1,\mathbf{f})\ \&\ \exists e_2\ [e_2<e_3\ \&\ P_2(e_2,\mathbf{f})]]]$; defined iff

(a) fin(f) ≠ init(f) (= f a non-zero vector), AND
(b) $\exists$f',f'' [f=f'+f'' ∧ net(e_1)=f' ∧ net(e_2)=f'']: ⋄ f''(f'(init(f))) = fin(f); with init(f) = source state and fin(f) = resulting situation after application of joint force f (Copley & Harley 2015)

⇒Fusion of two e's to larger force-dependent WHOLE

‖ individual domain: **part-whole structures**

leg + armrest + back + seat = chair
killing + chicken + cooking = unified process
↪ force gives conceptual unified shape to event sequences

iii e-**CUM**(ulation): **1agent, 2forces, 2events**
$\exists e,f_1,f_2\ [e=e_1 \oplus e_2\ \&\ P_1(e_1,f_1)\ \&\ P_2(e_2,f_2)]$

⇒Plural collection of independent events

iv ∃**e**-Conjunction: **2agents, 2forces, 2events**
$\exists e_1,f_1\ [P_1(e_1,f_1)\ \&\ \exists e_2,f_2\ [P_2(e_2,f_2)]$

⇒two predications over independent events

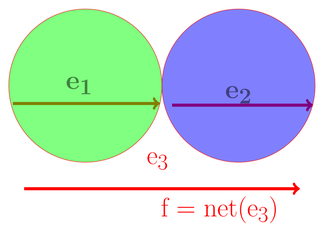
A note on force

(i) (vector) function of type <s,s>
(ii) situations determine the overall force working in them: net(s)=f: "an input of energy that arises from the objects and properties in a situation" (Copley & Harley 2015:104).
(iii) forces can be associated with ≥1 event (Goldschmidt 2018) ≈ 'e contributes to f'

(3) FORCE(e_1) = f & FORCE(e_2) = f

(iv) lexical predicates come with force & event arguments (≠ Copley & Harley 2015)

(4) $[[t_i\ cook]]^g = \lambda e.\ \lambda f.\ cook(e, g(i)) \wedge \text{FORCE}(e)=f$



	contrary f-adverbs	A-Q on V_2	CUM	AG-constancy	*again*
e-MOD	*	*	*	✓	*
$e<_f$	*	*	*	*	✓
⊕-CUM	✓	*	✓	*	✓
∃e	✓	✓	*	✓	✓

Summary of diagnostics

- **Event-semantic Diagnostics**

i *Contrary f-adverbs*: Independent events allow for modification with contrary f-adverbs (violently-carefully, quickly-slowly); force-unified events do not.

(5) a. SUBJ V_1 OBJ quickly V_2 (ya) slowly
b. *Chopping away wildly, the lumberjack carefully felled the tree

ii *A-quantification on V_2*: A-quantification maps event predicates to propositions and is hence only consistent with ∃e-conjunction

(6) a. SUBJ V_1 OBJ [Q-Adv V_2 (ya)]
b. Uche regularly kills chicken sometimes cooks (ya).

iii *Cumulation*: Plural collections of independent events should be cumulatable over plural Agents

(7) Uche & Obi catch fish cook (ya)

⇒ (7) true if Uche caught the fish and Obi cooked it?

iv *AG-constancy*: Agent of the two verbs identical under ∃e-conjunction and e-modification.

(8) Five men catch fish cook (ya).

⇒ but (8) is true under $e<_f$ if five men caught the fish and only two of them cooked it.

v *again-modification*: repetitive markers can individually target structurally independent subevents:

(9) SUBJ V_1+SFX$_{again}$ OBJ V_2+SFX$_{again}$ (ya)

3. Applying the diagnostics

(10) **contrary adverbs**

a. Uche gbù-rù ọ̀kụ́kọ̀$_i$ **ọ́síịsọ** sí-é ya$_i$ **nwáyọ̀ọ̀ nwáyọ̀ọ̀**
Uche kill-PST chicken quickly cook-SFX 3SG slowly
'Uche killed the chicken quickly and cooked it slowly.' *-OBJ-sharing*
b. *Uche gbù-rù ọ̀kụ́kọ̀$_i$ **ọ́síịsọ** sí-é ___$_i$ **nwáyọ̀ọ̀ nwáyọ̀ọ̀**
Uche kill-PST chicken quickly cook-SFX slowly
Intended:'Uche killed the chicken quickly and cooked it slowly.' *+OBJ-sharing*
c. Uche gbù-rù ọ̀kụ́kọ̀$_i$ **n'íké** sí-é ___$_i$ **nwáyọ̀ọ̀ nwáyọ̀ọ̀**
Uche kill-PST chicken P-strength cook-SFX slowly
Intended:'Uche killed the chicken with force and cooked it slowly.' *+OBJ-sharing*

(11) **A-quantification**

a. Úchè nà-ègbú ọ̀kụ́kọ̀$_i$ **ógè ùfọ́dú** sí-é ya$_i$
Uche HAB-kill chicken time some cook-SFX 3SG
intended: 'Uche regularly kills chicken. sometimes cooking them.' *-OBJ-sharing*
b. *Úchè nà-ègbú ọ̀kụ́kọ̀$_i$ **ógè ùfọ́dú** sí-é ___$_i$
Uche HAB-kill chicken time some cook-SFX
intended: 'Uche regularly kills chicken. sometimes cooking them.' *+OBJ-sharing*

(12) **cumulativity**

a. Ụ́mụ̀nwóke gbà-gbù-rù ǹgbàdà ìrí
men shoot-kill-PST antelope ten
'The men shot a total of ten antelopes.' ✓CUM *over pl. agents*
b. Ụ́mụ̀áka kọ̀-tà-rà ázụ̀$_i$ ìrí síé ___$_i$/ya$_i$
children catch-DIR-PST fish ten cook /it
'The children caught a total of ten fish and cooked them.' ✗CUM *of e_1 & e_2 over pl. agents*

→ (12-b) not true if some of the children caught the fish, and the others cooked it.

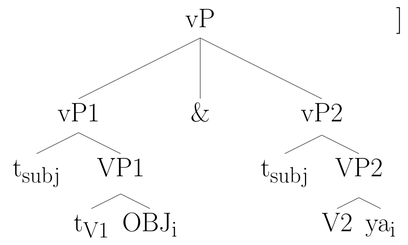
(13) **AG-constancy**

a. Ụ́mụ̀nwóke ìrí kọ̀-tà-rà ázụ̀$_i$ síé ___$_i$
men ten catch-DIR-PST fish cook
'Ten men caught some fish and cooked them.' *+OBJ-sharing*

→ (13-a) true if ten men caught the fish and only five of them cooked it *no AG-constancy ($e<_f$)*

4. Analysis

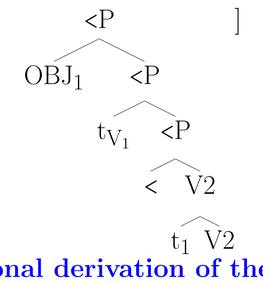
- **-OBJ-sharing (2a) = ∃e-conjunction**

(14)


(15) [[Úchè gbù-rù ọ̀kụ́kọ̀$_i$ sí-é **ya$_i$**]]^g
Uche kill-PST chicken cook-SFX 3SG
'Uche killed a/the chicken and cooked it.'

= 1 iff $\exists e_1,f_1$ [kill (e_1,ιx.chicken(x)$_i$) ∧ net(e_1)=f_1 ∧ AG(Uche,e_1)] ∧ $\exists e_2,f_2$ [cook(e_2,g(i)) ∧ net(e_2)=f_2 ∧ AG(Uche,e_2)]

- **+OBJ-sharing (2b) = force-unified event extension**

(16)


(17) [[Úchè gbù-rù ọ̀kụ́kọ̀$_i$ sí-é **t$_i$**]]^g
Uche kill-PST chicken cook-SFX
'Uche killed a/the chicken and cooked it.'

= 1 iff $\exists e_1,e_3$ $\exists f$ [$e_1<e_3$ ∧ net(e_3) = f ∧ AG(Uche,e_1) ∧ kill(e_1, ιx.chicken(x)) ∧ FORCE(e_1) = f ∧ $\exists e_2$[$e_2<e_3$ ∧ cook(e_2, ιx.chicken(x)) ∧ FORCE(e_2) = f]]

↪ **Compositional derivation of the VP-reading**

(18) a. $[[<_f]] = \lambda P_{2<s,ft>}.\lambda P_{1<e,s,ft>}.\lambda x.\lambda e_1.\lambda f.\ \exists e_3\ [e_1<e_3 \wedge net(e_3)=f \wedge P_1(e_1,x,f) \wedge \exists e_2\ [e_2<e_3 \wedge P_2(e_2,f)]]$
b. $[[t_i\ cook]]^g = \lambda e.\lambda f.\ cook(e, g(i)) \wedge \text{FORCE}(e)=f$
c. $[[<_f\ t_i\ cook]]^g = \lambda P_{1<e,s,ft>}.\lambda x.\lambda e_1.\lambda f.\ \exists e_3\ [e_1<e_3 \wedge net(e_3)=f \wedge P_1(e_1,x,f) \wedge \exists e_2\ [e_2<e_3 \wedge cook(e_2, g(i)) \wedge \text{FORCE}(e_2)=f]]$
d. $[[kill\ t_i\ cook]]^g = \lambda x.\lambda e_1.\ \lambda f.\ \exists e_3\ [e_1<e_3 \wedge net(e_3)=\mathbf{f} \wedge kill\ (e_1,x) \wedge \mathbf{FORCE(e_1)=f} \wedge \exists e_2\ [e_2<e_3 \wedge cook(e_2, g(i)) \wedge \mathbf{FORCE(e_2)=f}]]$
e. $[[chicken_i\ kill\ t_i\ cook]]^g = \lambda e_1.\lambda f.\ \exists e_3\ [e_1<e_3 \wedge net(e_3)=f \wedge kill\ (e_1,\iota x.chicken(x)) \wedge \text{FORCE}(e_1)=f \wedge \exists e_2\ [e_2<e_3 \wedge cook(e_2,\iota x.chicken(x)) \wedge \text{FORCE}(e_2)=f]]$
f. $[[voice]] = \lambda P_{<s,ft>}.\ \lambda y.\lambda e_1\ \exists f\ [AG(y,e_1) \wedge P(e_1)(f)]$
g. $[[voice\ VP]] = \lambda y.\lambda e_1\ \exists f\ [AG(y,e_1) \wedge \exists e_3\ [e_1<e_3 \wedge net(e_3)=f \wedge kill\ (e_1,\iota x.chicken(x)) \wedge \text{FORCE}(e_1)=f \wedge \exists e_2\ [e_2<e_3 \wedge cook(e_2,\iota x.chicken(x)) \wedge \text{FORCE}(e_2)=f]]]$

5. Further evidence and further predictions

•No strict temporal ordering

(19) Úchè fèrè ákwà ńmíri dé-é.
Uche spray cloth water iron-SFX
'Uche water-sprayed and ironed the cloth.'
... but not in this order
⇒ f''(f'(init(f)) = f'(f''(init(f))))

(20) Úchè lèrè bolu ányá họ́rọ́.
Uche look ball eye catch
'Uche looked ball and caught it.'
≠ 'Uche caught the ball and looked at it.'
⇒ f''(f'(init(f)) ≠ f'(f''(init(f))))

•but strict force causal ordering

(21)*Úchè kwàrà ákwà dọ́ká.
Uche sew dress tear
'Uche sewed dress and tore.'
↪ presuppositions clash

[[sew the dress]]^g =
λe.λf. sew(e,ιx.dress(x) ∧ FORCE(e)=f
defined iff: ¬(ιx.dress(x) < init(f))
[[tear]]^g = defined iff: (ιx.dress(x) < init(f))

Selected references: **•Copley, B. & Harley H. 2015.** A force-theoretic framework for event structure. *Linguistics & Philosophy* 38(2). **•Goldschmidt, A. 2018.** *Hitting playfully but hard: Conceptual effects of verb-adverb modification in the domain of force.* LOT Dissertation.**•Kratzer, A. 2003.** The event argument. ch.3. semanticsarchive.net. **•Stewart, O. T. 1998.** *The serial verb construction parameter.* PhD thesis, McGill. **•Veenstra, T. and Muysken, P. 2018.** Serial verb constructions. *Blackwell Companion to Syntax.*