A Semantic Model of Switch Reference in Koasati

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Objectives

- Model Koasati switch reference using Dekker's (1994) Predicate Logic with Anaphora

Introduction

- Switch reference (SR) is traditionally characterized as a way of indicating whether the subjects of two conjoined clauses are the same or different (Jacobsen 1993)
- Examples of SR in Koasati, a Muskogean language spoken in Louisiana and Texas, can be seen in (1)

(1) Joekak roomkã itcokhalihkok
Joe-k room-˜ itcokhali:ka-**k**
Joe-SBJ room-OBJ enter-**SS**
'Joe^j came into the room;' (**Koasati**; Rising 1992: 4)

a. Edkã hihcok cokko:lit
Ed-˜ hi:ca-**k** cokko:lit
Ed-OBJ see-**SS** sat_down
'he$_j$ saw Ed^k, and he$_j$ sat down.'

b. Edkã hihcan cokko:lit
Ed-˜ hi:ca-**n** cokko:lit
Ed-OBJ see-**DS** sat_down
'he$_j$ saw Ed^k , and he$_k$ sat down.'

(2) Joe^j came into the room. He$_j$ saw Ed^k. He$_{j/k}$ sat down.

- Previous semantic analyses of SR include work by Stirling (1993) and McKenzie (2007, et seq.) analyze SR as tracking events or situations
- I pursue a reference tracking analysis for Koasati SR, modeling the switch reference data using Predicate Logic with Anaphora (PLA; Dekker 1994), a system that maintains an ordered list of individuals in a discourse
- The notation for the Two List system shown here is adopted from Bittner's (2001) Update with Centering

Background

- Koasati word order is typically SOV
- SR marking appears on the verb at the end of the clause
- The verbal SS and DS morphemes are homophonous with the nominal SBJ and OBJ markings

Morpheme	Attached to Noun	Attached to Verb
-k	subject (SBJ)	same subject (SS)
-n	object (OBJ)	different subject (DS)

Table 1: Subject, object, and switch reference morphemes

Breaking down the data

Clause	Verb Gloss	Subject	Object	SR Marker	Subject	Object	SR Marker
1.	entered	**Joe**	**room**	SS	**Joe**	**room**	SS
2.	see	Joe	**Ed**	SS	Joe	**Ed**	DS
3.	sat_down	Joe	-	-	Ed	-	-

Table 2: Breakdown of (1a) on left and (1b) on right

- The SS marker appears to maintain the order of subject and object while the DS marker swaps the order
- However, new, overt arguments can replace the ones made available by switch reference markers
- This is shown even more clearly in (3):

(3) Joekak roomkã itcokhali:kon. Edkak hihcan cokko:lit.
Joe-k room-˜ itcokhali:ka-**n** Ed-k hi:ca-**n** cokko:lit
Joe-SBJ room-OBJ enter-**DS** Ed-SBJ see-**DS** sat_down
'Joe^j came into the room, Ed^k saw him$_j$, and he$_j$ sat down.'
(**Koasati**; Rising 1992: 4)

Clause	Verb Gloss	Subject	Object	SR Marker
1.	enter	**Joe**	**room**	DS
2.	see	**Ed**	Joe	DS
3.	sat_down	Joe	-	-

Table 3: Breakdown of (3)

Data Summary

- **SS marker**: makes SBJ and OBJ marked clause the available SBJ and OBJ, respectively, for the next clause
- **DS marker**: makes SBJ and OBJ marked clause the available OBJ and SBJ, respectively, for the next clause

Predicate Logic with Anaphora (PLA)

(4) **A PLA information state**
$s = \{\langle\ a,\ b,\ c\ \rangle\}$
$\uparrow\ \uparrow\ \uparrow$
$p_2\ p_1\ p_0$

- p_i: i indexes the position of the pronoun
- $\exists$: introduces individuals to information state

- **Table 2** gives a PLA analysis of English (2)

	English	PLA	Pronoun Interp.	Output State
a.				$s_0 = \{\langle\rangle\}$
b.	*Joe$_j$ came in.*	$\exists x(x = j \wedge Cx)$		$s_1 = \{\langle j\rangle\}$
c.	*He$_j$ saw Ed$_k$.*	$\exists y(y = e \wedge Sp_0y)$	$[p_0]_{s_1} = j$	$s_2 = \{\langle j, e\rangle\}$
d.	*He$_j$ sat down.* *He$_k$ sat down.*	Dp_1 Dp_0	$[p_1]_{s_2} = j$ $[p_0]_{s_2} = e$	$s_3 = \{\langle j, e\rangle\}$

Table 4: Analysis of PLA translations of (2)

One List PLA

- a-SBJ: $\exists z(z = a)$
- b-OBJ: $\exists x(x = p_0 \wedge \exists z(z = b))$
- intrans. verb: Vp_0
- trans. verb: Vp_0p_1
- SS: $\emptyset$
- DS: $\exists y(y = p_1)$

	Gloss	PLA	Pronoun Interp.	Output State
a.	Joe-SBJ	$\exists z(z = j)$		$s_1 = \{\langle j\rangle\}$
b.	room-OBJ	$\exists x(x = p_0 \wedge \exists z(z = r))$	$[p_0]_{s_1} = j$	$s_2 = \{\langle j, r, j\rangle\}$
c.	enter	Ip_0p_1	$[p_1]_{s_2} = r, [p_0]_{s_2} = j$	$s_3 = \{\langle j, r, j\rangle\}$
d.	-DS	$\exists y(y = p_1)$	$[p_1]_{s_3} = r$	$s_4 = \{\langle j, r, j, r\rangle\}$
e.	Ed-SBJ	$\exists z(z = e)$		$s_5 = \{\langle j, r, j, \mathbf{r}, e\rangle\}$
f.	see	Hp_0p_1	$[p_1]_{s_5} = \mathbf{r}, [p_0]_{s_5} = e$	$s_6 = \{\langle j, r, j, \mathbf{r}, e\rangle\}$
g.	-DS	$\exists y(y = p_1)$	$[p_1]_{s_6} = \mathbf{r}$	$s_7 = \{\langle j, r, j, \mathbf{r}, e, \mathbf{r}\rangle\}$
h.	sat_down	Cp_0	$[p_0]_{s_7} = \mathbf{r}$	$s_8 = \{\langle j, r, j, r, e, \mathbf{r}\rangle\}$

Table 5: Analysis of (3)

Two List PLA

(5) **A two list information state**
$s = \{\langle\ \langle a,\ b\rangle,\ \langle c\ \ d\rangle\ \rangle\}$
$\uparrow\ \uparrow\ \uparrow\ \uparrow$
$p_1^\top\ p_0^\top\ p_1^\perp\ p_0^\perp$

- a-SBJ: $\exists^\top z(z = a)$
- b-OBJ: $\exists^\perp z(z = b)$
- intrans. verb: $Vp_0^\top$
- trans. verb: $Vp_0^\top p_0^\perp$
- SS: $\exists_\perp x(x = p_0^\perp \wedge \exists_\perp y(y = p_0^\top)$
- DS: $\exists^\top y(y = p_0^\perp) \wedge \exists_\perp x(x = p_0^\top)$

	Gloss	PLA	Pro. Interp.	Output State
a.	Joe-SBJ	$\exists z(z = j)$		$s_1 = \{\langle\langle j\rangle, \langle\rangle\rangle\}$
b.	room-OBJ	$\exists^\perp z(z = r)$		$s_2 = \{\langle\langle j\rangle, \langle r\rangle\rangle\}$
c.	enter	$Ip_0^\top p_0^\perp$	$[p_0^\top]_{s_2} = j$, $[p_0^\perp]_{s_2} = r$	$s_3 = \{\langle\langle j\rangle, \langle r\rangle\rangle\}$
d.	-DS	$\exists y(y = p_0^\perp) \wedge \exists^\perp x(x = p_0^\top)$	$[p_0^\perp]_{s_3} = r$, $[p_0^\top]_{s_3} = j$	$s_4 = \{\langle\langle j, r\rangle, \langle r, j\rangle\rangle\}$
e.	Ed-SBJ	$\exists z(z = e)$		$s_5 = \{\langle\langle j, r, e\rangle, \langle r, j\rangle\rangle\}$
f.	see	$Hp_0^\top p_0^\perp$	$[p_0^\top]_{s_5} = e$, $[p_0^\perp]_{s_5} = j$	$s_6 = \{\langle\langle j, r, e\rangle, \langle r, j\rangle\rangle\}$
g.	-DS	$\exists y(y = p_0^\perp) \wedge \exists^\perp x(x = p_0^\top)$	$[p_0^\top]_{s_6} = e$, $[p_0^\perp]_{s_6} = j$	$s_7 = \{\langle\langle \ldots, e, j\rangle, \langle r, j, e\rangle\rangle\}$
h.	sat_down	$Cp_0^\top$	$[p_0^\top]_{s_7} = j$	$s_8 = \{\langle\langle \ldots, e, j\rangle, \langle r, j, e\rangle\rangle\}$

Table 6: Analysis of (3)

Conclusion

- The Two list version of PLA can account for the data here
- This analysis could be extended to
  - take into account agreement and other features
  - consider more complex argument structure

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