Modeling the proximate/obviative contrast in Algonquian languages

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1 Introduction

- Algonquian languages make a distinction between proximate-marked nouns (i.e., foregrounded) or obviative-marked nouns (i.e., backgrounded)
- Once a proximate has been established, a speaker has a choice whether to introduce the next noun as either proximate (prominent) or obviative (nonprominent) (Goddard, 1990; Thomason, 2003).
- Consider the following excerpt from Meskwaki, a Central Algonquian language

(1) o·ni=na·hkači nekotenwi **mahkate·wi-anakwe·wa** e·=ši·ša·či, e·h=nesa·či *pešekesiwani*.
And then another time **Black Rainbow (P)** went hunting and killed a *deer (O)*.

(2) e·=wi·naniha·či, e·h=mo·hki·hta·koči *aša·hahi*, e·h=ma·ne·niči.
As **he (P)** was butchering i*t (O)*, some *Sioux (O)* rushed out at **him (P)**, a lot of *them (O)*. (Goddard, 1990: 324)

- In (1) the topic is Black Rainbow whereas the obviative is a deer.
- Speaker can introduce Sioux in (2) as proximate (central characters) or as obviative (less central characters) thus, *prima facie*, maintaining the previously established central character Black Rainbow.
- To investigate the proximate/obviative contrast, we use data from fieldwork on Mi'gmaq, an Eastern Algonquian language
- Consider the differences between pronouns in English and obviation marking in Mi'gmaq

(3) Susan$_i$ scratched Mali$_j$ then she$_{i/j}$ went home.

- *she* could refer to either Susan or Mali

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Glosses abbreviations: 3 = third person; AI = animate intransitive; DIR = direct; PST = past OBV = obviative

- The same sentence in Mi'gmaq is not ambiguous

(4) **Susan** gejgapa'l-a-pn-n *Mali-al*
Susan.PROX scratch-DIR-PST.3-OBV *Mali*-OBV
'**Susan (P)** scratched *Mali (O)*.'
a. ... toqo enmie-**p**.
then go.home-**3.PST.PROX**
'... then **she (Susan)** went home.'
b. ... toqo enmie-*nipnn*.
then go.hom-3.PST.OBV
'... then *she (Mali)* went home.'

- Each argument in (4) is either marked as proximate (PROX) or obviative (OBV)
- The third person agreement on the verb *enmie-* reflects this and thus there is no ambiguity as to who went home
- We model this data on the proximate/obviative contrast using Predicate Logic with Anaphora (PLA; Dekker 1994), a system that keeps track of the salience of individuals

Roadmap

§2 Background on obviation
§3 Background on PLA
§4 PLA analysis for data in (4): one-list system
§5 Ambiguity with third individual: two-list system
§6 Conclusion

2 Obviation in Algonquian languages

- Proximate and obviative are two ways to differentiate third person arguments.
- In contexts with two third persons, the topical, foregrounded third person is proximate and the nontopical, backgrounded third person is obviative.
- In Mi'gmaq, the proximate **(P)** is unmarked, as in (5a), and the obviative *(O)* is marked with the suffix *-l*, as in (5b).

(5) a. e'pites
woman
'**woman (P)**'

b. e'pites-l
woman-OBV
'*woman (O)*'

(6) a. Gesal-a-t-l.
love-DIR-3-OBV
'**She (P)** loves *her (O)*.'

b. Gesal-Ø-t-l.
love-INV-3-OBV
'*She (O)* loves **her (P)**.' [1]

- direct marker (DIR): proximate = subject, obviative = object
- inverse marker (INV): obviative = subject, proximate = object
- In (4a) the marking on the verb *-p* is the third person proximate past, thus the proximate argument Susan went home
- In (4b) the marking on the verb *-nipnn*[2] is the third person obviative past

(4) **Susan** gejgapa'l-a-pn-n *Mali-al*
Susan.PROX scratch-DIR-PST.3-OBV *Mali-*OBV
'**Susan** scratched *Mali*.'

a. ... toqo enmie-**p**.
then go.home-**3.PST.PROX**
'... then **she (Susan)** went home.'
'... then *she (Mali)* went home.'

b. ... toqo enmie-*nipnn*.
then go.home-3.PST.OBV
'... then *she (Mali)* went home.'
'... then **she (Susan)** went home.'

- Proximate/obviative contrast marks salience in a discourse
- PLA: a system that keeps track of states of information and salience of individuals

3 Background on PLA

- Predicate Logic with Anaphora (PLA; Dekker 1994) extends standard Predicate Logic in order to keep track of individuals in a discourse

(7) **A sample PLA information state**

$$s = \{\langle a, b, c \rangle\}$$

($a \leftarrow \mathsf{p}_2$, $b \leftarrow \mathsf{p}_1$, $c \leftarrow \mathsf{p}_0$)

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

(8) Susan$_i$ scratched Mali$_j$ then she$_{i/j}$ went home.

(9) $\exists \mathsf{x}(\mathsf{x} = \mathsf{s} \wedge \exists \mathsf{y}(\mathsf{y} = \mathsf{m} \wedge \mathsf{Sxy})) \wedge \mathsf{Wp}_0$

(10) $\exists \mathsf{x}(\mathsf{x} = \mathsf{s} \wedge \exists \mathsf{y}(\mathsf{y} = \mathsf{m} \wedge \mathsf{Sxy})) \wedge \mathsf{Wp}_1$

[1] Here the inverse marker is null. However in the negative we can see that it is *-gu*:

(1) Mu gesal-gu-g-u-l
NEG love-INV-3-NEG-OBV
'*She (O)* doesn't love **her (P)**.' (Hamilton, 2015: 20)

[2] For convenience, we gloss this whole morpheme as the third person past obviative. However, it can be separated out as *-ni-pn-n* or 3.OBV-PAST-OBV.

Table 1: Analysis of (9)

	English	PLA	Pro. Interpr.	Output State
a.				$s_0 = \{\langle\rangle\}$
b.	Susan$_i$ scratched Mali$_j$	$\exists \mathsf{x}(\mathsf{x} = \mathsf{s} \wedge \exists \mathsf{y}(\mathsf{y} = \mathsf{m} \wedge \mathsf{Sxy}))$		$s_1 = \{\langle m, s\rangle\}$
c.	then she$_i$ went home.	Wp_0	$[\mathsf{p}_0]_{s_1} = s$	$s_2 = \{\langle m, s\rangle\}$

- The quantifier with narrower scope first adds *m* to the information state
- The quantifier with widest scope then adds *s* to the information state

Table 2: Analysis of (10)

	English	PLA	Pro. Interpr.	Output State
a.				$s_0 = \{\langle\rangle\}$
b.	Susan$_i$ scratched Mali$_j$	$\exists \mathsf{x}(\mathsf{x} = \mathsf{s} \wedge \exists \mathsf{y}(\mathsf{y} = \mathsf{m} \wedge \mathsf{Sxy}))$		$s_1 = \{\langle m, s\rangle\}$
c.	then she$_j$ went home.	Wp_1	$[\mathsf{p}_1]_{s_1} = m$	$s_2 = \{\langle m, s\rangle\}$

4 Analysis

- In English the ambiguity of *she* is represented in PLA by different pronoun terms: p_0 and p_1
- Intuitively we can represent the lack of ambiguity in the Mi'gmaq data, repeated below, by uniformly translating the proximate and obviative agreement as p_0 and p_1, respectively

(4) **Susan** gejgapa'l-a-pn-n *Mali-al*
Susan.PROX scratch-DIR-PST.3-OBV *Mali-*OBV
'**Susan** scratched *Mali*.'

a. ... toqo enmie-**p**.
then go.home-**3.PST.PROX**
'... then **she (Susan)** went home.'

b. ... toqo enmie-*nipnn*.
then go.home-3.PST.OBV
'... then *she (Mali)* went home.'

- PROX: p_0
- OBV: p_1
- DIR: $\mathsf{Vp}_0\mathsf{p}_1$
- INV: $\mathsf{Vp}_1\mathsf{p}_0$
- $\exists_\mathsf{p}$: adds to list position 0
- $\exists_\mathsf{o}$: adds to list position 1

(11) (4) $\rightsquigarrow \exists_\mathsf{p}\mathsf{y}(\mathsf{y} = \mathsf{s}) \wedge \exists_\mathsf{o}\mathsf{x}(\mathsf{x} = \mathsf{m}) \wedge \mathsf{Sp}_0\mathsf{p}_1$

(12) (4a) $\rightsquigarrow \mathsf{Wp}_0$

(13) (4b) $\rightsquigarrow \mathsf{Wp}_1$

Table 3: Analysis of (4)

	Gloss	PLA	Pro. Intp.	Output State
a.				$s_0 = \{\langle\rangle\}$
b.	Susan.PROX	$\exists_p y(y = s)$		$s_1 = \{\langle s\rangle\}$
c.	Mali-OBV	$\exists_o x(x = m)$		$s_2 = \{\langle m, s\rangle\}$
d.	scratch-DIR-PST.3-OBV	$\mathsf{S}p_0 p_1$	$[p_0]_{s_2} = s$, $[p_1]_{s_2} = m$	$s_3 = \{\langle m, s\rangle\}$

Table 4: Analysis of (4a)

	Gloss	PLA	Pro. Intp.	Output State
e.	then go.home-3.PST.PROX	$\mathsf{W}p_0$	$[p_0]_{s_3} = s$	$s_4 = \{\langle m, s\rangle\}$

Table 5: Analysis of (4b)

	Gloss	PLA	Pro. Intp.	Output State
e.	then go.home-3.PST.OBV	$\mathsf{W}p_1$	$[p_1]_{s_3} = m$	$s_4 = \{\langle m, s\rangle\}$

5 More complicated data

- New data: introducing a third argument creates ambiguity[3]

(14) **Susan** gejgapa'l-a-t-l *Mali-al*.
Susan.PROX scratch-DIR-3-OBV *Mali*-OBV
'**Susan (P)** scratches *Mali (O)*.' $\langle m, s\rangle$

a. **Anna** gejgapa'l-a-t-*l*.
Anna.PROX scratch-DIR-3-OBV
'**Anna (P)** scratches *her (O)*.' $\langle m, s, a\rangle$

b. *Anna-l* gejgapal-Ø-t-l.
Anna-OBV scratch-INV-3-OBV
'*Anna (O)* scratches her (P).'[4] $\langle m, a, s\rangle$

- In (14a), when a is added to the end of the list, the obviative agreement, p_1 is expected to pick out s unambiguously, which is not the case

[3] We use a different tense here (present) than in (4) however the ambiguity is also preserved in the past.

[4] The ambiguity goes away if *elg* 'too/also' is added. Though this shows that the particle *elg* targets the VP in Mi'gmaq, like it does in English.

(1) *Sa'n-al* elg gejgapal-Ø-t-l.
John-OBV too scratch-INV-3-OBV
'*John (O)* scratches **her (P)**.'
Mali scratches John.

  - Can be ameliorated if the obviative agreement is translated as any index that is not 0, so p_1 or p_2 can pick out the obviative argument.

- In (14b) when a is added in the second to last position on the list, it is not clear how we could say that either p_0 or p_2 can pick out the proximate argument.
- Next: how to capture this ambiguity under a **two-list system**

5.1 Two list system analysis

- We adapt PLA to be a two list system
- Bittner (2011) also uses a two list system in her analysis of the proximate/obviative affixes in West Greenlandic

(15) **A sample two list information state**

$$\begin{array}{cccccccc} s = \{\langle & \langle a, & b\rangle_{\blacktriangleleft}, & \langle c & d\rangle_{\triangleright} & \rangle\} \\ & \uparrow & \uparrow & \uparrow & \uparrow & \\ & p_1^{\blacktriangleleft} & p_0^{\blacktriangleleft} & p_1^{\triangleright} & p_0^{\triangleright} & \end{array}$$

- PROX: $p_i^{\blacktriangleleft}$
- OBV: $p_i^{\triangleright}$
- DIR: $\mathsf{V}p_i^{\blacktriangleleft}p_i^{\triangleright}$
- INV: $\mathsf{V}p_i^{\triangleright}p_i^{\blacktriangleleft}$

5.2 Accounting for data in (4)

(16) (4) $\rightsquigarrow \exists_{\blacktriangleleft} x(x = s) \wedge \exists_{\triangleright} y(y = m) \wedge \mathsf{S}p_0^{\blacktriangleleft} p_0^{\triangleright}$

(17) (4a) $\rightsquigarrow \mathsf{W}p_0^{\blacktriangleleft}$

(18) (4b) $\rightsquigarrow \mathsf{W}p_0^{\triangleright}$

Table 6: Analysis of (4)

	Gloss	PLA	Pro. Intp.	Output State
a.				$s_0 = \{\langle\langle\rangle, \langle\rangle\rangle\}$
b.	Susan.PROX	$\exists_{\blacktriangleleft} x(x = s)$		$s_1 = \{\langle\langle s\rangle_{\blacktriangleleft}, \langle\rangle_{\triangleright}\rangle\}$
c.	Mali-OBV	$\exists_{\triangleright} y(y = m)$		$s_2 = \{\langle\langle s\rangle_{\blacktriangleleft}, \langle m\rangle_{\triangleright}\rangle\}$
d.	scratch-DIR-PST.3-OBV	$\mathsf{S}p_0^{\blacktriangleleft} p_0^{\triangleright}$	$[p_0^{\blacktriangleleft}]_{s_2} = s$, $[p_0^{\triangleright}]_{s_2} = m$	$s_3 = \{\langle\langle s\rangle_{\blacktriangleleft}, \langle m\rangle_{\triangleright}\rangle\}$

Table 7: Analysis of (4a)

	Gloss	PLA	Pro. Intp.	Output State
e.	then go.home-3.PST.PROX	$\mathsf{W}p_0^{\blacktriangleleft}$	$[p_0^{\blacktriangleleft}]_{s_3} = s$	$s_4 = \{\langle\langle s\rangle_{\blacktriangleleft}, \langle m\rangle_{\triangleright}\rangle\}$

Table 8: Analysis of (4b)

	Gloss	PLA	Pro. Intp.	Output State
e.	then go.home-3.PST.OBV	$\mathsf{W}p_0^{\triangleright}$	$[p_0^{\triangleright}]_{s_3} = m$	$s_4 = \{\langle\langle s\rangle_{\blacktriangleleft}, \langle m\rangle_{\triangleright}\rangle\}$

5.3 Accounting for data in (14)

(19) (14) $\rightsquigarrow \exists_{\blacktriangleleft} \mathsf{x}(\mathsf{x}=\mathsf{s}) \wedge \exists_{\triangleright} \mathsf{y}(\mathsf{y}=\mathsf{m}) \wedge \mathsf{Sp}_0^{\blacktriangleleft}\mathsf{p}_0^{\triangleright}$

(20) (14a) $\rightsquigarrow \exists_{\blacktriangleleft} \mathsf{x}(\mathsf{x}=\mathsf{a}) \wedge \mathsf{Sp}_0^{\blacktriangleleft}\mathsf{p}_0^{\triangleright}$
(14a) $\rightsquigarrow \exists_{\blacktriangleleft} \mathsf{x}(\mathsf{x}=\mathsf{a}) \wedge \mathsf{Sp}_0^{\blacktriangleleft}\mathsf{p}_1^{\triangleright}$

(21) (14b) $\rightsquigarrow \exists_{\triangleright} \mathsf{x}(\mathsf{x}=\mathsf{a}) \wedge \mathsf{Sp}_0^{\blacktriangleleft}\mathsf{p}_0^{\triangleright}$
(14b) $\rightsquigarrow \exists_{\triangleright} \mathsf{x}(\mathsf{x}=\mathsf{a}) \wedge \mathsf{Sp}_0^{\blacktriangleleft}\mathsf{p}_1^{\triangleright}$

- Note that the index on obviative term can be 0 or 1.

Table 9: Analysis of (14)

	Gloss	PLA	Pro. Intp.	Output State
a.				$s_0 = \{\langle\langle\rangle_{\blacktriangleleft}, \langle\rangle_{\triangleright}\rangle\}$
b.	Susan.PROX	$\exists_{\blacktriangleleft} \mathsf{x}(\mathsf{x}=\mathsf{s})$		$s_1 = \{\langle\langle s\rangle_{\blacktriangleleft}, \langle\rangle_{\triangleright}\rangle\}$
c.	Mali-OBV	$\exists_{\triangleright} \mathsf{y}(\mathsf{y}=\mathsf{m})$		$s_2 = \{\langle\langle s\rangle_{\blacktriangleleft}, \langle m\rangle_{\triangleright}\rangle\}$
d.	scratch-DIR-PST.3-OBV	$\mathsf{Sp}_0^{\blacktriangleleft}\mathsf{p}_0^{\triangleright}$	$[\mathsf{p}_0^{\blacktriangleleft}]_{s_2} = s$, $[\mathsf{p}_0^{\triangleright}]_{s_2} = m$	$s_3 = \{\langle\langle s\rangle_{\blacktriangleleft}, \langle m\rangle_{\triangleright}\rangle\}$

Table 10: Analysis of (14a)

	Gloss	PLA	Pro. Intp.	Output State
e.	Anna.PROX	$\exists_{\blacktriangleleft} \mathsf{x}(\mathsf{x}=\mathsf{a})$		$s_4 = \{\langle\langle a\rangle_{\blacktriangleleft}, \langle m,s\rangle_{\triangleright}\rangle\}$
f1.	scratch-DIR-3-OBV	$\mathsf{Sp}_0^{\blacktriangleleft}\mathsf{p}_0^{\triangleright}$	$[\mathsf{p}_0^{\blacktriangleleft}]_{s_4} = a$, $[\mathsf{p}_0^{\triangleright}]_{s_4} = s$	$s_5 = \{\langle\langle a\rangle_{\blacktriangleleft}, \langle m,s\rangle_{\triangleright}\rangle\}$
f2.	scratch-DIR-3-OBV	$\mathsf{Sp}_0^{\blacktriangleleft}\mathsf{p}_1^{\triangleright}$	$[\mathsf{p}_0^{\blacktriangleleft}]_{s_4} = a$, $[\mathsf{p}_1^{\triangleright}]_{s_4} = m$	$s_5 = \{\langle\langle a\rangle_{\blacktriangleleft}, \langle m,s\rangle_{\triangleright}\rangle\}$

- In (c), the proximate list is added to the obviative list from input state, s_1, to form the obviative list of the output state, s_2, and a becomes the only member of the proximate list of the output state.

Table 11: Analysis of (14b)

	Gloss	PLA	Pro. Intp.	Output State
e.	Anna-OBV	$\exists_{\blacktriangleleft} \mathsf{x}(\mathsf{x}=\mathsf{a})$		$s_4 = \{\langle\langle s,m\rangle_{\blacktriangleleft}, \langle a\rangle_{\triangleright}\rangle\}$
f1.	scratch-INV-3-OBV	$\mathsf{Sp}_0^{\triangleright}\mathsf{p}_0^{\blacktriangleleft}$	$[\mathsf{p}_0^{\triangleright}]_{s_4} = a$, $[\mathsf{p}_0^{\blacktriangleleft}]_{s_4} = m$	$s_5 = \{\langle\langle s,m\rangle_{\blacktriangleleft}, \langle a\rangle_{\triangleright}\rangle\}$
f2.	scratch-INV-3-OBV	$\mathsf{Sp}_0^{\triangleright}\mathsf{p}_1^{\blacktriangleleft}$	$[\mathsf{p}_0^{\triangleright}]_{s_4} = a$, $[\mathsf{p}_1^{\blacktriangleleft}]_{s_4} = s$	$s_5 = \{\langle\langle s,m\rangle_{\blacktriangleleft}, \langle a\rangle_{\triangleright}\rangle\}$

- In this way the ambiguity in Mi'gmaq is represented in the same way as in English where translating the pronoun term with different indices generates the different meanings.

6 Conclusion

- We presented basic data on the obviative/proximate patterns on Mi'gmaq

- We discussed two PLA analyses for how to account for this data
  - One account uses Dekker's (1994) one-list system
  - The other account modifies his system to two lists to separate proximate and obviative-marked individuals
- New fieldwork on Mi'gmaq shows that an ambiguity arises when a third individual has been introduced in a discourse
- This makes the two-list system better equipped to account for the new data because it captures the ambiguity

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A Formulas

PLA

(22) $s[\![\exists \mathsf{x}\phi]\!]_{\mathscr{M},g} = \{e' \cdot d \mid d \in D \ \&\ e' \in s[\![\phi]\!]_{\mathscr{M},g[\mathsf{x}/d]}\}$

- (22) adds individual d to end of list e'

One List System

(23) a. $s[\![\exists_p x\phi]\!]_{\mathscr{M},g} = \{e' \cdot d \mid d \in D \ \&\ e' \in s[\![\phi]\!]_{\mathscr{M},g[x/d]}\}$
b. $s[\![\exists_o x\phi]\!]_{\mathscr{M},g} = \{e' \cdot d \cdot d' \mid d \in D \ \&\ d' \in D \ \&\ e' \cdot d' \in s[\![\phi]\!]_{\mathscr{M},g[x/d]}\}$

- (23a) adds individual d to end of list e'
- (23a) adds individual d to second to last position of list e'

Two List System

(24) a. $s[\![\exists_p x\phi]\!]_{\mathscr{M},g} = \{\langle e, e'\rangle \mid e = \langle\rangle \cdot d \ \&\ d \in D \ \&\ e' = e''' \cdot e'' \ \&\ \langle e'', e'''\rangle \in s[\![\phi]\!]_{\mathscr{M},g[x/d]}\}$
b. $s[\![\exists_o x\phi]\!]_{\mathscr{M},g} = \{\langle e', e\rangle \mid e = \langle\rangle \cdot d \ \&\ d \in D \ \&\ e' = e'' \cdot e''' \ \&\ \langle e'', e'''\rangle \in s[\![\phi]\!]_{\mathscr{M},g[x/d]}\}$

- (24a) adds proximate list, e'', to obviative list, e''', and adds individual d to empty proximate list
- (24b) adds obviative list, e''', to proximate list, e'', and adds individual d to empty obviative list