



Plains Cree Verbal Derivational Morphology: A Corpus Investigation

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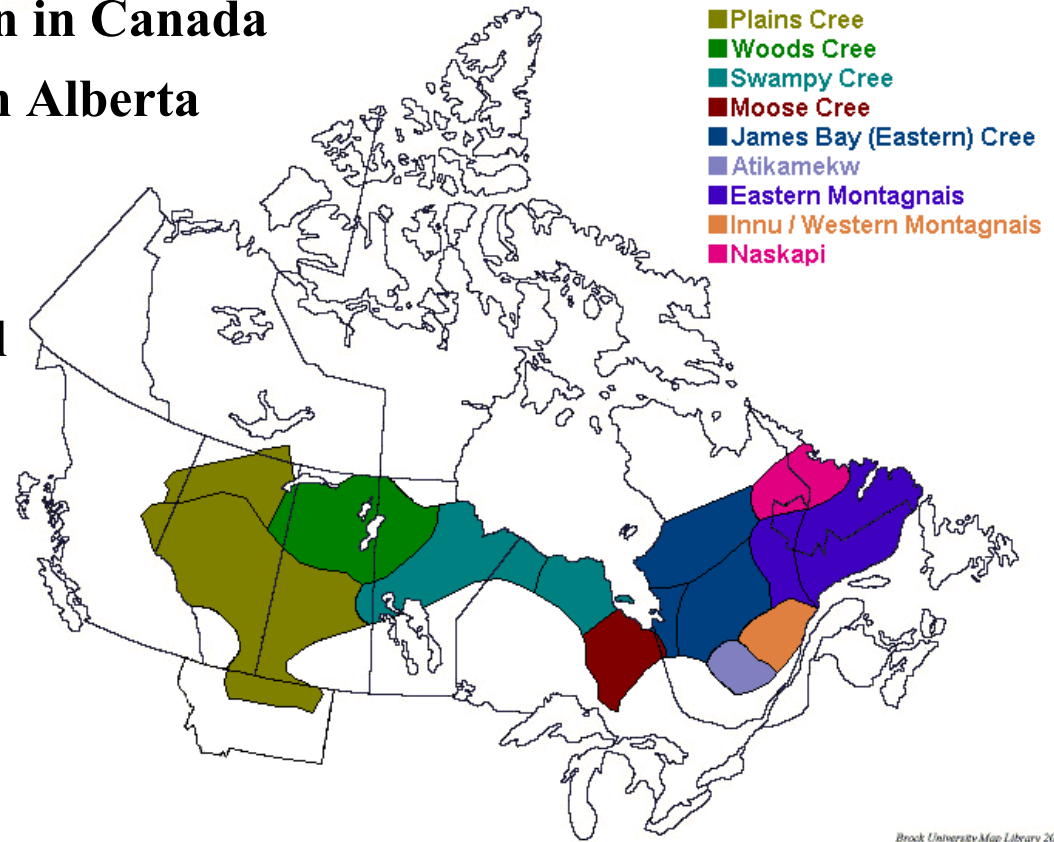
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References

Plains Cree

- Algonquian language spoken in Canada
- 15-20,000 speakers mostly in Alberta and Saskatchewan
- Polysynthetic: complex derivational and inflectional morphology
- A sizeable amount of published texts for corpus investigation



Brock University Map Library 2001

Some relevant features of Plains Cree

- **Animacy**
 - **Noun classification/gender**
 - **Marked in plural forms, some singular forms**
- **Verb classes**
 - **Intransitive**
 - **VII: inanimate intransitive verbs**
 - **VAI: animate intransitive verbs**
 - **Transitive**
 - **VTI: transitive inanimate verbs**
 - **VT A: transitive animate verbs**

These classes are often determined by the morphology of the verb stem

Plains Cree derivation

- **Stem derivation:**
 - **Three elements described for Algonquian stems**
 - **Initial/root morphemes: generally carry semantic content, fairly unrestricted (used in verbs, nouns, particles)**
 - **Medial morphemes: optional, often classificatory or denote manner, fairly unrestricted**
 - **Final morphemes: required (though may be null), often specific to word classes (nouns vs verbs, transitivity, animacy)**

Root	(Medial)	Final
wâp- ‘light, bright’	-âskw- ‘wood’	-(i)kê general object (VAI)
pim- ‘along’	-âpisk(w)- ‘metal, stone’	-payi ‘move’ (VAI)
mihkw- ‘red’	-êk(inw)- ‘cloth, material’	-(i)n ‘by hand’ (VTA)
it- ‘thus, so’		

(Wolfart, 1973; Bloomfield, 1946; etc.)

Plains Cree derivation

- **Stem derivation:**
 - **Recursive process**
 - **Primary stems can be treated as “roots” and undergo further suffixation with medials and finals**
 - **Secondary stems can also be further derived**
 - **Several layers of derivation are possible:**

pim- + _ + -payi = pimipayi- ‘work, function’ (VII)

pimipayi- + _ + -htâ = pimipayihtâ- ‘manage, run s.t.’ (VTI)

pimipayiht- + _ + -ikê = pimipayihcikê- ‘manage, run things’ (VAI)

pimipayihcikê- + _ + -stamaw = pimipayihcikêstamaw- ‘manage for s.o.’ (VTA)

pimipayihcikêstamaw- + _ + -iso = pimipayihcikêstamâso- ‘manage for oneself’
(VAI)

Plains Cree derivation

- **Preverbs:**
 - **Can be grammatical (tense, conjunct, etc.) or lexical**
- **Preverbal “derivation”:**
 - **Outside the verb stem, inside inflectional morphology**
 - **Lexical preverbs**
 - **Open class**
 - **Do not change verb classes**
 - **May be identical to particles**
 - **Often able to modify both nouns and verbs, though some are restricted**
 - **May tend toward the “syntax” side of “morphosyntax”**

Plains Cree lexical preverbs

- **Subtypes with different functions have been identified with slots in the preverbal template (e.g. Wolvengrey, 2012)**

Participant-oriented modality	Phasal aspect	Manner/Direction
nôhtê- ‘want to’	mâci- ‘start’	nitawi- ‘go and’
kakwê- ‘try to’	ati- ‘begin’	isi- ‘thus, so’
nihtâ- ‘be able to’	pôni- ‘stop’	pê- ‘come and’

- **Structured derivational morphology on both sides of verbal root, within inflectional morphology**
- **A maximum of six preverbs (both grammatical and lexical) has been found in corpus counts (e.g. Wolvengrey, 2015)**
- **Before hesitations, repetitions, etc. start to appear**

Research Questions

- **How do lexical preverbs co-occur with each other?**
 - **Are there patterns to common sequences?**
- **How do elements of stem morphology co-occur with each other?**
 - **Are there patterns to common sequences?**
- **How do lexical preverbs co-occur with stem morphology (i.e., other derivational morphology)? Is there an upper limit on derivation in general?**

Our corpus

- **We investigate preverb counts using a corpus of Cree analysed using a morphological model for Cree**
- **The analyses have been hand-verified**
- **Our lexical database includes a full morphological breakdown of stems, which allows us to find co-occurrence counts for preverbs and roots, medials, and finals in the lexemes**
 - **Extended finals are grouped into individual morphemes, so there will be more complexity than our numbers suggest**
- **The hand-verified corpus is used while the modelling undergoes development**
- **We have restricted ourselves to lexical preverbs**
 - **Excluded grammatical preverbs, particularly those for conjunct and tense**

Preverb co-occurrences

- **8 combinations of lexical preverbs that occur 3 times or more**

<u>MI</u>	<u>n1</u>	<u>n2</u>	<u>n12</u>	
0.945840	528	271	38	PV/pe PV/isi
0.014963	199	528	11	PV/ohci PV/pe
2.591919	528	11	8	PV/pe PV/kiwe
0.184521	119	271	4	PV/kakwe PV/isi
1.274765	271	40	4	PV/isi PV/miyo
2.099232	49	97	4	PV/nipahi PV/misi
-0.565726	528	97	3	PV/pe PV/misi

- **Manner/direction are prevalent here: *pê-*, *isi-*, *ohci-*, *kîwê-***
- **However, forms like *pê-* and *ohci-* can have different functions that are “more grammatical” and occur in earlier slots, so cannot take such co-occurrence rates at face value – will require some closer scrutiny**

Stem derivation combinations

MI	n1	n2	n12	
1.564932	648	826	264	<-ht> <-â>
2.182486	323	853	252	<-oht-> <-ê>
2.436682	253	801	239	<wîht-> <-h>
1.904927	479	711	236	<-êyi-> <-m>
1.932040	479	648	221	<-êyi-> <-ht>
2.243014	228	826	183	<ay-> <-â>
1.001878	676	711	135	<-i> <-m>
1.676551	711	329	129	<-m> <-o>
2.998240	141	439	128	<wîht-> <-amaw>
1.698693	615	323	112	<iT-> <-oht->

- ***-ht-â*** denotes causative VTI
- ***-oht-ê*** denotes walking-type motions + VAI final
- ***iT-...-oht*** involves manner/direction (relative root) +motion type
- ***-êyim/ êyiht*** – ‘think’ or ‘thought process’, VTA and VTI extended finals
- Full verb forms, clearly common: *wîcih-*, *wîhtamaw-*, VTAs

Co-occurrences of preverb and stem derivation

<u>MI</u>	<u>n1</u>	<u>n2</u>	<u>n12</u>	
0.336000	528	853	65	PV/pe <-ê>
0.351646	528	801	62	PV/pe <-h>
0.916841	271	801	56	PV/isi <-h>
0.939383	528	323	45	PV/pe <-oht->
0.099668	528	615	37	PV/pe <iT->
0.665481	224	801	36	PV/nitawi <-h>
-0.140085	528	676	32	PV/pe <-i>
0.778180	528	253	30	PV/pe <wît->
0.193169	528	439	29	PV/pe <-amaw>
1.081780	119	801	29	PV/kakwe <-h>

- **No particularly strong correlations**
 - ***pê-* occurring with motion and manner elements, but also in a number of other contexts**

Counts of preverbs and stem morphemes

N	n (PV)	n (drv)	n (tot)	N	n (PV)	n (drv)	n (tot)
2602	1	2	3	47	2	0	2
1786	1	3	4	41	3	3	6
919	0	2	2	26	3	1	4
710	1	1	2	22	2	5	7
653	2	2	4	13	0	6	6
536	0	3	3	9	1	7	8
529	1	4	5	7	3	0	3
495	2	3	5	6	4	2	6
212	0	1	1	6	2	6	8
207	2	1	3	3	3	5	8
200	0	4	4	3	1	8	9
175	1	0	1	2	4	6	10
117	2	4	6	2	3	4	7
113	1	5	6	2	0	7	7
78	0	0	0	1	4	3	7
59	1	6	7	1	4	0	4
56	3	2	5	1	3	7	10
53	0	5	5	1	2	7	9

Counts of preverbs and stem morphemes

- **Significant but weak inverse correlations between the number of preverbs and the number of derivational morphemes in the stem**
- **Potential indication of limit to the total number of derivational-type elements, but further investigation needed**

Pearson's product-moment correlation

data: WNf\$Npv and WNf\$Ndrv

t = -2.1225, df = 9691, **p-value = 0.03382**

alternative hypothesis: true correlation is not equal to 0

95 percent confidence interval:

-0.041445824 -0.001648208

sample estimates:

cor

-0.02155555

Preverbs and verbal orders – Part 1

0.026224	528	7048	394	PV/pe Cnj
0.172172	271	7048	234	PV/isi Cnj
0.077807	224	7048	176	PV/nitawi Cnj
-0.039861	199	7048	139	PV/ohci Cnj
0.145016	119	7048	100	PV/kakwe Cnj
-0.058908	143	7048	98	PV/ati Cnj
0.061747	97	7048	75	PV/misi Cnj
-0.130947	69	7048	44	PV/nohte Cnj
0.116029	49	7048	40	PV/nipahi Cnj
0.054277	43	7048	33	PV/pimi Cnj
-0.038336	528	2347	123	PV/pe Ind
0.219615	199	2347	60	PV/ohci Ind
0.193401	143	2347	42	PV/ati Ind
-0.409552	224	2347	36	PV/nitawi Ind
-0.687036	271	2347	33	PV/isi Ind
0.319963	69	2347	23	PV/nohte Ind
-0.265764	97	2347	18	PV/misi Ind
-0.721491	119	2347	14	PV/kakwe Ind

Preverbs and verbal orders – Part 2

0.696453	224	151	7	PV/nitawi Imp
-0.315148	528	151	6	PV/pe Imp
0.992503	119	151	5	PV/kakwe Imp
-0.341318	271	151	3	PV/isi Imp

- **A smaller range of subtypes and number of individual forms are seen here in imperatives, with participant-oriented modality and manner/direction showing up in our corpus**
- **Patterns for future conditional not yet discussed, though they are also infrequent so any patterns may be similarly difficult to discern**

Discussion

- **Various combinations are semantically consistent**
 - **E.g. Manner/direction preverbs with other manner/direction preverbs and with motion-related stem elements**
- **Others make sense with respect to the lexical classes of Cree**
 - **Frequent combinations of stem elements are those that occur in large classes of verbs, such as causative VTIs or “thinking” VTIs and VTAs**
- **Apparent upper limits to preverbs plus stem elements in the corpus**
- **Lexical preverbs generally do not occur with strict patterns in the corpus**
 - **Fits with Cree morphosyntax, where “a verb can be a sentence”**
 - **“Free” elements like words in more isolating languages**

Conclusions

- **There may be an overall upper limit to the number of morphemes in Cree verbs – although a lot of complexity is described, we see only parts of it in actual texts**
- **Lexical preverbs occur very freely – syntactic more than morphological (morphosyntactic!)**
- **Patterns are semantically motivated**
 - **Co-occurrences of motion/direction/manner preverbs and stem morphemes**
- **Pedagogy: teaching of derivational elements may aid students in understanding otherwise unfamiliar forms**
 - **Understanding which elements are most frequent and how they combine may be beneficial to this**

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Thank you!
Questions?

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