# PRODUCTIVITY, POLYSYNTHESIS and THE ALGONQUIAN LANGUAGES





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### PREVIOUS WORK ON MICHIF

• Postdoctoral project Michif derivation and productivity, University of Bremen (Germany)

 Mazzoli (forthcoming 2021), Mazzoli, Bakker & DeMontigny (forthcoming 2021), Mazzoli & Sippola (forthcoming 2021, Mazzoli 2020, Mazzoli 2019)



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# OUTLINE OF THE PRESENTATION

(1) Michif verb structure and polysynthesis in Michif

(2) **Productivity** and different types of schemas in morphology

(3) Productivity of the stem internal non-root bound morphemes in the **Algonquian** languages, and plans for **Michif** 

(4) Conclusion



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### MIXED MICHIF



# **VERB STRUCTURE - POLYSYNTHESIS**

- Michif verbal morphology "polysynthetic" (Gillon & Rosen 2019) (cf. Fortescue, Mithun & Evans 2017, cf. Haspelmath 2018)
- Fortescue (2017) and Mattissen (2004):
- polypersonal agreement on the verb (contextual agreement in VTA)
- (productive) noun incorporation AND/OR
- "non-root bound lexical morphemes": productive affixes marked on a verb, forming combinations that are not lexicalized, and encoding meanings which would be expressed by independent lexical roots in more analytic languages (e.g. location, body parts, or manner of action). Although their existence appears to be a necessary criterion, their definition is not one "with sharp contours" (Mattissen 2017: 74).



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## **VERB STRUCTURE - POLYSYNTHESIS**

- no thorough study on Michif verb stem structure or processes of word formation (cf. Rhodes 1977: 8, Bakker 2004: 73–74, and Rosen 2007: 33–35)
- no research on wordhood in Michif (Russel 1999 on Plains Cree, on other polysynthetic languages Evans, Fletcher & Ross 2008, Bickel & Zúñiga 2017)
- Bakker & Papen (1997: 313) argued that contact with French and English did not alter the morphology of Plains Cree in Michif (cf. also Comrie 2010: 28)
- Semantic and phonological **lexicalization** may have taken place
- Mazzoli, Bakker & DeMontigny (forthcoming 2021). **Original functional morphemes**: new Al final *-ii* from the French infinitive marker *-er* to accommodate English verb loans
- (bakwaat-ee-n bin-ii-kaashoo-chick li mooñd, sapraañ chi-kalekt-ii-yen)





# **VERB STRUCTURE - POLYSYNTHESIS**

(1) giimiyeuyimikaashoonaan

prefixes- preverb- stem: primary derivation- secondary derivation- suffixesni- kii- miyo-eeyim- ikaashoo- naan1- PST- good-do.by.mind.TA- MED.AI- IND.1PL.INCL'we were liked' (Mazzoli 2019: 112)- WED.AI- WED.AI- WED.AI



1	2	3			6	7	8	9	10	11	12
ORDER	TENSE/ MOOD (close set, rigid order)	PRE- VERB (open, free)	STEM (open = lexicon)		THEME TI	DERIVATIVES Voice Valency Animacy	THEM E TA (TI)	OBV AGR (POSS S)	PERS AGR	PLU RAL	SBJ
ee- kaa- chi- CNJ OR ni- ki- IND	kii- PST ka- FUT wii- VOL	kaahkwee- TRY noohte- WANT [] miyo- GOOD mayi- BAD []	45INITIAFINLcloseopenconsetcon-eei-eei-pa[abs-eei-aa-i-i-eei[[	NAL osed set ncrete eyiht TI eyim TA ayi TR .] stract e/aa AI AI e II .]	• -am THE.TI X	output VTA -aw TA -h CAUS.TA -*(am)aw APP.TA [] output VTI -t -sht output VAI -ikee GEN.AI -ikee GEN.AI -ikaashoo MED.AI -ikaashoo MED.AI -ikaashoo MED.AI -iko REC.AI	-aa THE.T A -ee -i -iti -iko -am THE.TI	-yi OBV X -yi OBV	-w IND [] -aan -an CNJ [] [] [] -yaan -yen -t	-aan -ak -ik -a []	-i SBJ

### PRIMARY DERIVATION

productivity -> the difference between primary and secondary definition (non productive lexical schemas vs. productive morphological schemas)

- Michif primary derivation = combination of categorizing items (finals, e.g. -*eeyim* in 1) with lexical initials (e.g. *miyo*- in 1), in semantically idiosyncratic constructions, mostly unavailable to speakers
- Availability and productivity within the stem may be language-specific and change in relation to different constructions within a language





### SECONDARY DERIVATION

 Michif secondary derivation (e.g. -ikaashoo in 1) is canonical derivation realized by suffixes that derive stems (Spencer 2015), available to speakers, productive. Mazzoli (accepted) provides a comprehensive list and analysis of twenty Michif secondary derivatives

(2)	li DEF.M.S		<i>gaaz</i> gas.M.INAN		<i>ohpi-payi</i> -n up-move.FIN.INTR-IND.II.0S		
	'the gas ra	ises, it goes	s up' (II) (M	azzoli, elicit	tation)		
(3)	li	paeñ		ohpi-payi-	-W		
	DEF.M.S	bread.M.A	AN .	up-move.f	IN.INTR-IN	ID.AI.3S	
	'the bread	l rises' (AI) (	(Mazzoli, el	icitation)			
(4)	ohpiki-h-e	?e-w			laañfaañ		
	up-FIN.TA-	DIR-IND.3>	4		child.AN		
	's/he raise	es the child'	(TA) (Mazz	oli, elicitatio	on)		
(5)	ohpiki-ht-	am-aashoo	-W		li	shyaeñ	
	up-FIN.TI-	THE.TI-AC.F	OC.AI-IND.	35	DEF.M.S	dog.M.AN	
	's/he adop	ots the dog'	(AI) (Mazz	oli, elicitatio	on)	-	
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# PRODUCTIVITY

- Morphological productivity = creation of new word forms from a set of interpretable stored elements (morphemes)
- Polysynthetic languages = morphological richness and productivity equating the complexity of English syntax (Fortescue 1994: 2601, Rood 2002: 295, Evans & Sasse 2002)
- Fortescue (2007) = a large inventory of bound morphemes generate a restricted number of stems, which are all lexical
- Fortescue (2017: 122) = "more or less open-ended" derivational and incorporative productivity
- **de Reuse** (2009) = "productive non-inflectional concatenation" is a type of word formation, intermediate between derivation and syntax, that defines typologically polysynthetic languages



# PRODUCTIVITY

- (1) **phonological and semantic transparency** (or coherence) in complex words (Anshen & Aronoff 1988, Baayen 1993);
- (2) concrete attestation of **new coinages** (Baayen 1992); and
- (3) relative frequency between the derived and base word forms (Hay & Baayen 2002)
- Baayen (2009) and Bauer (2001: 20, 209–211) describe (2) and (3) as pertaining to the language norm: "profitability"
- At the level of the language system, surveyed in a comprehensive analysis of both the attested and the *potential* words. "Availability" = rooted into the established morphological schemes pervading the lexicon and reinforced by the recurrent parsing of complex forms (Bauer 2001: 210).





### OTHER POLYSYNTHETIC NORTH AMERICAN LANGUAGES

- Mithun (1983: 238) = morphological "relic system" for Muskogean languages that "can have a lasting effect on the everyday language" so that speakers learn to "feel relationships that are the result of morphologization which is no longer productive or even transparent".
- Bauer (2001: 115) reports that creating new words in **Mohawk** "is a conscious procedure, and one which is carried out by people with prestige in the community on special occasions, not as a regular thing".
- Bakker (1997: 246) describes **Plains Cree** morphological combinations within the stem as having "strongly idiomatic or lexicalized meaning", although it seems possible "to make new combinations with them productively".
- Bakker (ibid.) also reports that **Plains Cree** speakers are "able to ascribe a meaning to new formations when they hear them", although they cannot "ascribe meanings to the formatives themselves".



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### IS STEM-INTERNAL PARTITION JUSTIFIED? UNDER WHICH CONDITIONS?

- **Descriptive scholarship** recursive tripartition into initials, medials and finals (Frantz 1991, Wolfart 1996, Valentine 2001a, Bakker 2006), rooted in the foundational work of the early American scholarship
- Generative literature → initials "acategorical lexical roots" and finals as "suffixes" encoding a specific syntactic feature (little v) (Branigan, Brittain & Dyck 2005, Slavin 2012, Déchaine & Weber 2018), based on a theoretical proposal by Harley (2014) on the concept of "root"
- Functional Discourse Grammar → (Genee 2013).

This stem-internal richness is rarely questioned in terms of what actually determines or supports the morphological analyses.





### PRODUCTIVITY IN MICHIF

• How are new, interpretable verbs created in Michif?

(1) Are **stem-internal non-root bound morphemes** (i.e. initials, medials and finals) **available** to Michif speakers, and to what extent are speakers able to manipulate them?

(2) Mazzoli (accepted) surveys a list of twenty derivatives that are available in Michif: **how they are profited**, which constraints govern their use and potential?

(3) Also, how does **noun incorporation** function in Michif?





### PLAN (1): AVAILABILITY OF CONCRETE FINALS

(1) actual **distribution of concrete finals** in the Michif lexicon through a corpus survey of semantic networks or clans (FLEx);

(2) analysis of word **stress patterns** in stems containing stressed concrete finals, e.g. -*payi* ('move') or -(*i*)naakoshi ('looks like');

(3) tests to ascertain whether **concrete finals are interpretable units available for language users:** checking their interpretability in new formations/unattested mixed verb forms (group of stress-bearing e.g. *-payi* 'move', *-eeyim/eeyiht* 'do by mind', and non stress-bearing e.g. *-in* 'by hand', *-cheen* 'by touch').





### AVAILABILITY OF CONCRETE FINALS

- Mazzoli, Bakker & DeMontigny (forthcoming 2021) → some stem-internal finals of Cree origin are attested in Michif in combination with French-derived nominals (-*inaakwan*, -*inaakoshiw*, -*payiw*, -*ishtikwaaneew*)
- Borrowed affixes are considered available and profitable only if they appear on "native bases or on foreign bases where they have no counterpart in the donor language". (Bauer 2006: 183, notes that Romance morphology in English is considered)





### **STEM-INTERNAL FINALS**

• French nominals with concrete finals of perception, AI (-*inaakoshi-w*) and II (-*inaakw-an*) -*inaakoshi* and -*inaakw* 'appears, looks like', intransitive finals of perception related to sight (final related to vision and the eye, -*n*-, and a derivational morpheme of 'middle attributive predication', -*aakoshi* (AI) or -*aakw-an* (II))

 (7) toolee-naakw-an awful-appear.II-II.0
 'it is/looks ugly' (< Fr. tout laid 'very ugly')</li>

(8) *dilet-inaakw-an* milk-appear.II-II.0
 'it looks milky' (< Fr. *du lait* 'some milk')

(Laverdure and Allard 1983: 177)

They combine with Cree initials (e.g. *ishinaakoshiw* AI 's/he looks thus'; *shoohkinaakoshiw* AI 's/he looks strong'; *teepinaakwan* VII 'it is still seen (in the distance)', 'it is still in sight').



### **STEM-INTERNAL BOUND FINALS**

#### • French nominals with Cree concrete final -payi 'move.Al'

-payi combines with a great variety of initials to form intransitive stems. It has fuzzy semantics related to 'movement', 'change of state', and 'unexpected/sudden event'

- (9) li simawn ka-li jeur-ipayin
   li simaañ ka-li-dzheur-i-payi-n
   DEF.M.S cement.M.INAN FUT-the.M.S-hard-EPEN-move.II-II.0
   'the concrete will harden'
   (Laverdure and Allard 1983: 125)
- (10) *liveer*-i-payi-n winter-EPEN-move.II-II.0 'it will get winter'



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### STEM-INTERNAL FINALS

• French nominalized adjectives combine with Cree -(i)*shtikwaan-ee* 'head.Al' The Michif element -(*i*)*shtikwaan-ee/aa* 'to have a head like' combines the Cree medial -(*i*)*shtikwaan* and the Al final -*ee/aa*.

- aen kanawr kaw-li vayr-ishtikwawnayt
   *aeñ* kanaar kaa-li-veer-i-shtikwaan-ee-t
   INDEF.M.S duck.M.AN CNJ-the.M.S-green-EPEN-head-AI-CNJ.3S
   'a duck that has a green head, a mallard'
   (Laverdure and Allard 1983: 170, Bakker 1997: 245)
- (12) *ruzh*-i-shtikwaan-ee-w red-EPEN-head-AI-IND.3S 's/he has a red head'





### STEM-INTERNAL FINALS

- (a) <u>li-purii</u>-**payi**-w (intended) 'it turned (unexpectedly) rotten'
- (b) <u>li-zhaalii</u>-**naakoshi**-w (intended) 'it looks nice'
- (c) <u>li-for</u>-**ihtaakoshi**-w (intended) 'it sounds loud'

- (d) <u>li-paeñcheur</u>-**in**-ee-w (intended) 's/he paints by hands'
- (e) <u>li-meelii</u>-**eeyim**-ee-w (intended) 's/he has mixed feelings for her'
- (f) <u>li-moo</u>-**cheen**-ee-w (intended) 'it is soft to the touch'





### PLAN (2): PROFITABILITY OF SECONDARY DERIVATIVES

(2) Based on the list of twenty derivatives available in Michif, yet not much is known about the constraints govern their use and potential.

Figure 1. Portion of a paradigm chart for medio-passives and predicative markers in Michif (question mark = form yet to elicit; asterisk = ungrammatical form).



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	derivative stem (in bold)	-(i)kaashoo Al	-(i)kaatee II	-aakoshi Al	-aakwan II
1	kishkeeyim-ee-w 'know someone' TA	kishkeeyim- <u>ikaashoo</u> -w 's/he is well known'	kishkeeyim- <u>ikaatee</u> -w 'it is well known'	*	*
2	kishkeeyiht-am 'know something' TI	*	*	kishkeeyiht- <u>aakoshi</u> -w 's/he is renewed'	kishkeeyiht- <u>aakw</u> an 'it is renewed'
3	kitimaah-ee-w 'abuse someone' TA	ee-kii-kitimaah- <u>ikaashoo</u> -t 's/he was abused'	la ash kitimaah- <u>ikaatee</u> -w 'the ax was misused'	kitim- <u>aakoshi</u> -w 's/he is pitiful'	kitim- <u>aakw</u> an 'it is pitiful'
6	kiishiht-aa-w 'complete something' AI	?	la bol kiishihch- <u>ikaatee</u> -w avik la tool. 'the cup is made of metal'.	?	?
7	mow-ee-w 'eat someone' TA	?	?	?	?

### CONCLUSION

- 1. In Michif and other Algonquian languages there is need to survey the synchronic evidence for **stem internal complexity**
- This would add to our understanding of productive vs. lexical schemes in morphology (Jackendoff & Audrey 2020) (and how to survey those in lesserknown and endangered laguages)
- 3. This knowledge would inform **typologically aligned descriptions** of Algonquian languages and **applied perspectives** to facilitate learners







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### PRE-FINAL / POST-INITIAL

In (3) and (4), the initial is *ohpiki*- and not *ohpi*-.

Bloomfield (1946: 104) and Wolfart (1973: 63) observe that many immediate constituents (either initials, medials or finals) exhibit a ("lexomorphemic", in their terminology) alternation of shorter and longer forms.

Both authors regard the shorter alternant as basic and call the longer alternant "extended". The status of the "accretive" elements (post-radical, pre- and post-medial, and pre-final) is not commonly addressed in the literature, with the exception of **Macaulay and Salmons (2017)**, who conceive of "postradical extensions" and "prefinal accretions" as diachronic formatives in Menominee that should not be taken as synchronically available to speakers.

In (3)–(4), the accretive element -ki- is a post-radical that pertains to the extended form of the initial ohpi-.



Area	§	Function	Form	Base input	Derivational output	Gloss
Animacy converters	4.1	Animacy converter (O)	-aw	TI, AI+O	TA verbs	ТА
	4.2	Animacy converter (S)	-maka	AI	11	11
Valency (+)	4.3	comitative	-m	AI+O	ТА	COM.TA
	4.4	transitivizer (valency increaser)	-h-(ee)	AI	ТА	INCR.TA
	4.5	causative	-h	AI	ТА	CAUS.TA
	4.6	transitivizer	-t-(am) -t-(ee)	AI	TI TA	TR-(THE.TI) TR-(DIR/INV)
	4.7	applicative	(-am)-aw	TI Al+O	ТА	(THE.TI)-APP.TA
	4.8	benefactive	-sht	AI	TI	BEN.TI
	4.9	benefactive animate	-shtaw	AI	ТА	BEN.TA
Valency(-)	4.10	actor focus	(-am)-aashoo	ті	AI	(THE.TI)-AC.FOC.AI
	4.11	non-specified goal	-ikee	TI, AI+O	AI	GEN.AI
Voice	4.12	reciprocal	-ito	ТА	AI	REC.AI
	4.13	reflexive	-ishoo	ТА	AI	RFLX.AI
	4.14	middle-reflexive	-00	ТА	AI	MID.RFLX.AI
	4.15	medio-passive AI	-ikaashoo	TA (also TI?)	AI	MED.AI
	4.16	medio-passive II	-ikaatee	TA, TI, AI+O	11	MED.II
	4.17	middle attributive predication Al	-aakoshi	ті	AI	PRED.II
	4.18	middle attributive predication II	-aakwa	TI	II	PRED.AI
	4.19	agent-less passive	-ikaawi (SAP) -aa (3)	ТА	AI AI	PASS.AI PASS.AI
Valutative	4.20	accrescitive	-shkee	AI	AI	ACCR.AI

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### RELATIVE ORDER OF DERIVATIVES

TA/MID.AI	GEN.AI	BEN.TA	APP.TA	REC.AI	CAUS.TA	RFLX.AI	AC.FOC.AI/PASS.AI/TR
-aw -00	-ikee	-st	-amaw	-ito	-h	-isho	-aashoo -ikawi -t

**Relative order of Michif derivatives within slot 7 of the template in Figure** 

- (86) *nootin-<u>ikee-sht-am-aw-ee-w</u>* fight.TR-GEN.AI-BEN-THE.TI-APP.TA-DIR-IND.3→4
   's/he fights (people) for him/her' (Mazzoli, elicitation)
- (87) *wiiht-<u>am-aa-to-</u>w-ak*tell.TI-THE.TI-TA-REC.AI-IND.3-PL
  'they tell it to each other' (Wolfart 1973: 70; Mazzoli, elicitation)

But cf. positions of the general goal -*ikee* and the applicative (-am)-aw appear inverted:

 (88) osht-<u>am-aw-kee</u>-hk make.AIt-THE.TI-APP.TA-GEN.AI-INDEF.AC 'accomodate, lit. makes for others in general' (Laverdure and Allard 1983: 16)



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### CONSTRUCTION MORPHOLOGY (JACKENDOFF & AUDRING 2020)

- Non-productive schemas are useful in organizing storage in the lexicon
- They are an aid in the **acquisition** of new instances







### PRODUCTIVITY OF STEM INTERNAL NON-ROOT BOUND LEXICAL COMPONENTS

- sapraañ chi-tip-eeyim-a-ch-ik
   lii pesaañ ookik
   Necessary CNJ-rule?-by.mind.TA-DIR-CNJ.2>3-PL.OBJ
   the peasant
   those
   'it is necessary that you rule on those peasants' (Fleury & Bakker 2004)
- Sasse 2002: 207 for Cayuga, Harrigan et al. 2017 for Plains Cree
- Common fieldwork technique? (pattern-matching and the analysis of recurring partials in minimal pairs?)
- In Michif and Plains Cree, the formative *-eeyim* appears in dozens of verb stems in the semantic domain of "mental activity" (e.g. *miyo-eeyim-* 'to like an animate entity', *miyo-it-eeyim-* 'to think good things about an animate entity')
- It alternates with its transitive inanimate correspondent -eeyiht ('do by mind on an inanimate entity')
- -eeyim/eeyiht are listed in the index of Plains Cree morphemes (Cook & Muehlbauer 2010, based on Wolfart 1973: 74)
- Cognitive reality for the morpheme -eyi- indicating "mental activity" in East Cree (Junker 2003)



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