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The direction(s) of analogical change in direct/inverse systems^{*}

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Abstract: In this paper, we extract general principles of language change from the study of the evolution of the conjunct order in various Algonquian languages, and propose four generalizations concerning the directionality of the spread of analogy in these systems. These generalizations are expected to bring insights on the analysis of data from other language families with direct/inverse marking but insufficient philological record, such as for instance Sino-Tibetan.

Keywords: Analogy, Direct/Inverse, Hierarchical Agreement, Algonquian, Arapaho, Cree, Ojibwe, conjunct order

1 Introduction

In families without recorded history the comparative method, combined with internal reconstruction, is the only way to reconstruct unattested stages. Still, when applying the comparative method it is important to understand the directionality of analogical levelling. Indeed, morphological systems are affected not only by regular sound changes, but are also subject to analogical changes which make them more regular, either by undoing the effects of sound change or by removing opaque morphemes.

Algonquian is the only family with direct/inverse morphology whose verbal proto-system can be reconstructed without sparking controversy. This is due to the combination of three factors. First, the sound laws of Algonquian languages are perfectly understood (except for Blackfoot). Second, some languages, in particular Fox and Miami-Illinois, are very conservative, and preserve the proto-system in an almost pristine way. Third, records dating back to the seventeenth century for some languages provide information on the intermediate stages between the proto-language and the modern forms.

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26 For other families with direct/inverse systems, no such diachronic information is available,
27 due to the absence of ancient attestations and/or the fact that many of these languages are
28 either isolates or else belong to very small language families. Hence, it is easier at the present
29 stage to observe the attested history of Algonquian languages and deduce from it a series of
30 principles, which can then be tentatively applied to languages with direct/inverse systems for
31 which such detailed information is not available.

32 In this paper, we will limit ourselves to formulating four generalizations concerning the
33 directionality of analogical change in direct/inverse systems based on data from Algonquian
34 by way of several case studies on Cree, Ojibwe, Mi'gmaq and Arapaho.

35 **2 Some terminological preliminaries**

36 Algonquian languages present multiple challenges to the unprepared some of which (especially
37 those pertaining to the verbal domain which is the main topic of this paper) we will try to
38 explain in this short introduction (partly based on the more detailed discussion in [Jacques &
39 Antonov, 2014](#)).

40 **2.1 Verb classes and animacy**

41 Algonquian verbs are traditionally classified into four big classes, according to the animacy of
42 the S/P argument. There is thus a major distinction between animate (NA) and inanimate (NI)
43 nouns. It is important to note that the criteria used to ascribe animate or inanimate gender to a
44 given referent do not always coincide with those familiar from European languages: 'sock(s)'
45 and 'rock(s)', for instance, are animate in Cree.

46 The four classes are the following: VII (intransitive verbs with an inanimate actor), VAI
47 (intransitive verbs with an animate actor), VTI (transitive verbs with an inanimate patient)
48 and VTA (transitive verbs with an animate patient). The last two classes also have an animate
49 actor. In fact, there are also several subclasses of 'deponent' VAI and VTI verbs whose syntactic
50 behaviour does not match their morphological makeup (cf. [Table 1](#)). These are usually either
51 not specifically signalled or else termed VAI-T and VTI-I. Here we will call them VAI_{TR} and
52 VTI_{INTR}, respectively.

53 **2.2 Direct/inverse and obviation**

54 It is important to observe that in spite of the existence of syntactically transitive deponent
55 verbs, the only verbs that index both of their participants as long as they are not third person
56 are the VTA (transitive animate) ones. The resulting complex forms reference their participants
57 using S, A, P-neutral affixes. This, in turn, calls for the use of a special 'direction' marker
58 (traditionally called a 'theme sign') in order to indicate the 'direct' vs 'inverse' direction of the
59 action. The use of one or the other reflects the position of the agent on the following hierarchy
60 (valid for Plains Cree):

61 (1) SAP > animate proximate > animate obviative > inanimate

Table 1: The four verb classes in Algonquian exemplified by Plains Cree

Verb class	S, A, P [\pm ANIM]	Cree	meaning
VII	S=INAN	<i>wâpiskâ-</i> <i>miywâsi-</i> <i>wâpa-</i>	‘be white’ ‘be good’ ‘be dawn’
VAI	S=ANIM	<i>wâpiskisi-</i> <i>miywâsisi-</i> <i>pimipahtâ-</i>	‘be white’ ‘be good’ ‘run’
VAI _{TR}	A=ANIM+P= \pm ANIM A=ANIM+P=INAN	<i>mêki-</i> <i>âpacihtâ-</i>	‘give (out) s.o. or sth’ ‘use sth’
VTI	A=ANIM+ P=INAN	<i>wâpaht-</i>	‘see sth’
VTI _{INTR}	S=ANIM	<i>mâham</i>	‘canoe downriver’
VTA	A=ANIM+ P=ANIM	<i>wâpam-</i>	‘see s.o.’

62 If it is higher than the patient the verb shows direct marking, but if it is lower then the
63 verb receives inverse marking.¹ Thus, we observe a tripartite distinction between proximate
64 animate, obviative animate and inanimate referents.

65 Obviation is an ubiquitous feature in Algonquian which is reflected both in verbal and
66 nominal morphology. Its basic function is to distinguish two or more third-person partici-
67 pants within a given sentence or stretch of discourse. Thus, in oral narratives, the *obviative*
68 (OBV, *-(w)a* in Cree) is used to introduce a hitherto unknown participant by contrast with the
69 unmarked form which is called the *proximate* (PROX). There can be at most one proximate par-
70 ticipant within a given clause. Later on, the interplay between the two helps the listener to
71 keep track of who does what to whom. Except if s/he is a persistent topic, no participant is
72 inherently tied to a proximate or obviative status solely by virtue of their inherent semantic
73 features. The obviative must also be used on the possessee, and on the verb whose argument
74 the possessee is, whenever the possessor is third-person (cf. ex. 2 below and ex. 3 in section
75 2.5).

76 (2) *pêyak piko nipah-êyiwa o-mis-a* *wâposw-a*
one just kill-3'→3' 3POSS-older_sister-OBV rabbit-OBV
77 ‘His sister had killed but one rabbit.’ (Wolfart, 1996, p. 401)

78 Example 2 also illustrates the so-called *further obviative* form, which is often abbreviated
79 as 3'→3" (cf. section 2.4), with the verb *nipah-* ‘to kill’.

80 2.3 Independent vs. Conjunct order

81 The inflectional paradigms of the Algonquian verb classes have further been organized in five
82 sets (called ‘orders’) in Proto-Algonquian, of which most modern languages preserve only

¹It is generally considered that the second person outranks the first person ($2 > 1$) in Algonquian languages, but this refers to a distinct hierarchy related to the slot accessibility of person prefixes, not the distribution of direct and inverse forms. Concerning obviative inanimates, see a recent study by Muehlbauer (2012).

83 three, ie. the Independent, the Conjunct and the Imperative, having discarded the other two,
 84 ie. the Interrogative and the Prohibitive. While the imperative order is self-explanatory (and
 85 won't be dealt with in this paper), the **independent** (which will be discussed only in passim)
 86 and the **conjunct** roughly correspond to verb forms used in main and subordinate clauses, re-
 87 spectively (for the actual forms cf. Tables 3 and 4). Put differently, conjunct order forms are
 88 non-finite, whereas independent order ones are finite. It is important to stress that *wh*-clauses,
 89 those with focalized constituents or under the scope of (clausal) negation require the use of the
 90 conjunct order, since these 'de-subordinated' clauses are underlyingly (or rather, historically)
 91 non-finite.

92 2.4 Visualizing complex participant configurations

93 It is customary to represent systems indexing more than one argument (usually two) such as
 94 those found in Algonquian languages in tabular format as in Table 2, where rows indicate agent
 95 and columns patient. The different transitive configurations are symbolically represented by
 96 using an arrow, with the agent on its left and the patient on its right, both abbreviated as 1, 2, 3
 97 for first, second and third person respectively. In the case of third person arguments 3 indicates
 98 **proximate** and 3' **obviative** referents. In intransitive forms, by contrast, the abbreviation refers
 99 to the sole argument of the verb. They are systematically included for reference.

100 The cells corresponding to the 1→1 and 2→2 configurations are semantically reflexive and
 101 are thus filled in grey, since in most languages they tend to be expressed by an intransitive
 102 construction². The 3→3 cell, on the other hand, is not since the corresponding configuration
 103 is not necessarily reflexive.

Table 2: The three domains of the transitive paradigm

	1	2	3
1	1→1	1→2	1→3
2	2→1	2→2	2→3
3	3→1	3→2	3→3
INTR	1	2	3

104 It is convenient to separate the transitive paradigm into three DOMAINS (Zúñiga 2006, 47-
 105 54), represented in Table 2 by different colours. First, the LOCAL domain (in blue) comprises
 106 the forms 1→2 and 2→1, where both arguments are SAPs. Second, the NON-LOCAL domain (in
 107 red) refers to the cases where both arguments are third person. Third, the MIXED domain (in
 108 green) includes all the forms with a SAP argument and a third person (1→3, 2→3, 3→1, 3→2).

109 2.5 Plains Cree paradigms

110 We can now give the full paradigms for the main four classes using some of the verbs from
 111 Table 1. Table 3 presents the independent order while Table 4 shows the conjunct order, whose

²The same applies, in languages with clusivity (a distinction between first person inclusive [1PI] vs exclusive [1PE]), such as the Algonquian languages, to the combination of first inclusive and second person.

112 diachronic evolution will be at the centre of subsequent discussion.

Table 3: Plains Cree Independent Order paradigms of VTA *wâpam-* “see s.o.”, VTI *wâpaht-* “see sth”, VAI *wâpiskisi-* “be white (+ANIM)”, *pimipahtâ-* “run”, VII *wâpiskâ-* “be white (-ANIM)”, *miywâsin* “be good”, *wâpan* “be dawn” (based on Wolfart, 1996)

		P									
A		1SG	1PI	1PE	2SG	2PL	3SG	3PL	3'SG	3'PL	
VTA	1SG				<i>ki-wâpam-iti-n</i>	<i>ki-wâpam-iti-nâw-âw</i>	<i>ni-wâpam-â-w</i>	<i>ni-wâpam-â-w-ak</i>	<i>ni-wâpam-im-â-w-a</i>		
	1PI						<i>ki-wâpam-â-naw</i>	<i>ki-wâpam-â-na-w-ak</i>	<i>ki-wâpam-im-â-na-w-a</i>		
	1PE					<i>kiwâpamitinân</i>	<i>ni-wâpam-â-nân</i>	<i>ni-wâpam-â-nân-ak</i>	<i>ni-wâpam-im-â-nân-a</i>		
	2SG	<i>ki-wâpam-in</i>					<i>ki-wâpam-âw</i>	<i>ki-wâpam-â-wak</i>	<i>ki-wâpam-im-â-wa</i>		
	2PL	<i>ki-wâpam-in-âwâw</i>		<i>ki-wâpam-inân</i>			<i>ki-wâpam-â-wâw</i>	<i>ki-wâpam-â-wâw-ak</i>	<i>ki-wâpam-im-â-wâw-a</i>		
	3SG	<i>ni-wâpam-ik</i>	<i>ki-wâpam-iko-n-aw</i>	<i>ni-wâpam-iko-nân</i>	<i>ki-wâpam-ik</i>	<i>ki-wâpam-iko-wâw</i>			<i>wâpam-(im)-ê-w</i>	<i>wâpam-(im)-ê-wak</i>	
	3PL	<i>ni-wâpam-ikw-ak</i>	<i>ki-wâpam-iko-n-aw-ak</i>	<i>ni-wâpam-iko-nân-ak</i>	<i>ki-wâpam-ikw-ak</i>	<i>ki-wâpam-iko-wâw-ak</i>			<i>wâpam-(im)-ê-yi-wa</i>	<i>wâpam-(im)-ê-yi-wak</i>	
	3'	<i>ni-wâpam-iko-yi-wa</i>	<i>ki-wâpam-iko-naw</i>	<i>ni-wâpam-iko-nâna</i>	<i>ki-wâpam-iko-yi-wa</i>	<i>ki-wâpam-iko-wâwa</i>	<i>wâpamik</i>	<i>wâpam-ikw-ak</i>	<i>wâpam-iko-yi-wa</i>		
VTI	1SG							<i>n-îwâpaht-ê-n</i>			
	1PI							<i>ki-wâpaht-ê-(n-â)n-aw</i>			
	1PE							<i>ki-wâpaht-ê-n-ân</i>			
	2SG							<i>ki-wâpaht-ê-n</i>			
	2PL							<i>ki-wâpaht-ê-n-âwâw</i>			
	3SG							<i>wâpaht-am</i>			
	3PL							<i>wâpaht-am-w-ak</i>			
	3'							<i>wâpaht-am-iyi-wa</i>			
VAI	<i>ni-wâpiskisi-n</i> <i>ni-pimipahtâ-n</i>	<i>ki-wâpiskisi-(nâ)naw</i> <i>ki-pimipahtâ-(nâ)naw</i>	<i>ni-wâpiskisi-nân</i> <i>ni-pimipahtâ-nân</i>	<i>ki-wâpiskisi-n</i> <i>ki-pimipahtâ-n</i>	<i>ki-wâpiskisi-nâwâw</i> <i>ki-pimipahtâ-nâwâw</i>	<i>wâpiskisi-w</i> <i>pimipahtâ-w</i>	<i>wâpiskisi-wak</i> <i>pimipahtâ-wak</i>	<i>wâpiskisi-yi-wa</i> <i>pimipahtâ-yi-wa</i>			
VII						<i>wâpiskâ-w</i> <i>miywâsin</i> <i>wâpan</i>	<i>wâpiskâ-w-a</i> <i>miywâsin-w-a</i>	<i>wâpiskâ-yi-w</i> <i>miywâsin-iyi-w</i> <i>wâpan-iyi-w</i>	<i>wâpiskâ-yi-w-a</i> <i>miywâsin-iyi-w-a</i>		

Table 4: Plains Cree Conjunct Order paradigms of VTA *wâpam-* “see s.o.”, VTI *wâpaht-* “see sth”, VAI *wâpiskisi-* “be white (+ANIM)”, *pimipahtâ-* “run”, VII *wâpiskâ-* “be white (-ANIM)”, *miywâsin* “be good”, *wâpan* “be dawn” (based on Wolfart, 1996)

		P									
A		1SG	1PI	1PE	2SG	2PL	3SG	3PL	3'SG	3'PL	
VTA	1SG				<i>ê-wâpam-it-ân</i>	<i>ê-wâpam-it-ako-k</i>	<i>ê-wâpam-ak</i>	<i>ê-wâpam-ak-ik</i>	<i>ê-wâpam-im-ak</i>		
	1PI						<i>ê-wâpam-â-yahk</i>	<i>ê-wâpam-â-yahko-k</i>	<i>ê-wâpam-im-â-yahk</i>		
	1PE					<i>ê-wâpam-it-âhk</i>	<i>ê-wâpam-â-yâhk</i>	<i>ê-wâpam-â-yâhk-ik</i>	<i>ê-wâpam-im-â-yâhk</i>		
	2SG	<i>ê-wâpam-i-yan</i>					<i>ê-wâpam-at</i>	<i>ê-wâpam-ač-ik</i>	<i>ê-wâpam-im-at</i>		
	2PL	<i>ê-wâpam-i-yêk</i>		<i>ê-wâpam-i-yâhk</i>			<i>ê-wâpam-â-yêk</i>	<i>ê-wâpam-â-yêko-k</i>	<i>ê-wâpam-im-â-yêk</i>		
	3SG	<i>ê-wâpam-i-t</i>	<i>ê-wâpam-iko-yahk</i>	<i>ê-wâpam-iko-yâhk</i>	<i>ê-wâpam-isk</i>	<i>ê-wâpam-iko-yêk</i>			<i>ê-wâpam-(im)-â-t</i>		
	3PL	<i>ê-wâpam-i-č-ik</i>	<i>ê-wâpam-iko-yahko-k</i>	<i>ê-wâpam-iko-yâhk-ik</i>	<i>ê-wâpam-isk-ik</i>	<i>ê-wâpam-iko-yêko-k</i>			<i>ê-wâpam-(im)-â-č-ik</i>		
	3'	<i>ê-wâpam-i-yi-t</i>	<i>ê-wâpam-iko-wâ-yahk</i>	<i>ê-wâpam-iko-wâ-yâhk</i>	<i>ê-wâpam-iy-isk</i>	<i>ê-wâpam-iko-wâ-yêk</i>	<i>ê-wâpam-iko-t</i>	<i>ê-wâpam-iko-č-ik</i>	<i>ê-wâpam-iko-yi-t</i>		
VTI	1SG							<i>ê-wâpaht-am-ân</i>			
	1PI							<i>ê-wâpahtamahk</i>			
	1PE							<i>ê-wâpaht-am-âhk</i>			
	2SG							<i>ê-wâpaht-am-an</i>			
	2PL							<i>ê-wâpaht-am-êk</i>			
	3SG							<i>ê-wâpaht-ah-k</i>			
	3PL							<i>ê-wâpaht-ah-ik</i>			
	3'							<i>ê-wâpaht-am-iyi-t</i>			
VAI	<i>ê-wâpiskisi-yân</i> <i>ê-pimipahtâ-yân</i>	<i>ê-wâpiskisi-yahk</i> <i>ê-pimipahtâ-yahk</i>	<i>ê-wâpiskisi-yâhk</i> <i>ê-pimipahtâ-yâhk</i>	<i>ê-wâpiskisi-yan</i> <i>ê-pimipahtâ-yan</i>	<i>ê-wâpiskisi-yêk</i> <i>ê-pimipahtâ-yêk</i>	<i>ê-wâpiskisi-t</i> <i>ê-pimipahtâ-t</i>	<i>ê-wâpiskisi-č-ik</i> <i>ê-pimipahtâ-č-ik</i>	<i>ê-wâpiskisi-yi-t</i> <i>ê-pimipahtâ-yi-t</i>			
VII						<i>ê-wâpiskâ-k</i> <i>ê-miywâsin-k</i> <i>ê-wâpah-k</i>	<i>ê-wâpiskâ-k-i</i> <i>ê-miywâsin-k-i</i>	<i>ê-wâpiskâ-yi-k</i> <i>ê-miywâsin-iyi-k</i> <i>ê-wâpan-iyi-k</i>	<i>ê-wâpiskâ-yi-k-i</i> <i>ê-miywâsin-iyi-k-i</i>		

113 The following example from Plains Cree will serve as an illustration of the actual use of
 114 these verb classes and the two main orders.

115 (3) *â, êwak ôma kâ-wî-tâhkôt-am-ân¹, matwân cî kwayask*
 well DEM DEM:INAN NMLZ-FUT:PROX-discuss(VTI)-TH-1SG:CNJ I_wonder properly

116 ni-ka-kî-isi-tâhkôt-ên² *tânis ê-kî-itâcimostaw-it*³
1-FUT-PST-thus-discuss(VTI)-1SG:INDEP how CNJ-PST-tell_about(VTA)-3SG→1SG:CNJ
117 kâ-kî-oyôhtâwî-yân⁴, *ôm ita*
NMLZ-PST-have_as_father(VAI [TR])-1SG:CNJ DEM:INAN here
118 kâ-pakosêyim-ikawi-yân⁵ ka-kî-tâhkôt-am-ân⁶, *êwak ôm*
NMLZ-expect(VTA)-UNSPEC-1SG:CNJ FUT-PST-discuss(VTI)-TH-1SG:CNJ DEM DEM:INAN
119 ‘*oskiciy*’ k-êsiyîhkâtê-k⁷; *ât[a] âni mitoni kwayask*
pipestem(NI) NMLZ-be_called(VII)-3SG:CNJ although then really properly
120 ni-kî-wihtamâ-ko-h⁸ *mîna n-ôhcâwîs, ita*
1-PST-tell_about(VTA)-INV-PRET also 1-father’s_brother there
121 ê-kî-kanawêyih-ah-k⁹ *êwak ôma, ita o-mosôm-a*
CNJ-PST-keep(VTI)-TH-3SG:CNJ DEM DEM:INAN there 3-grandfather-OBV
122 kâ-kî-ohtaskat-am-iyit¹⁰ *êwak ôma*
NMLZ-PST-leave(VTI)-TH-3’:CNJ DEM DEM:INAN
123 ‘Well, this which I am about to discuss, I wonder if I will be able to discuss it with
124 proper faithfulness, just as my late father had told me the story about it, here [at the
125 Saskatchewan Indian Languages Insititute] where I should (be able) to discuss it, this
126 ‘pipestem’ as it is called; although I had most properly been told about it also by my
127 father’s brother, where he had kept this, where his grandfather had left this pipestem
128 behind.’ (Ahenakew & Wolfart, 1988, p. 107)

129 Verb forms (1) and (6) illustrate the use of the conjunct order while verb form (2) illustrates
130 the use of the independent order of the TI verb *tâhkôt-* ‘discuss sth, discourse upon sth’, respec-
131 tively. The verb stands in the conjunct order in (1) because it acts as a (nominalized) relative
132 clause modifying *êwak ôma* ‘that one’ and is thus non-finite: ‘that one (ie. subject) which I am
133 going to discourse upon’; in (6) it is in a complement clause with a deontic meaning: ‘(it is
134 expected of me) that I should discuss it’. In (3) we see the TA verb *itâcimostaw-* ‘tell s.o. thus
135 about it’ used in the conjunct order since it appears in a *wh-* clause headed by *tânis* ‘how’. The
136 verb form is furthermore inverse since the narrator was told about it by his father, and so we
137 have a case where the patient (or semantically speaking, the addressee in this case) is higher
138 than the agent on the hierarchy in 1. In (4) we see another example of *kâ-* (NMLZ) used this time
139 as a headless relative clause built from the transitive (sic!) AI verb *oyôhtâwî-* ‘have s.o. as one’s
140 father’ which as such appears in the conjunct order: ‘(litt.) the one I had as (my) father’. (5)
141 is an example of a TA verb *pakosêyim-* ‘expect sth from s.o.’ with the unspecified actor suffix
142 *-ikawi-* (UNSPEC) used in the conjunct because it modifies *ita* ‘there (where)’: ‘(litt.) there where
143 it is expected of me’. In (7) we have the conjunct order form of the II verb *isiyîhkâtê-* ‘be called
144 thus’ used as a relative clause modifying *êwak ôma* ‘that one’ (referring to *oskiciy-* NI ‘pipestem’):
145 ‘(litt.) that one which is called thus’. In (8) we find another TA verb *wihtamaw-* ‘tell s.o. about
146 sth/s.o.’ appearing in the inverse since once again the narrator (1SG) has been told about the
147 pipestem by his uncle (3SG). And finally, (9) *kanawêyih-* ‘keep it’ and (10) *ohtaskat-* ‘leave it
148 (suddenly)’ are both TI verbs appearing in the conjunct order, both of them having *oskiciy-* NI
149 ‘pipestem’ as their object and modifying once again *ita* ‘there (where)’. Observe that (10) shows
150 obviative morphology as well since it has to agree with its subject *omosôma* ‘his grandfather’

151 which as explained earlier must bear obviative marking (-a) as its possessor is third person.

152 3 The reshaping of the conjunct order in Algonquian

153 Algonquian languages share complex verbal paradigms that are mostly inherited from their
154 common ancestor. Even languages, such as Arapaho and Cheyenne, which have undergone
155 some drastic sound changes largely preserve the Proto-Algonquian paradigms albeit with some
156 interesting reshaping.

157 The present section focuses on two particular paradigms: the conjunct order indicative
158 intransitive animate (VAI) and transitive animate (VTA) conjugations.

159 This choice is determined by the fact that the Algonquian conjunct order paradigms consti-
160 tute the only case in the languages of the world where the creation of a direct/inverse system
161 from a non-hierarchical system can be observed. While the Proto-Algonquian conjunct order
162 paradigm was partly accusative and partly tripartite, some languages, in particular Plains Cree,
163 varieties of Nishnaabemwin, Mi'gmaq and Arapaho have reshaped it towards a direct/inverse
164 system. In the case of Cree and Ojibwe, historical documents even attest intermediate stages
165 showing how the morphological reshapings came about.

166 In this section, we first describe the Proto-Algonquian conjunct order conjugation, then
167 present Plains Cree, Nishnaabemwin, Mi'gmaq and Arapaho data, and finally propose a series
168 of generalizations based on these observations.

169 3.1 Proto-Algonquian

170 The reconstruction of the conjunct order paradigm of Proto-Algonquian is uncontroversial.
171 Table 5 (based on Bloomfield 1946 and Goddard 2000) presents the indicative mode forms of
172 that order, which are directly attested as such in Fox (Kickapoo) and Miami (Costa 2003).

173 The final *-i in the singular direct and inverse forms is the indicative mode suffix. In the
174 subjunctive and participle forms the suffix is *-e and *-a, respectively.³ Note that the indicative
175 mode suffix palatalizes an earlier **-t- in *-č- contrary to the subjunctive and participle forms
176 which preserve the non-palatalized **-t-. Thus, the 2SG→3 participle form is *-ata while the
177 indicative one is *-aci. As we will see, most of the languages in which the final vowel of the verb
178 form is lost have generalized the non-palatalized forms in the indicative mode of the conjunct
179 order by analogy with the subjunctive and participle forms.

³The participle also presents a different set of endings for the plural forms, which will not be discussed here.

Table 5: Proto-Algonquian conjunct order indicative paradigm, VAI and VTA

A \ P	P							
	1SG	1PI	1PE	2SG	2PL	3SG	3PL	3'
1SG				-eθ-âni	-eθ-akokw-e	-ak-i	-ak-wâw-i	-em-ak-i
1PI						-ankw-e		-em-ankw-e
1PE					-eθ-ânk-e	-akenč-i		-em-akenč-i
2SG	-iy-an-i					-ač-i	-at-wâw-i	-em-ač-i
2PL	-iy-êkw-e		-iy-ânk-e			-êkw-e		-em-êkw-e
3SG	-i-č-i	-eθ-ankw-e	-iy-amenč-i	-eθ-k-i	-eθ-âkw-e			-â-č-i
3PL	-i-wâ-č-i			-eθ-k-wâw-i				-â-wâ-č-i
3'	-i-ri-č-i			-em-eθ-k-i		-ekw-eč-i	-eko-wâ-č-i	
INTR	-âni	-ankw-e	-ânk-e	-ani	-êkw-e	-č-i / -k-i	-wâ-č-i	-ri-č-i

180 The proto-Algonquian system is clearly not a direct/inverse one, except for the non-local
181 scenarios (3 → 3' and 3' → 3) where what will later become the direct (-â-) and inverse (-ekw-)
182 markers can be seen. As for the rest, some parts of the system are tripartite, in particular the
183 first and second singular and the first person plural exclusive forms. For instance, intransi-
184 tive 1PE**-ânk-e* and transitive 1PE → 3**-akenč-i*, 3 → 1PE**-iy-amenč-i* are all marked by unrelated
185 morphemes ($S \neq A \neq P$).

186 Other forms present accusative alignment; for instance, the second plural has *-êkw-e* in both
187 intransitive and direct forms, but **-âkw-e* in inverse ones ($S = A \neq P$). In all inverse and local
188 forms, there are specific markers for first person (**-i(y)-*) and second person (**-eθ-*) patients.
189 The first person inclusive, which represents the association of the speaker(s), ie. a first person,
190 with the hearer, i.e. a second person, also shows the second person patient marker (**-eθ-*) on
191 top of its corresponding direct marker (**-ankw-*) in inverse forms. Incidentally, this is one of
192 two suffixes neutral as to the syntactic roles in the system, alongside third person **-č-i/k-i* (cf.
193 Table 6).

Table 6: The alignment of PA indicative personal verb suffixes

	S	A	P
1SG	* <i>-âni</i> (→2SG)	* <i>-akokw-e</i> (→2PL)	* <i>-i</i>
		* <i>-ak-i</i> (→3)	
1PI	* <i>-ankw-e</i>		* <i>-eθ-ankw-e</i>
1PE	* <i>-ânk-e</i> (→2)		* <i>-iy-ânk-e</i> (2→)
		* <i>-akenč-i</i> (→3)	* <i>-iy-amenč-i</i> (3→)
2SG	* <i>-an-i</i> (→1SG)		* <i>-eθ</i>
		* <i>-ač-i</i> (→3)	
2PL	* <i>-êkw-e</i>		* <i>-eθ-akokw-e</i> (1SG→)
			* <i>-eθ-âkw-e</i> (3SG→)
3SG	* <i>-č-i</i> /* <i>-k-i</i> (→1, 2SG, 3')		* <i>-č-i</i> /* <i>-k-i</i>
3PL	* <i>-wâ-č-i</i>	<i>-k-wâw-i</i>	* <i>-wâw-i</i> /* <i>-wâ-č-i</i>

194 The following sections show how such a non-hierarchical system was independently re-
 195 shaped as a (partial) direct/inverse system in several Algonquian languages by ousting the
 196 opaque forms and replacing them with (more) transparent ones.

197 3.2 Plains Cree

198 Table 7 presents the conjunct order paradigm of Modern Plains Cree while Table 8 presents
 199 the earliest attested stage in the conjunct order paradigm of Plains Cree.

Table 7: Plains Cree Conjunct Order indicative paradigms. (Wolfart, 1996)

A \ P	1SG	1PI	1PE	2SG	2PL	3SG	3PL	3'
1SG				-it-ân	-it-ako-k	-ak	-ak-ik	-im-ak
1PI						-â-yahk	-â-yahko-k	-im-â-yahk
1PE					-it-âhk	-â-yâhk	-â-yâhk-ik	-im-â-yâhk
2SG	-i-yan		-i-yâhk			-at	-ač-ik	-im-at
2PL	-i-yêk					-â-yêk	-â-yêko-k	-im-â-yêk
3SG	-i-t	-iko-yahk	-iko-yâhk	-isk	-iko-yêk			-(im)-â-t
3PL	-i-č-ik	-iko-yahko-k	-iko-yâhk-ik	-isk-ik	-iko-yêko-k			-(im)-â-č-ik
3'	-i-yi-t	-ikow-â-yahk	-ikow-â-yâhk	-iy-isk	-ikow-â-yêk	-iko-t	-iko-č-ik	-â-yi-t -iko-yi-t
INTR	-yân	-yahk	-yâhk	-yan	-yêk	-t	-č-ik	-yi-t

200 Comparing Table 7 with Table 8 we can easily see that the direct forms and the inverse
 201 ones, bearing the so-called 'theme signs' -â- (direct) vs. -ikw- (inverse), originally present only
 202 in non-local (3→3' and 3'→3, respectively) scenarios have been generalized to other parts of
 203 the paradigm at the expense of older and less easily segmentable ones.

Table 8: 19th century Plains Cree Conjunct Order indicative paradigms (based on Dahlstrom, 1989)

A \ P	1SG	1PI	1PE	2SG	2PL	3SG	3PL	3'
1SG				-it-ân	-it-ako-k	-ak	-ak-ik	-im-ak
1PI						-ahk	-ahko-k	-im-â-yahk
1PE					-it-âhk	-ak-ihk	-ak-ihč-ik	-im-â-yâhk
2SG	-i-yan		-i-yâhk			-at	-ač-ik	-im-at
2PL	-i-yêk					-êk	-êko-k	-im-â-yêk
3SG	-i-t	-it-ahk	-i-yam-ihk	-isk	-it-êk			-(im)-â-t
3PL	-i-č-ik	-it-ahko-k	-i-yam-ihč-ik	-isk-ik	-it-êko-k			-(im)-â-č-ik
3'	-i-yi-t	-ikow-â-yahk	-ikow-â-yâhk	-iy-isk	-ikow-â-yêk	-iko-t	-iko-č-ik	-â-yi-t -iko-yi-t
INTR	-yân	-yahk	-yâhk	-yan	-yêk	-t	-č-ik	-yi-t

204 According to Dahlstrom (1989), the change proceeded in two steps. First, as shown in table

205 9, the relevant inverse forms were innovated,⁴ based upon the generalized use of the inverse
 206 marker in the independent order and by analogy with the inanimate actor forms which had
 207 the inverse marker already in both orders as a result of an earlier and non-documented similar
 208 analogical process. This change was completed by the end of the 19th century.

Table 9: Innovative inverse forms in the Plains Cree conjunct order VTA paradigm

	Innovative VTA paradigm	Inanimate actor forms	PA paradigm (inanimate actor)	Conservative VTA paradigm (19th century)	PA paradigm (VTA)
3SG→1PE	<i>-iko-yâhk</i>	<i>-iko-yâhk</i>	* <i>-iy-amenki</i>	<i>-iy-amiht</i>	* <i>-iy-amenči</i>
3PL→1PE	<i>-iko-yâhk-ik</i>			<i>-iy-amihč-ik</i>	
3SG→1PI	<i>-iko-yahk</i>	<i>-iko-yahk</i>	* <i>-eθ-ankwe</i>	<i>-it-ahk</i>	* <i>-eθ-ankwe</i>
3PL→1PI	<i>-iko-yahko-k</i>			<i>-it-ahko-k</i>	
3SG→2PL	<i>-iko-yêk</i>	<i>-iko-yêk</i>	* <i>-eθ-âkwe</i>	<i>-it-êk</i>	* <i>-eθ-âkwe</i>
3PL→2PL	<i>-iko-yêko-k</i>			<i>-it-êko-k</i>	

209 Then, possibly in an effort to rationalize the system and make it more coherent, the direct
 210 forms followed suit, and the modern system is attested as such at the very beginning of the
 211 20th century (cf. Table 10).

Table 10: The Plains Cree VTA paradigm innovative conjunct order direct forms

	Innovative VTA paradigm	Conservative VTA paradigm (19th century)	Proto-Algonquian
1PE→3SG	<i>-â-yâhk</i>	<i>-akiht</i>	* <i>-akenči</i>
1PE→3PL	<i>-â-yâhk-ik</i>	<i>-akihcik</i>	
1PI→3SG	<i>-â-yahk</i>	<i>-ahk</i>	* <i>-ankw-e</i>
1PI→3PL	<i>-â-yahko-k</i>	<i>-ahko-k</i>	
2PL→3SG	<i>-â-yêk</i>	<i>-êk</i>	* <i>-êkw-e</i>
2PL→3PL	<i>-â-yêko-k</i>	<i>-êko-k</i>	

212 Following are some of the examples Dahlstrom 1989 gives to illustrate the change. They
 213 come from the 1855 translation of the Gospel according to St. John and the First Epistle General
 214 of John compared to a 1904 edition of the New Testament. We can see that the older forms still
 215 in use in the former two have been replaced by the innovative ones in the latter.

216 In ex. 4a we see an example of the direct vs inverse mixed scenario archaic forms 1PI→3SG
 217 (*-ahk*) and 3SG→1PI (*-itahk*), respectively, which are replaced by the innovative ones, viz. *-â-*
 218 *yahk* and *-iko-yahk* in ex. 4b.

- 219 (4) a. *namawiya kiyânaw, ê-kîh-sâkih-ahk* *Manitôw, mâka wiya*
 NEG 1PI CNJ-PST-love(VTA)-1PI→3SG:CNJ God but 3SG
 220 *ê-kîh-sâkih-itahk.*
 CNJ-PST-love(VTA)-3PI→1PI:CNJ

⁴Here and afterward innovative forms are shown in grey.

221 ‘...not that we loved God, but that he loved us, ...’ (First Epistle General John 4.10
 222 (1855), [Dahlstrom 1989](#), p. 3)

223 b. *namawiya kiyânaw, ê-kîh-sâkih-â-yahk* *Manitôw, mâka wiya*
 NEG 1PI CNJ-PST-love(VTA)-DIR-1PI→3SG:CNJ God but 3SG
 224 *ê-kîh-sâkih-iko-yahk.*
 CNJ-PST-love(VTA)-INV-3SG→1PI:CNJ

225 ‘...not that we loved God, but that he loved us, ...’ (First Epistle General, John 4.10
 226 (1904), [Dahlstrom 1989](#), p. 3)

227 Examples like this where both the direct and the inverse forms show the archaic suffixes
 228 in the 1855 translation are less common than those where only the direct forms are archaic.
 229 Indeed, the change was already well under way in the inverse configurations, as only one third
 230 of the inverse forms documented in this translation show the relevant archaic suffixes, while
 231 the remaining two thirds had already been inovated ([Dahlstrom 1989](#), p. 3). Compare ex. 5a
 232 and 5b with an example of the shift from an archaic to an innovative form in the case of a direct
 233 scenario (ie. 1PL→3) and ex. 6a and 6b in the case of the corresponding inverse scenario (ie.
 234 3→1PL) where the innovative form is already in use in the older version.

235 (5) a. *kita nipah-akiht*
 for kill(VTA)-1PE→3SG:CNJ
 236 ‘...for us to kill him.’ (John 18.31 (1855), [Dahlstrom 1989](#), p. 3)

237 b. *kita nipah-â-yâhk*
 for kill(VTA)-DIR-1PE
 238 ‘...for us to kill him.’ (John 18.31 (1904), [Dahlstrom 1989](#), p. 3)

239 (6) a. *kâ-kîh-is-itisahw-iko-yâhk-ik*
 NMLZ-PST-thus-send(VTA)-INV-1PL-3PL
 240 ‘...them that sent us...’ (John 1.22 (1855), [Dahlstrom 1989](#), p. 3)

241 b. *kâ-kî-pê-itisahw-iko-yâhk-ik*
 NMLZ-PST-thus-send(VTA)-INV-1PL-3PL
 242 ‘...them that sent us...’ (John 1.22 (1855), [Dahlstrom 1989](#), p. 3)

243 This reshaping of the system has thus taken place some time between the 19th and the
 244 beginning of the 20th centuries. It is particularly noteworthy that it has affected only mixed
 245 scenarios with plural speech act participants and has been completed only in the Plains Cree
 246 dialect.

247 Indeed, other dialects such as Woods Cree, for instance, still use the archaic forms, at least
 248 those of the direct set. Ex. 7 shows an archaic direct 1PL→3SG form (*-akiht*), while ex. 8
 249 illustrates the corresponding inverse configuration with 3SG→1PL and the archaic *-iyamiht*.

250 (7) *îkosi â-kî-isi-kiskinawhamâ-kawi-yâ ta-pamih-akiht*
 thus CNJ-PST-thus-teach(VTA)-UNSPEC-1PL PURP-look_after(VTA)-1PL→3SG:CNJ
 251 *isa kisî-aya.*
 you_know old-person

252 'that's how we were taught to look after an elder, you know.' (Westfall & Castel, 2001,
253 p. 275)

254 (8) *akwâni îkosi â-kî-isi-pimâcih-iyamiht.*
then thus CNJ-PST-thus-bring_up(VTA)-3SG→1PL:CNJ
255 '...and that's how he (=my father) brought us up.' (Westfall & Castel, 2001, p. 182)

256 These archaic forms are used alongside the innovative forms (*-â-yâ* and *-ikow-â*, respec-
257 tively), and in the case of the inverse scenario the above cited example is only one of two
258 attested in more than 560 pages of transcribed oral corpus comprising spontaneous narratives
259 from dozens of speakers. This and the fact that the innovative forms are the only ones attested
260 in the direct 1PI/2PL→3 (*-â-ya/-â-yîk*) and the corresponding inverse 3→1PI/2PL (*-ikow-a/-ikow-*
261 *îk*) scenarios, show that a similar analogical process is under way in the Woods Cree dialect as
262 well, and we think it can be expected to reach the same levelling result.

263 3.3 Ojibwe

264 Some Nishnaabemwin (Ojibwe) dialects present innovations similar to those observed in Plains
265 Cree, but limited to the inverse forms. Table 11, based on data from Valentine (2001, 295),
266 presents the Nishnaabemwin conservative paradigm. The suffixes with capital *-I-* appear with
267 the palatalized allomorphs of *s/sh-* and *n/zh-* alternating verbs. For instance 'give' *mîin-* / *mîizh-*
268 has *mîin-inaan* 1SG→2SG with non-palatalizing *i* (from PA **e*) and *mîizh-id* 3SG→1SG with palatal-
269 izing *i* (from PA **i*, the first person patient theme sign).

270 As in Cree, Nishnaabemwin has generalized the non-palatalized allomorphs of second
271 and third person conjunct order suffixes: We thus find 2SG→3SG-*ad* corresponding to proto-
272 Algonquian **-ačī* < ***-ati* in the indicative conjunct order instead of expected **-aj*. This is
273 because the subjunctive and participle forms, which were **-ate* and **-ata*, respectively, were
274 not palatalized, and were continued by the non-palatalized form *-ad*, which was then generalized
275 to the indicative mode of the conjunct order after the loss of final vowels. This development is
276 not shared by all Ojibwe dialects: The Algonquin Ojibwe dialect described by Cuoq (1866), for
277 instance, has instead generalized the palatalized form (see Bloomfield 1946, 101).

278 Table 12 (see Valentine 2001, 178-9) shows that some dialects of Nishnaabemwin, such
279 as Parry Island, have developed innovative forms combining *-igo-* with the VAI endings as
280 optional variants of the conservative suffixes. The conservative forms themselves have been
281 reshaped in comparison with the paradigm recorded in the 19th century. This includes the
282 introduction of the 2PL suffix *-eg* in the inverse 3→2PL form from the direct 2PL→3 form to-
283 gether with the doubling of the second person theme sign *-in* (from **-eθ-*), and the replacement
284 of the 3→1PE *-iyamintf* by an analysable form created by combining the direct *-angid* and the
285 first object theme sign *-i*. For the sake of comparison, Table 12 also shows the 19th century
286 Algonquin forms from Cuoq (1866, 51), which are directly inherited from proto-Algonquian.

Table 11: The conservative Ojibwe VTA and VAi paradigms

A \ P	P							
	1SG	1PI	1PE	2SG	2PL	3SG	3PL	3'
1SG				-inaan	-inagog	-ag	-agwaa	
1PI						-ang	-ang-waa	
1PE					-inaang	-angid	-angidwaa	
2SG	-Iyan					-ad	-adwaa	
2PL	-Iyeg		-Iyaang			-eg	-egwaa	
3SG	-Id	-inang	-Iyangid	-ik	-ineg			-aad
3PL	-Iwaad	-inangwaa	-Iyangidwaa	-ikwaa	-inegwaa			-aawaad
3'						-igod	-igowaad	
INTR	-yaan	-yang	-yaang	-yan	-yeg	-d / -g	-waa	-nid

Table 12: The Ojibwe VTA paradigm inverse forms and their PA origins

	Innovative paradigm	Conservative paradigm	19th century Nipissing Ojibwe	Proto-Algonquian
3→1SG	-igo-yaan	-id	-itf	*-iči
3→1PI	-igo-yang	-inang	-inang	*-eθankwe
3→1PE	-igo-yaang	-iyangid	-iyamintf	*-iyamenči
3→2SG	-igo-yan	-ik	-ik	*-eθki
3→2PL	-igo-yeg	-ineg	-inaak	*-eθâkwe
3'→3SG	-igod	-igod	-igotf	*-ekweči
3'→3PL	-igodwaa	-igodwaa	-igowaatf	*-ekowaači

287 This dialect of Nishnaabemwin goes further than Plains Cree as far as inverse forms are
 288 concerned, since the analogy has affected not only plural forms, but also singular ones. It is
 289 noteworthy that direct forms, on the other hand, have remained unchanged.

290 3.4 Mi'gmaq

291 The Listuguj (or Restigouche) dialect of Mi'kmaq (or Mi'gmaq in Listuguj orthography), an
 292 Eastern Algonquian language spoken in Quebec, shows a number of interesting innovations in
 293 its verbal system. The discussion here is based on Quinn (2012).

294 One such innovation concerns the transitive animate paradigm. While it has replaced,
 295 along with all Mi'gmaq dialects, the PA independent order forms by the conjunct order ones
 296 (cf. Table 13), Listuguj has departed from the other dialects' more direct PA reflexes based on
 297 local person 'theme signs', still present at earlier attested stages of the dialect (cf. Table 14) by
 298 innovating the TA morphology for the mixed 3→1/2PL scenario (cf. Table 15). According to
 299 Quinn (2012), the innovation consists in a combination of the inverse suffix (-ug- < PA *-ekw-) and
 300 the reflexive one (-si- < PA *-esi-). This hypothesis is subject to debate (Will Oxford, p.c.).

Table 13: Mi'gmaq independent order (< PA conjunct order participle) indicative paradigm

A \ P	P									
	1SG	1PE	1PI	2SG	2PL	3SG	3PL	3' SG		
1SG				-ul	-ulnoq	-(V)'g	-(V)'gig			
1PE					-ulneg	-(Ve)g't	-(Ve)g'jig			
1PI							-ugg	-uggwig		
2SG	-i'lin						-(V)'t	-(V)'jig		
2PL	-i'lioq	-i'lieg							-(V)og	-(V)ogig
3SG	-i'lit			-ugsi'gw	-(V)'sg					-a-t'l
3PL	-i'lijig	-ugsieg	-ugsi'gwig	-(V)'sgig	-ugsioq					
3' SG						-t'l				

Table 14: Early 20th century Mi'gmaq VTA indicative independent order paradigm of *nemi*- 'to see' (based on Hewson & Francis, 1990)

A \ P	P										
	1SG	1PE	1PI	2SG	2PL	3SG	3PL	3' SG		3' PL	
1SG				<i>nemi'l</i>	<i>nemi'-l-oq</i>	<i>nemi'-g</i>	<i>nemi'-g-jig</i>				
1PE				<i>nemi'-l-eg</i>		<i>nemi'-gət</i>	<i>nemi'-gə-jig</i>				
1PI							<i>nemi'-gw</i>	<i>nemi'-gw-jig</i>			
2SG	<i>nemi'-n</i>	<i>nemi'-eg</i>				<i>nemi'-t</i>	<i>nemi'-jig</i>				
2PL	<i>nemi'-oq</i>						<i>nemi'-oq</i>	<i>nemi'-oq</i>			
3SG	<i>nemi'-t</i>	<i>nemi'-namə-t</i>	<i>nemi'-l-g</i>	<i>nemi'-sg</i>	<i>nemi'-l-oq</i>			<i>nemi'-a-jl</i>	<i>nemi'-a-ji</i>		
3PL	<i>nemi'-jig</i>	<i>nemi'-namə-jig</i>	<i>nemi'-l-gw-jig</i>	<i>nemi'-sg-jig</i>					<i>nemi'-a-ti-jl</i>	<i>nemi'-a-ti-ji</i>	
3' SG						<i>nemi'-a-li-jl</i>	<i>nemi'-a-li-ji</i>				
3' PL						<i>nemi'-a-ti-li-jl</i>	<i>nemi'-a-ti-li-ji</i>				

301 This development is comparable though only partially cognate to the development in the
 302 local scenario in Parry Island Nishnaabemwin (cf. section 3.3), but is also (partially) attested in
 303 Wampanoag (Goddard & Bragdon, 1988, 556).

Table 15: The Mi'gmaq VTA paradigm innovative inverse forms

	Innovative paradigm (Listuguj)	Conservative paradigm (other dialects)	Proto-Algonquian
3→1PE	<i>-ugsi-eg</i>	<i>-i-nam't</i>	* <i>-iyamenčī</i>
3→1PI	<i>-ugsi-gw</i>	<i>-ul-gw</i>	* <i>-eθankwe</i>
3→2PL	<i>-ugsi-oq</i>	<i>-ul-oq</i>	* <i>-eθākwe</i>

304 Listuguj Mi'gmaq also shows an innovative reshaping of the sequence of a TA stem ending
 305 in final *-i* and a following 1SG patient theme sign *-i* as *-i'li-*. The origin of this extra *-l-* is
 306 unclear but according to Quinn (2012) we may be dealing with either the VTA abstract final *-l-*
 307 (with no particular semantic import), or else the *-l-* may have come about due to some sort of
 308 paradigmatic analogy with the 2SG patient suffix *-ul*. The regular (inherited) endings were then
 309 added after a replication of the 1SG patient suffix *-i*. We think that it is possible to suggest one
 310 more solution to this problem: the *-li-* element may be related to the obviative suffix appearing
 311 in inverse non-local scenarios 3'→3 in other dialects which goes back to PA **-ri-*.

Table 16: The Mi'gmaq VTA paradigm innovative 1SG patient forms

	Innovative paradigm (Listuguj)	Conservative paradigm (other dialects)	Proto-Algonquian
2SG→1SG	<i>-i'li-n</i>	<i>-i'-n</i>	* <i>-i-yana</i>
2→1SG/PL	<i>-i'li-eg</i>	<i>-i'-eg</i>	* <i>-i-yēkwa</i> (2p→1s)
3SG→1SG	<i>-i'li-t</i>	<i>-i'-t</i>	* <i>-i-ta</i>
3PL→1SG	<i>-i'li-jig</i>	<i>-i'jig</i>	* <i>-i-ciki</i>

312 3.5 Arapaho

313 The paradigm reshaping that has occurred in Cree, Nishnaabemwin and Mi'gmaq is not iso-
 314 lated. Among Algonquian languages, Arapaho provides an example of a language which has
 315 reshaped the conjunct order even further. Before discussing the Arapaho VTA paradigm, we
 316 provide some information on the VAI paradigm, which is necessary for understanding the
 317 changes in the VTA. We must warn the reader that the drastic sound changes in Arapaho (see
 318 Goddard 1974) have rendered the cognate forms barely recognizable. We cannot provide here
 319 a detailed account of Arapaho historical phonology, and defer the reader to Goddard's works
 320 for an in-depth presentation of this topic. Arapaho data used in this section is taken from
 321 Salzmann (1967) and Cowell & Moss (2006).

322 The Arapaho VAI conjunct order paradigm, as shown by Goddard (1965, 16-7), regularly

323 derives from the proto-Algonquian conjunct order participle (for the SAP forms, it could also
 324 originate from the corresponding indicative forms). Had it originated from the indicative con-
 325 junct order forms, the third person forms would have been different: the third singular suffix,
 326 in particular, would have been $**-\theta < *-\check{c}i$.

327 Table 17 shows the main allomorphs for the conjunct order suffixes in Arapaho and their
 328 Proto-Algonquian origins. The first plural exclusive $-'$ originates from the indefinite third per-
 329 son form $*-nki$ (Goddard 1998), replacing the inherited 1PE ending, which would have been
 330 homophonous with that of the first singular.⁵

Table 17: The Arapaho VAI paradigms and its proto-Algonquian origin

Person	Arapaho	Expected Arapaho	Proto-Algonquian
1SG	$-noo$		$*-y\hat{a}n-$
1PE	$-ni' / -'$	$**noo$	$*-y\hat{a}nk-$
1PI	$-no'$		$*-yankw-$
2SG	$-n$		$*-yan-$
2PL	$-nee$		$*-y\hat{e}kw-$
3SG	$-t / -'$		$*-ta / -ka$
3' SG	$-ni\theta$		$*-ri\check{c}iri$
3PL	$-\theta i'$		$*-\check{c}iki$
3' PL	$-ni\theta i$		$*-ri\check{c}ihi$

331 In comparison with the VAI paradigm, which is almost entirely inherited from proto-
 332 Algonquian, the VTA paradigm presents considerable reshaping. The account proposed here
 333 as well as the Proto-Algonquian reconstructions are largely based on Goddard (1965, 19-24) (in
 334 combination with Goddard 2000 for some details of the Proto-Algonquian paradigms). Table
 335 18 presents the regular endings of the VTA paradigm in Arapaho, taken from Cowell & Moss
 336 (2006, 487-490) and Cowell & Moss (2005, 448). The further obviative $3' \rightarrow 3'$ direct and inverse
 337 forms are not included.

⁵The following sound laws apply here: $*y- \rightarrow -n-$, $*a \rightarrow o$, $*k \rightarrow \emptyset$, $*nk \rightarrow '$, $*c \rightarrow \theta$, $*r \rightarrow n$; final vowels are always lost. In some cases, two final syllables can be lost, if they follow the pattern $*(V_1)C(y,w)V_2$, where C is any of $*n$, $*m$, $*r$, $*y$, $*w$ and V_i is a short vowel.

Table 18: The Arapaho VTA paradigm

	1SG	1PI	1PE	2SG	2PL	3SG	3PL	3'
1SG				-éθen	-eθénee	-o'	-óú'u	
1PI							-óóno'	
1PE				-een	-eenee	-éét	-ééθi'	
2SG	-ín / -ún		-ínee / -únee			-ót	-óti(i)	
2PL	-éi'een		-éi'éénee			-óónee		
3SG	-éínoo	-éíno'	-éi'éét	-éín	-éínee			-oot
3PL	-iθi' / -uθi'		-éi'ééθi'	-éínoí(i)				-óóθi'
3'						-éít	-éiθi'	

338 Given the complexity of the paradigm in Table 18, we shall split the discussion in three
 339 parts, analyzing the direct, inverse and local forms separately. The SAP→3PL and 3PL→SAP
 340 are only discussed in the case of the suffix 3PL→1SG -iθi'), since they otherwise follow the same
 341 patterns of refection as the corresponding SAP→3SG and 3SG→SAP forms.

342 The direct forms of the VTA paradigm are compared with the corresponding reconstructed
 343 Proto-Algonquian forms in Table 19, in which the Arapaho forms that do not continue Proto-
 344 Algonquian ones are indicated in grey. This table shows that as in Plains Cree, while the
 345 singular direct forms are inherited, the SAP plural ones are reshaped by reanalyzing the third
 346 person ending -oot as -oo- + the VAI ending -t and generalizing this structure to the first and
 347 second person plural: -óó-no' 1PI and -óó-nee 2PL are built by combining the direct marker -oo-
 348 with the regular VAI endings.

349 The 1PE -éét probably does not originate from inherited *-akenta. This form should have
 350 yielded either *-ooot or *-eet. While it is not entirely impossible that vowel shortening would
 351 have happened, it is more satisfying to derive -éét from the unspecified form of the conjunct
 352 participle *-enta (Goddard 1998, 4, see the X-3 form of the TA direct paradigm).

Table 19: The Arapaho VTA paradigm direct forms and their PA origins

Form	Arapaho	Expected Arapaho	Proto-Algonquian
1SG→3SG	-o'		*-aka
1PE→3SG	-éét	** -eet	*-akenta
1PI→3SG	-óó-no'	** -o'	*-ankwa
2SG→3SG	-ót		*-ata
2PL→3SG	-óó-nee	** -ee	*-ékwa
3SG→3'	-oot		*-âta
3PL→3'	-óóθi'		*-âčiki

353 By contrast with the direct paradigm, the inverse VTA paradigm is almost entirely remade,
 354 as in Parry Island Nishnaabemwin: only the third person forms are inherited, as can be seen in
 355 Table 20. As in the direct paradigm, the third person ending -éít was reanalyzed as -ei- + the

356 VAI ending *-t* and all other forms were rebuilt on that model, replacing the inherited forms.⁶
 357 All inverse forms follow this pattern, except the 3→1PE suffix, where **-éi'* would have been
 358 been obtained if *-ei* had been combined with the VAI 1PE ending *-'*. The attested 3→1PE form
 359 *-éi'-éét* combines the expected form **-éi'* with the direct ending *-éét*.

360 The 3PL→1SG suffix *-iθi' / -uθi'* is the only suffix in the inverse configurations involving a
 361 SAP which was not renewed. It is all the more remarkable that the corresponding 3SG→1SG
 362 form is remade.

Table 20: The Arapaho VTA paradigm inverse forms and their PA origins

Person	Arapaho	Expected Arapaho	PA Conjunct
3SG→1SG	<i>-éi-noo</i>	** <i>-it</i>	* <i>-ita</i>
3SG→1PE	<i>-éi'-éét</i>	** <i>-inobeet</i>	* <i>-iyamenta</i>
3SG→1PI	<i>-éi-no'</i>	** <i>-eθo'</i>	* <i>-eθankwa</i>
3PL→1SG	<i>-iθi' / -uθi'</i>		* <i>-ičiki</i>
3SG→2SG	<i>-éi-n</i>	** <i>-es</i>	* <i>-eθki</i>
3SG→2PL	<i>-éi-nee</i>	** <i>-eθoo</i>	* <i>-eθâkwa</i>
3'→3SG	<i>-éit</i>		* <i>-ekweta</i>
3'→3PL	<i>-éiθi'</i>		* <i>-ekočiki</i>

363 Just as the inverse paradigm, the local paradigm has also undergone considerable analogical
 364 reshaping with only the 2SG→1SG and 2PL→1SG being inherited.

Table 21: The Arapaho VTA paradigm local forms and their PA origins

Person	Arapaho	Expected Arapaho	PA Conjunct
1SG→2SG	<i>-éθen</i>	** <i>-eθoo</i>	* <i>-eθâni</i>
1SG→2PL	<i>-eθénee</i>	** <i>-eθou</i>	* <i>-eθakokwe</i>
1PE→2SG	<i>-één</i>	** <i>-eθoo</i>	* <i>-eθânke</i>
1PE→2PL	<i>-eenee</i>	** <i>-eθoo</i>	* <i>-eθânke</i>
2SG→1SG	<i>-ún / -ín</i>		* <i>-iyani</i>
2SG→1PE	<i>-éi'één</i>	** <i>-inoo</i>	* <i>-iyânkwe</i>
2PL→1SG	<i>-únee / -ínee</i>		* <i>-iyêkwe</i>
2PL→1PE	<i>-éi'eenee</i>	** <i>-inoo</i>	* <i>-iyânkwe</i>

365 [Goddard \(1965, 23\)](#) explains the forms 1PE→2SG-*één* and 3→1PE-*éi'-één* by proportional
 366 analogy, after the reshaping of the inverse paradigm had taken place: As direct and inverse
 367 forms were rebuilt by adding VAI endings to the first part of the third person endings *-oo-* and
 368 *-ei-* reanalyzed as direction markers, the final consonants *-t* and *-n* became respectively 3SG
 369 and 2SG markers not only for S, but also for P.

⁶Arapaho *-ei-* regularly derives from **-ekwe-*; **k* → ∅ and **we* → **o* → *i*.

370 After that, even in forms where the *-t* was not a third person marker, in particular 1PE→3
 371 *-éét* and 3→1PE *-éi'éét*, it became reanalyzed as such and the forms 1PE→2 *-één* and 2→1PE
 372 *-éi'één* were built by changing the final *-t* to *-n* on the model of the VAI and VTA inverse forms
 373 (see Table 22).

Table 22: Proportional analogy in the Arapaho local forms

Person	Form	Person	Form
VAI 3SG	<i>-t</i>	VAI 2SG	<i>-n</i>
3'→3SG	<i>-éi-t</i>	3→2SG	<i>-éi-n</i>
1PE→3	<i>-éé-t</i>	1PE→2SG	<i>-éé-n</i>
3→1PE	<i>-éi'éé-t</i>	2SG→1PE	<i>-éi'éé-n</i>

374 From there, the 1SG→2SG *-éθen* (instead of expected **eθoo*) is likely to have originated from
 375 the independent order 1SG→2SG ending *-éθ* < **-eθe* to which the second person suffix *-n* from
 376 the VAI paradigm was added.

377 The second plural forms 1SG→2PL *-eθénee*, 1PE→2PL *-eenee* and 2PL→1PE *-éi'eenee* were built
 378 from the corresponding second singular forms by replacing the 2SG *-n* marker with the 2PL one
 379 *-nee*, as shown in Table 23.

Table 23: Proportional analogy in the Arapaho local forms – second plural

Person	Form	Person	Form
VAI 2SG	<i>-n</i>	VAI 2PL	<i>-nee</i>
3→2SG	<i>-éi-n</i>	3→2PL	<i>-éi-nee</i>
2SG→1SG	<i>-í-n</i>	2PL→1SG	<i>-í-nee</i>
1SG→2SG	<i>-éθe-n</i>	1SG→2PL	<i>-eθé-nee</i>
1PE→2SG	<i>-ee-n</i>	1PE→2PL	<i>-ee-nee</i>
2SG→1PE	<i>-éi'ee-n</i>	2PL→1PE	<i>-éi'ee-nee</i>

380 The restructuring that took place in the Arapaho conjunct order goes one step further
 381 than that observed in the Cree paradigms: While the extent of reshaping in the (mixed) di-
 382 rect paradigm is comparable, all inverse and local forms, except 2SG→1SG, have been remade.
 383 The direct *-oo-* and inverse *-éi-* theme signs, which originally were restricted to non-local
 384 forms, were generalized to nearly direct and all inverse forms in the mixed scenarios (only the
 385 1SG→3SG, 2SG→3SG and 3PL→1SG endings remained unaffected by analogy), and the inverse
 386 one was even extended to the local 2→1PE forms.

387 Arapaho thus proves that a language can develop a near-canonical direct/inverse system
 388 from a partly accusative, partly tripartite one by generalizing the direct and inverse markers
 389 of the non-local forms to the mixed and local ones.

390 **3.6 The VTA conjunct order and its relationship to other paradigms**

391 In the sections above, we have studied the effects of analogy in the VAI and VTA conjunct order
 392 paradigms largely in isolation from other paradigms. However, it is likely that some analogical
 393 patterns, in particular the innovative direct and inverse forms built by combining the direct
 394 or inverse theme signs with the VAI endings, are structurally modelled after forms from other
 395 more transparent paradigms. Indeed, the (perceived) identity of final *-t* in $3 \rightarrow 3'$ **-ât-* and $3' \rightarrow 3$
 396 **-ekwet-* forms with the VAI third person *-t* could have prompted the reanalysis of the preceding
 397 segment **-â-* and **-ekwe-* as a direction marker which was then productively combined with
 398 the corresponding VAI endings in order to obtain the direct and inverse forms in the rest of the
 399 paradigm.

400 Another potential model, in the case of inverse configurations especially, is the unspecified
 401 actor paradigm of the conjunct order. While in PA this paradigm had a special set of endings,
 402 (Goddard 1979, 88, Oxford 2014, 156-7), in Ojibwe and Cree, even in the most conservative
 403 dialects (and in nearly all Algonquian languages except Kickapoo, Maliseet and Miami), the
 404 forms are built by combining the theme sign *-igoo-* with the VAI person markers, except in the
 405 third person, where the inherited suffix *-ind* (Ojibwe)/*-iht* (Cree) < **-enta* is still preserved (cf.
 406 Table 24).

Table 24: The conjunct order of the unspecified actor paradigm in Cree and Ojibwe

Person	Cree	Ojibwe	Proto-Algonquian
X→1SG	<i>-ikawi-yân</i>	<i>-igoo-yaan</i>	<i>*-i < n > ki</i>
X→1PE	<i>-ikawi-yâhk</i>	<i>-igoo-yaang</i>	<i>*-i < n > amenki</i>
X→1PI	<i>-ikawi-yahk</i>	<i>-igoo-yang</i>	<i>*-eθ < en > ankwi</i>
X→2SG	<i>-ikawi-yan</i>	<i>-igoo-yan</i>	<i>*-eθ < en > ki</i>
X→2PL	<i>-ikawi-yêk</i>	<i>-igoo-yeg</i>	<i>*-eθ < en > âkwi</i>
X→3SG	<i>-iht</i>	<i>-ind</i>	<i>*-e < n > ta</i>

407 In Cree and Ojibwe texts, we find numerous examples where the unspecified actor forms is
 408 used alongside a $3 \rightarrow \text{SAP}$ form in the same sentence, with the unspecified actor corresponding
 409 to the same referent as the definite third person agent of the $3 \rightarrow \text{SAP}$ verb (see examples 9 and
 410 10 for Cree and ex. 11 for Ojibwe).

- 411 (9) “*kîkwây ôm?*” *îtêw* *êkwa awa* *ni-kisêyinîm;* “*aya*
 412 what DEM:INAN tell(VTA).3SG→3’ then DEM:ANIM 1POSS-old_man:POSS well
 413 *ôm*”, *itik*, “this is three times stronger than beer,”
 414 DEM:INAN tell(VTA).3’→3SG
 415 *k-êt-ikawi-yâhk*, *k-êt-iko-yâhk* *êkwa awa.*
 416 NMLZ-tell(VTA)-UNSPEC-1PL NMLZ-tell(VTA)-INV-1PL then DEM:ANIM
 “What is this?” my husband said to him; “Oh this,” the other replied to him, “this is
 three times stronger than beer,” we were told, he then said to us.’ (Wolfart & Ahenakew,
 2000, p. 57)

- 417 (10) *Akwa kayâs îy mistik â-wâpam-at awa pikwîta*
 and long_ago look! tree(NA) CNJ-see(VTA)-2SG→3SG:CNJ DEM:ANIM wherever
 418 *kî-ohtinam-wak kisî-ayak â-kî-ohci-ntawih-ikawi-yâ. Isa piko*
 PST-take(VTI)-3PL old-person CNJ-PST-with_it-cure(VTA)-UNSPEC-1PL just
 419 *nîsta kîyâpic ôma â-pimâtisi-yân â-kî-ntawihikawiyân.*
 1SG:EMPH yet DEM:INAN CNJ-live(VAI)-1SG CNJ-PST-cure(VTA)-UNSPEC-1SG
 420 ‘And long ago, when you saw a tree anywhere, the elders took it and used it to cure
 421 [us]. Even myself, in my lifetime, they cured me.’ (Westfall & Castel, 2006, p. 9)
- 422 (11) *Miish gaa-izhi-i-goo-yaan ingoji naawakwe-g,*
 then PST:IC-thus-say(VTA)-X-1SG:CNJ approximately be.noon(VII)-INAN.SG:CNJ
 423 *n-ookomis gaa-izhi-anoozh-id.*
 1POSS-grandmother PST:IC-thus-commission.to.do(VTA)-3→1SG:CNJ
 424 Around noon, I was told, I was told by my grandmother to get something. (Kegg &
 425 Nichols 1993, 96)

426 It is thus possible that such constructions, rather than the VTA independent order, provided
 427 the model on which to shape the innovative inverse scenario forms by combining the inverse
 428 theme sign with the VAI endings as in Plains Cree and Parry island Ojibwe.

Table 25: The conjunct order of the inanimate actor paradigm in Cree and Ojibwe

Person	Cree	Ojibwe	Proto-Algonquian
X→1SG	<i>-iko-yân</i>	<i>-igo-yaan</i>	*-i-k-i
X→1PE	<i>-iko-yâhk</i>	<i>-igo-yaang</i>	*-iy-amenk-i
X→1PI	<i>-iko-yahk</i>	<i>-igo-yang</i>	*-eθ-ankw-i
X→2SG	<i>-iko-yan</i>	<i>-igo-yan</i>	*-eθ-k-i
X→2PL	<i>-iko-yêk</i>	<i>-igo-yeg</i>	*-eθ-âkw-i
X→3SG	<i>-iko-t</i>	<i>-igo-d</i>	*-ekw-eč-i

429 4 The directionality of analogy in polypersonal systems

430 The five cases studied above allow us to propose four generalizations concerning the direction-
 431 ality of analogy in polypersonal systems with a proximate/obviative distinction in the non-local
 432 forms.

433 First, analogy operates from 3'→3 to all inverse forms and from 3→3' to all direct forms.
 434 This is a particular case of Watkins’s law (Watkins 1962): Analogy starts out from the third
 435 person and extends to the other forms through a reanalysis of the third person ending as part
 436 of the verb stem.

437 Second, analogy can apply from direct forms to inverse and local ones (as shown by the
 438 reshaping of 3→1PE and 3→2PL in Nishnaabemwin).

439 Third, analogy first applies to plural SAP forms before influencing singular SAP forms, both
440 in the case of direct and inverse paradigms. There is no evidence of a hierarchy between third
441 singular and third plural, as we saw that the 3PL→1SG resisted analogy in Arapaho while its
442 singular counterpart 3SG→1SG was remade.

443 Fourth, analogy first applies to inverse forms before affecting direct forms. There appears
444 to be no hierarchy between inverse and local forms as to their sensitivity to analogy.

445 Whether these four generalizations have a validity in language families other than Al-
446 gonquian remains to be demonstrated, but we believe that they may be used as a heuristic
447 principle for diachronic studies on languages whose history is less well documented.

448 5 Conclusion

449 On the basis of the attested evolutions of the conjunct order paradigms in Algonquian lan-
450 guages, we have proposed several generalizations on the directionality of analogical levelling
451 in polypersonal systems with proximate/obviative contrast in non-local scenarios. Analogy
452 spreads from 3'→3 to mixed and local inverse forms, from 3→3' to direct forms, and from
453 direct forms to inverse and local ones. Moreover, it first applies to plural SAP forms before
454 applying to singular ones, and to inverse forms before affecting direct ones.

455 As stated above, the generalizations proposed in this paper must be thought of as heuristic
456 principles, to be tested against data from other language families with direct/inverse systems.
457 Future studies on language families such as Sino-Tibetan, in particular on Rgyalrong and Ki-
458 ranti languages which have fully functional direct/inverse systems but no historical attestations
459 (DeLancey, 1981; Jacques, 2010; Sun & Shidanluo, 2002 and Gong, 2014), should make it possible
460 to evaluate whether they remain valid when tested on a larger body of data.

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