

Probe specification and agreement variation: Evidence from the Algonquian inverse

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Abstract

The distribution of a special agreement pattern known as the “inverse” varies across the Algonquian languages. This paper shows that, under an interaction and satisfaction model of phi-agreement (Deal 2015), twelve distinct distributions of inverse agreement can be derived simply by varying the interaction and satisfaction conditions of the probe on Infl. This syntax-based approach to agreement variation has strong predictive power: it not only accounts for the twelve attested patterns but also rules out the unattested patterns, a result that a less restrictive postsyntactic approach cannot deliver. The Algonquian data thus provide support for a syntactic model of agreement patterns in general, and for the interaction and satisfaction model in particular.

Keywords: agreement, probes, variation, inverse, Algonquian

1 Introduction

Patterns of phi-agreement vary across languages. Just as agreement itself straddles the boundary of morphology and syntax, so do the potential accounts of its variation. Under a probe-goal model (Chomsky 2000, 2001), variation in agreement patterns can be derived in the syntax by varying the makeup of the probe (e.g. Béjar 2003; Béjar & Rezac 2009; Preminger 2014). But it is clear that postsyntactic processes such as impoverishment play a role in the realization of agreement morphology as well (Halle & Marantz 1993), and such operations can also derive variation in agreement patterns. In fact, it has been proposed that, given a sufficiently powerful postsyntactic component, morphological agreement patterns can be derived without reference to probe-goal syntax at all (Bobaljik 2008). This leads to the central question of the current paper: to what extent is variation in agreement patterns derived in the syntax? More broadly, is agreement derived in the syntax at all?

The paper examines these questions through the empirical lens of the Algonquian languages. These languages have an “inverse” agreement pattern whose distribution varies widely across the family. It is shown that, under an interaction and satisfaction model of

agreement (Deal 2015), twelve distinct distributions of inverse agreement can be derived simply by varying the interaction and satisfaction conditions of the probe on Infl. This probe-based account is argued to provide exactly the right fit for the data: not only does it derive the twelve attested patterns, but it also rules out the unattested patterns. The overall picture of variation in inverse agreement, which forms a “staircase” cline across languages, has exactly the shape that we would expect if the variations were derived purely by tinkering with the specification of the probe. No similar account can be provided under a postsyntactic model of agreement, which is simply not restrictive enough to explain why the variation adheres so closely to a particular staircase pattern. The Algonquian data thus provide evidence for a tight connection between the patterning of morphological agreement and the probe-goal mechanism in the syntax. The Algonquian data also provide support for Deal’s (2015) formalization of the probe-goal mechanism in terms of interaction and satisfaction, which provides an elegant and strongly predictive account of the attested variation.

The paper proceeds as follows. Section 2 provides background on Algonquian inflection and introduces the inverse agreement pattern. Section 3 shows that the inverse pattern occurs in two main contexts: (i) when a third person is acted upon by a less topical third person and (ii) when a first or second person—i.e., a speech-act participant (SAP)—is acted upon by a third person. Section 4 shows that within the latter context, the languages vary: in most languages, only a subset of such forms show the inverse pattern, but the precise subset differs from language to language. Twelve distinct distributions of inverse agreement are attested, forming a striking staircase cline. Section 5 proposes that the shape of the cline can be derived straightforwardly by varying the interaction and satisfaction conditions of the probe on Infl, yielding an elegant and restrictive analysis that is argued in Section 6 to have no counterpart under a postsyntactic approach.

2 Agreement patterns in Algonquian

The Algonquian family, which covers a broad area of North America, is conventionally divided into three subgroups: Plains, Central, and Eastern. This paper considers data from the Central and Eastern subgroups, which each consist of a large number of closely-related languages, an ideal situation for micro-comparative analysis. The dataset includes all Central and Eastern languages for which adequate information is available. The languages are listed in Table 1 along with the sources of data for each; to save space, these sources will not be repeated when data is cited elsewhere in the paper. The smaller Plains Algonquian subgroup is not considered in this paper, as the three Plains languages—Cheyenne, Arapaho, and Blackfoot—have each undergone significant innovations that are too complex to be treated adequately in a broad survey such as the current paper.

The remainder of this section describes the layers of agreement inflection that appear on transitive verbs (§2.1) and the three distinct patterns by which the phi-features of the agent and patient can be mapped to these layers of inflection (§2.2). A rudimentary formal analysis will be assumed, to be enhanced as the paper proceeds.

LANGUAGE	ISO	SOURCES
Proto-Algonquian	n/a	Bloomfield 1946; Goddard 1979
<i>Central Algonquian</i>		
Meskwaki	sac	Goddard 1994
Kickapoo	kic	Voorhis 1974
Miami-Illinois	mia	Costa 2003
Shawnee	sjw	Voegelin 1936
Menominee	mez	Bloomfield 1962
<i>Ojibwe-Algonquin</i>		
Southwestern Ojibwe	ciw	Nichols 1980
Odawa	otw	Bloomfield 1958
Eastern Ojibwe	ojg	Rogers 1975 (Parry Island dialect)
Northern Algonquin	alq	Brouillard & Dumont-Anichinapeo 1987
Potawatomi	pot	Hockett 1966
<i>Cree-Innu-Naskapi</i>		
Plains Cree	crk	Wolfart 1973
Woods Cree	cwd	Starks 1992
Moose Cree	crm	Ellis 1971
<i>Eastern Algonquian</i>		
Mi'kmaq	mic	Proulx 1978; Fidelholtz 1999; Quinn 2012
Passamaquoddy-Maliseet	pqm	Francis & Leavitt 2008
Eastern Abenaki	aaq	Quinn 2015 (Penobscot dialect)
Western Abenaki	abe	Laurent 1884; Quinn 2015
Munsee Delaware	umu	Goddard 1969
Unami Delaware	unm	Goddard 1969
Mahican	mjy	Christopher Harvey, p.c.
Massachusett	wam	Goddard & Bragdon 1988

Table 1: Languages and sources of data

2.1 Layers of agreement inflection

Algonquian languages have two parallel but formally distinct paradigms of verb inflection known as the INDEPENDENT and CONJUNCT ORDERS (Bloomfield 1946:97). The difference is illustrated by the Cree forms in (1), which both mean ‘you.PL sleep’. The 2PL agreement is expressed by a prefix-suffix combination in the independent form in (1a) (*ki-...-na:wa:w* ‘2PL’) and by a completely unrelated suffix in the conjunct form in (1b) (*-ye:k* ‘2PL’).¹

- | | | | | |
|-----|----|--------------------------------------------------------------------------------------------------------------------------|----|------------------------------------------------------------------------------------------|
| (1) | a. | <i>kinipa:na:wa:w</i>
ki- nipa: -na:wa:w
2- sleep -2PL
‘you.PL sleep’ (independent) | b. | <i>nipa:ye:k</i>
nipa: -ye:k
sleep -2PL
‘you.PL sleep’ (conjunct) |
|-----|----|--------------------------------------------------------------------------------------------------------------------------|----|------------------------------------------------------------------------------------------|

¹Glosses follow the Leipzig Glossing Rules, with these additions: 1PL = exclusive; 21PL = inclusive; AN = animate; IMP = impersonal; IN = inanimate; IND = indicative; INV = inverse; OBV = obviative; PROX = proximate; SUB = subordinate. The notation X→Y, shortened to X:Y in glosses, indicates that X acts on Y. English translations of 3SG forms use feminine gender as a default.

Typically the independent paradigm is used in main clauses and the conjunct paradigm is used in embedded clauses, but the details are subtle and vary greatly across the languages; this variation does not correlate with the variation in agreement patterns that is the focus of this paper. The conjunct paradigm, which is diachronically older than the independent (Goddard 1974:323), is the site of all agreement variation that will be examined in this paper, so the following description will focus on conjunct forms. The descriptive and analytical framework is, however, fully compatible with independent forms as well.

In the conjunct paradigm, a transitive verb inflects with a sequence of two agreement suffixes, known as the theme sign and the **central suffix** (Bloomfield 1946; Goddard 1969, 2004), which are visually distinguished in this paper using underlining and boldface, respectively. Examples from Moose Cree are given in (2). The theme sign normally marks the person of the internal argument (Cree *-i* ‘1OBJ’, *-it* ‘2OBJ’, *-a:~e:~Ø* ‘3OBJ’) but is sometimes realized as a special “inverse” marker, discussed below. The central suffix shows great flexibility, marking the person and number of either the external argument, as in (2c), the internal argument, as in (2b), or both arguments simultaneously, as in (2a).

(2)	a.	3→1PL	b.	3→21PL	c.	21PL→3
		<i>wa:pamiyamih</i> wa:pam - <u>i</u> - amiht see - <u>1OBJ</u> - 3:1PL ‘she sees us.EXCL’		<i>wa:pamitahk</i> wa:pam - <u>it</u> - ahkw see - <u>2OBJ</u> - 21PL ‘she sees us.INCL’		<i>wa:pamahk</i> wa:pam - <u>Ø</u> - ahkw see - <u>3OBJ</u> - 21PL ‘we.INCL see her’

I assume a formal analysis in which the theme sign realizes the head that introduces the external argument (as in Bruening 2005; Béjar & Rezac 2009; Coon & Bale 2014; Hamilton 2017; Oxford 2019), which I label as Voice, and the central suffix realizes a head above VoiceP that is the closest Algonquian parallel to English T (as in Halle & Marantz 1993; Coon & Bale 2014; Hamilton 2017; Oxford 2019), which I label as **Infl**. Under a downward-probing model of Agree, this analysis explains why the theme sign (Voice) can index only the internal argument while the central suffix (Infl) can index either argument.

2.2 Three agreement patterns: neutral, direct, and inverse

There are three distinct patterns by which the morphological resources described above can be deployed to index the arguments of a transitive verb. In what I will call the NEUTRAL pattern, Voice indexes the patient and **Infl** is most prototypically realized as a portmanteau suffix indexing both arguments, as in the Moose Cree conjunct forms in (3).²

²Although the description in this section is illustrated using conjunct forms, the description applies equally to both the conjunct and the independent. The only difference is that Infl is realized as a prefix-suffix combination in the independent, as opposed to the single suffix that appears in the conjunct (see (1) above).

- (3) a. 1PL→3 neutral
wa:pamakiht
 wa:pam -Ø -**akiht**
 see -3OBJ -**1PL:3**
 ‘we.EXCL see her’
- b. 3→1PL neutral
wa:pamiyamih
 wa:pam -i -**amiht**
 see -1OBJ -**3:1PL**
 ‘she sees us.EXCL’

Not all neutral forms involve portmanteau realizations of Infl, however. If a portmanteau suffix happens not to exist for a particular agent-patient combination, Infl usually falls back to indexing the argument with the most richly specified phi-features, which may be either the agent, as in (4a), or the patient, as in (4b).³

- (4) a. 21→3 neutral
wa:pamahk
 wa:pam -Ø -**ahkw**
 see -3OBJ -**21PL**
 ‘we.INCL see her’
- b. 3→21 neutral
wa:pamitahk
 wa:pam -it -**ahkw**
 see -2OBJ -**21PL**
 ‘she sees us.INCL’

In sum, in the neutral pattern, Voice indexes the patient while Infl has access to the features of both arguments and realizes as many of these features as the morphology permits.

In the DIRECT and INVERSE agreement patterns, Infl shows less flexibility than in the neutral pattern, always indexing just one argument. In the direct pattern, Infl indexes the agent and Voice indexes the patient, as in the Plains Cree form in (5a). In the inverse pattern, Infl indexes the patient and Voice shows no agreement at all: instead of the usual indexing of the patient, a special “inverse” marker appears (Cree *-ikw~iko*), as in (5b).

- (5) a. 1PL→3 direct
wa:pama:ya:hk
 wa:pam -a: -**ya:hk**
 see -3OBJ -**1PL**
 ‘we.EXCL see her’
- b. 3→1PL inverse
wa:pamikoya:hk
 wa:pam -iko -**ya:hk**
 see -INV -**1PL**
 ‘she sees us.EXCL’

The description of the three agreement patterns is summarized in (6).

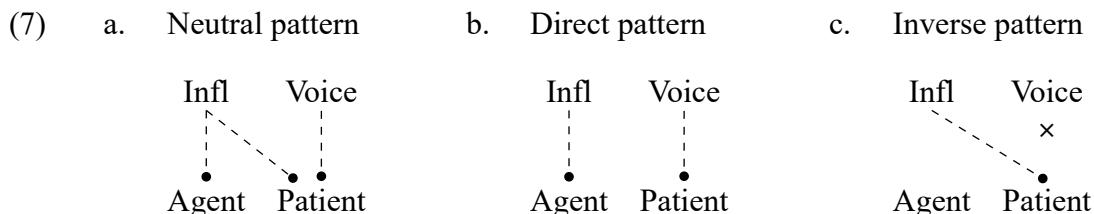
- (6) a. NEUTRAL PATTERN: Infl indexes agent and/or patient, Voice indexes patient
 b. DIRECT PATTERN: Infl indexes agent, Voice indexes patient
 c. INVERSE PATTERN: Infl indexes patient, Voice is special “inverse” marker

The distinction between the neutral and direct patterns is fuzzy: in principle, a form in which Infl indexes the agent and Voice indexes the patient could be classified as either

³I assume that SAPs are more specified than third persons and plurals are more specified than singulars (Harley & Ritter 2002). There is one exception to the statement that Infl indexes the argument with the most richly specified phi-features: if the patient is a singular SAP, Infl indexes the agent, regardless of its features (Xu 2016; Bhatia et al. 2018). A morphological explanation for this exception is offered in Oxford 2021.

neutral or direct. In a neutral form, the indexing of the agent is accidental, arising when a portmanteau realization of Infl is not available and the agent’s features are richer than those of the patient (as in (4a)), whereas in a direct form, the indexing of the agent is systematic. There are ways to diagnose this difference, but the issue is mostly moot, as it is the inverse agreement pattern that is of primary interest in this paper, and the inverse pattern is always clearly distinguished by the realization of Voice as the special inverse marker.⁴

The first step towards a formal analysis of the three agreement patterns is illustrated in (7), with dotted lines indicating Agree relations in the syntax. Taking the morphological patterns described above as a guide, we may conclude that Infl agrees with both arguments in the neutral pattern, with only the agent in the direct pattern, and with only the patient in the inverse pattern. Voice shows less flexibility, agreeing only with the patient in both the neutral and direct patterns. In the inverse pattern, where Voice is realized as a special inverse marker rather than an agreement marker, we may surmise that Voice either does not agree in the first place, or agrees but fails to have its agreement features realized.



The Agree relations sketched in (7) are, needless to say, not an analysis. Rather, these are the outcomes that an analysis of Algonquian agreement must deliver in order to account for the attested morphological patterns. If these Agree relations can be derived in a principled way, then the morphological patterns described above will directly follow.

2.3 Summary: Agreement patterns in Algonquian

Algonquian transitive verbs inflect in one of three agreement patterns. The neutral and direct patterns are unremarkable: the lower head, Voice, agrees with the patient, and the higher head, Infl, agrees with the agent or with both arguments. These outcomes are consistent with the c-command relations between each head and the verb’s arguments. The inverse pattern, however, is of greater interest, for two reasons: (i) Infl agrees only with the

⁴A reviewer points out that in some direct and inverse forms, the realization of Infl appears to be sensitive to the features of both arguments, contrary to the description given here. Consider, for example, the Ojibwe independent forms *nima:ča:mi:n* ‘we leave’ and *niwa:pama:na:nik* ‘we see them’ (Nichols 1980). Here the 1PL Infl suffix is realized as *-mi:n* when there is no object and *-na:n* when there is an animate third-person object. Is the Infl suffix *-na:n* thus actually a portmanteau agreement marker that indexes both the 1PL subject and the third-person object (cf. Despić et al. 2019 for Cheyenne)? According to Goddard (2007:264), the answer is no: *-mi:n* and *-na:n* are both simply 1PL markers, and the difference in their shapes is a matter of allomorphy conditioned by the “peripheral suffix” that occurs word-finally in independent forms: the 1PL Infl suffix is realized as *-na:n* when followed by an animate third-person peripheral suffix (here *-ik* ‘3PL’) and as *-mi:n* when a peripheral suffix is absent. I follow Goddard in taking such alternations to involve contextual allomorphy rather than portmanteau agreement.

patient, despite c-commanding both arguments, and (ii) the patient agreement that normally appears on Voice disappears, supplanted by a special inverse marker. In purely descriptive terms, the inverse marker can be understood as signaling that the function of indexing the patient, normally performed by Voice, has exceptionally been taken over by Infl.

One component of this description warrants emphasis: the Algonquian inverse is not just a *morpheme*; it is an *agreement pattern* that consists of a particular morpheme in the Voice slot and a particular outcome in the Infl slot. Many analyses of the inverse focus on the inverse marker that characteristically realizes Voice in inverse forms (e.g. Béjar & Rezac 2009; Despić & Hamilton 2018), but an equally important characteristic of such forms is that Infl indexes only the patient. The two properties go hand-in-hand, and an analysis that derives only one of them is not an adequate analysis of the Algonquian inverse.

This section has introduced the three agreement patterns and the Agree relations that can be assumed to underlie them, but two important questions remain. First, what are the contexts in which each agreement pattern is used? Second, why does each pattern of Agree relations emerge in each context? The next two sections take up these questions.

3 Two contexts for the inverse pattern

The distribution of the neutral, direct, and inverse agreement patterns is conditioned by properties of the agent and patient arguments. The distribution of the three patterns in the Central and Eastern Algonquian languages listed in Table 1 is summarized in (8).

- (8) Distribution of transitive agreement patterns in Central and Eastern Algonquian
- a. If both arguments are third person
 - (i) More topical third acts on less topical third: **always direct**
 - (ii) Less topical third acts on more topical third: **always inverse**
 - b. If one argument is an SAP and the other is a third person
 - (i) SAP acts on third: **neutral or direct** (languages vary)
 - (ii) Third acts on SAP: **neutral or inverse** (languages vary)
 - c. If both arguments are SAPs: **almost always neutral**⁵

The inverse pattern occurs in two main contexts: (i) when a third person is acted upon by a less topical third person and (ii) when an SAP is acted upon by a third person. I will refer to these contexts as the THIRD-PERSON INVERSE and the SAP INVERSE, respectively. The two inverse contexts are often unified by positing a single overarching “person hierarchy” as in (9), with the inverse appearing whenever the patient outranks the agent.

- (9) Algonquian person hierarchy (e.g. Hockett 1966; Blain 1998)
 SAP > topical 3 > non-topical 3

⁵Forms in which the agent and patient are both SAPs show the neutral pattern in all Central and Eastern languages except for certain dialects of Ojibwe that have extended the inverse pattern to 1PL→2 forms (Nichols 1980:177; McGinnis 2008:180), a unique development that is not examined in this paper.

However, as Rhodes (1994:432) observes, this unification is misleading, as the two inverse contexts differ in both their conditioning (topicality versus person) and their variability. It is thus more prudent to consider each context separately. This section examines the two inverse contexts in turn and proposes an analysis that derives the appearance of the inverse agreement pattern in each context. The third-person inverse, which is invariant across the family (§3.1), is analyzed as a voice construction enabled by a special ergative-like version of the Voice head (§3.2). The SAP inverse, which has a greatly varied distribution (§3.3), is analyzed as an agreement pattern that mimics the morphological signature of the special ergative-like voice construction without sharing its underlying syntax (§3.4). This analysis opens the door to an explanation for why the distribution of the SAP inverse varies extensively while the distribution of the third-person inverse does not vary at all. The description and analysis in this section are a condensed version of Oxford forthcoming, to which the reader is referred for a more complete presentation.

3.1 The third-person inverse is a voice construction

In all Algonquian languages, a verb with two third-person arguments can inflect in either the direct or the inverse pattern, as shown for Plains Cree in (10) (Wolvengrey 2011:216–217). The choice of pattern is determined by topicality. The direct pattern, in which Infl indexes the agent (*-w* ‘3SG’) and Voice indexes the patient (*-e:* ‘3OBJ’), is used when the agent is more topical. The inverse pattern, in which Infl indexes the patient (*-w* ‘3SG’) and Voice is realized as the special inverse maker (*-ikw* ‘INV’), is used when the patient is more topical.⁶ Speakers often translate the third-person inverse as an English passive (Bruening 2001:176; Wolvengrey 2011:176), as indicated in the translation of (10b).

- (10) a. DIRECT: more topical third acts on less topical third

ana mahihkan ki:-wa:pame:w wa:poswa.
 ana mahihkan ki:= wa:pam -e: -w wa:pos:wa
 that wolf.3SG PAST= see -3OBJ -3SG rabbit.3OBV
 ‘The wolf saw (a) rabbit(s).OBV.’

- b. INVERSE: more topical third is acted upon by less topical third

ana mahihkan ki:-wa:pamik wa:poswa.
 ana mahihkan ki:= wa:pam -ikw -w wa:pos:wa
 that wolf.3SG PAST= see -INV -3SG rabbit.3OBV
 ‘(A) rabbit(s).OBV saw the wolf.’ / ‘The wolf was seen by (a) rabbit(s).OBV.’

The direct-inverse contrast in third-person forms intersects with another morphological phenomenon known as OBVIATION: in a given context, only the most topical (or “proximate”) third person is marked by default third-person morphology; all other third persons

⁶On the role of relative topicality in the conditioning of inverse forms, see Wolvengrey 2011:192 for Algonquian and Givón 1994:22 for a broad typological perspective.

receive special “obviative” marking (Goddard 1984; Wolfart 1978; Rhodes 1990), which happens to be number-neutral in Cree. The PROX-OBV contrast is often portrayed as the driving force behind the direct-inverse alternation in third-person forms: the direct pattern is used when PROX acts on OBV, as in (10a), and the inverse pattern is used when OBV acts on PROX, as in (10b). However, as Appelbaum (2019) points out, this characterization cannot be correct. While it is indeed common for third-person clauses to involve one proximate argument and one obviative argument, as in (10), it is also possible for both arguments to be obviative. And, crucially, even though the PROX-OBV contrast is absent in such clauses, the direct-inverse alternation still exists. This is illustrated by the Cree examples in (11) (Wolvengrey 2011:218–220), which were both elicited under the framing clause *ca:n kiske:yihtam* ‘John knows...’. The presence of the proximate nominal *ca:n* in the framing clause forces both nominals in the embedded clause to be obviative. Despite the absence of a PROX-OBV asymmetry, the direct-inverse contrast plays out just as in (10): the direct pattern is used when the agent is more topical, as in (11a), and the inverse pattern is used when the patient is more topical, as in (11b), translated most naturally as a passive.

- (11) a. DIRECT: more topical third acts on less topical third

anihi mahihkana e:-ki:-wa:pama:yit anihi wa:poswa.
 ana mahihkana e:= ki:= wa:pam -a: -**yit** anihi wa:pos:wa
 that wolf.3OBV SUB= PAST= see -3OBJ -3OBV that rabbit.3OBV
 ‘...that the wolf.OBV saw the rabbit.OBV.’

- b. INVERSE: more topical third is acted upon by less topical third

anihi mahihkana e:-ki:-wa:pamikoyit anihi wa:poswa.
 ana mahihkana e:= ki:= wa:pam -iko -**yit** anihi wa:pos:wa
 that wolf.3OBV SUB= PAST= see -INV -3OBV that rabbit.3OBV
 ‘...that the wolf.OBV was seen by the rabbit.OBV.’

Such data indicate that the direct-inverse alternation in third-person forms is conditioned by the relative topicality of the arguments, not by their morphological marking as proximate or obviative, since the direct-inverse alternation exists even when the PROX-OBV contrast does not. Rather than being the driving force behind the direct-inverse alternation, the PROX-OBV contrast is an independent phenomenon whose conditioning happens to be sensitive to the same factor that conditions the direct-inverse alternation (i.e., topicality).

The direct-inverse alternation in third-person forms resembles the English active-passive alternation. In terms of pragmatics, the passive and the third-person inverse are both “optional” in that their use is constrained by pragmatic factors that are within the speaker’s control. In terms of morphology, the passive and the third-person inverse both switch Infl from indexing the agent to indexing the patient. And in terms of syntax, there is evidence that the third-person inverse involves the same structural promotion of the patient that takes place in the passive: the third-person inverse reverses binding relations (Bruening 2001:117; Lochbihler 2012:100–101; Bliss 2013:§7.4.1) and reverses the default word order of agent

and patient (Rhodes 1994:436–438; Junker 2004:349–350; Shields 2004:374; Bruening 2005:13). I conclude that the third-person inverse is best characterized as a voice construction that exceptionally maps the patient rather than the agent to the structural subject position, deployed when the patient is more topical than the agent. The third-person inverse differs from the English passive only in that the agent remains a core argument rather than becoming an oblique. This conclusion mirrors the characterization of the third-person inverse that has emerged in functional-typological work (Givón 1994; Thompson 1994).

3.2 Deriving the third-person inverse

Although it is the SAP inverse that furnishes the main theoretical point of this paper, it is nevertheless useful to begin by laying out a formal analysis of the third-person inverse. This section proposes that, as a voice contrast, the third-person direct-inverse alternation reflects a contrast between two distinct Voice heads, one with accusative properties and the other with ergative properties. Let us refer to the Cree conjunct forms in (12). Note, first, that in comparison with the intransitive form in (12c), the transitive direct form in (12a) shows ACCUSATIVE alignment: the agent shares the same marking as the intransitive subject (*-t* ‘3SG’) and the patient is indexed by a dedicated object marker (*-a:* ‘3OBJ’). The transitive inverse form in (12b), in contrast, shows ERGATIVE alignment: the patient shares the same marking as the intransitive subject (*-t* ‘3SG’) and there is no dedicated object marker. The observation that the inverse is an ergative pattern within an otherwise accusative system has been made by several authors (Siewierska 1998; Déchaine 1999:50; Agnès 2014).

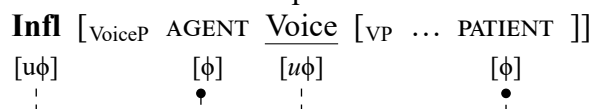
(12)	a.	3RD DIRECT	b.	3RD INVERSE	c.	INTRANSITIVE
		<i>wa:pama:t</i>		<i>wa:pamikot</i>		<i>nipa:t</i>
		<i>wa:pam -a: -t</i>		<i>wa:pam -iko -t</i>		<i>nipa: -t</i>
		see <i>-3OBJ -3SG</i>		see <i>-INV -3SG</i>		sleep <i>-3SG</i>
		‘she sees OBV’		‘she is seen by OBV’		‘she sleeps’

The direct form in (12a), with its typologically unremarkable accusative agreement pattern, can be given the conventional derivation sketched in (13), in which Voice agrees with the patient and Infl agrees with the agent.⁷ The result is a structure in which the agent remains higher than the patient.⁸ If the PROX-OBV contrast is in play, it must be the agent rather than the patient that is PROX due to a general requirement that proximates cannot be c-commanded by obviatives (Bruening 2005:21); this requirement likely reflects the unique referential properties of proximate nominals (Dahlstrom 1986:56–57; Branigan & MacKenzie 1999), as discussed further in Oxford forthcoming.

⁷It is in fact possible that Infl agrees not only with the agent, but also with the patient’s features on the Voice head, as discussed in Section 3.4 below. Either way, the crucial point is that in a direct form such as this, Infl does not agree solely with the patient, which is the key factor that distinguishes an inverse form.

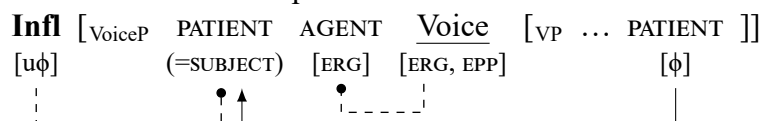
⁸We might imagine that the agent also moves to [Spec, InfIP], but such movement is not crucial for the analysis in this paper, as the agent remains higher than the patient even if no movement takes place.

(13) Derivation of the third-person direct voice



The inverse form in (12b), with its exceptional ergative characteristics, can be derived by positing a distinct Voice head, which I will refer to as “Voice_{ERG}”. Drawing on a leading approach in the literature on ergative languages, I posit that Voice_{ERG} lacks an agreement probe and instead assigns inherent case to its specifier, the agent (Woolford 1997; Legate 2002, 2008; Aldridge 2004, 2012). Voice_{ERG} also carries an [EPP] feature that attracts the patient to the outer specifier of VoiceP, as proposed by Aldridge (2012) for ergative structures in Tagalog. If the numeration includes Voice_{ERG} rather than default Voice, the derivation of a third-person transitive clause will proceed as sketched in (14). Voice assigns inherent case to the agent, rendering the agent inactive, and also attracts the patient to its outer specifier. Infl then agrees with the only remaining active nominal, the patient. If the PROX-OBV contrast is in play, it will be the patient, as the structurally higher DP, that must be proximate. The result is a clause in which the proximate patient is structurally higher, Infl indexes the patient, and Voice shows no agreement at all—exactly as in the inverse form in (12b).

(14) Derivation of the third-person inverse voice



This analysis derives the key properties of the third-person inverse, including the absence of object agreement on Voice. One question remains: what exactly is the special “inverse” marker that realizes the Voice head in such contexts? Following Oxford (2017, 2019) and Despić & Hamilton (2018), I assume that the inverse marker is simply the *elsewhere* realization of the Voice head, spelled out whenever Voice lacks person features, as formalized in (15). The inverse marker will therefore appear whenever the derivation involves the Voice_{ERG} rather than the default Voice head, since Voice_{ERG} has no agreement probe and thus always lacks person features.

(15) Realization of Voice in Cree

-i	↔	[1]	(= first-person object marker)
-it	↔	[2]	(= second-person object marker)
-a:	↔	[3]	(= third-person object marker)
-ikw	↔	elsewhere	(= “inverse” marker)

In summary, this section has analyzed the third-person inverse as a marked voice construction that serves to increase the morphosyntactic prominence of a topical patient. A speaker may use this construction by including Voice_{ERG} rather than the default Voice head in the numeration (cf. Bruening 2005:20), which produces a derivation in which the patient ends up in a higher position than the agent and Infl indexes only the patient. The inverse

marker that realizes Voice in such contexts is simply the elsewhere exponent of Voice, realized whenever Voice lacks phi-features. This analysis captures the nature of the third-person inverse as an ergative-like voice construction and also helps to explain why the patterning of the third-person inverse is invariant across the Algonquian family: as a simple voice contrast, there is no scope for intricate variation; either a language has the contrast or it does not. The situation with the SAP inverse is quite different, as we will see next.

3.3 The SAP inverse is not a voice construction

The alternation between the direct and inverse agreement patterns also arises when one argument is a third person and the other is an SAP. As shown for Plains Cree in (16), the direct pattern is used when the SAP is the agent, as in the 1PL→3 form in (16a), while the inverse pattern is used when the SAP is the patient, as in the 3→1PL form in (16b). The overall result is that Infl indexes with the SAP regardless of its role. In a direct form, where the SAP indexed by Infl is the agent, Voice indexes the patient (*-a:* ‘3OBJ’ in (16a)). In an inverse form, where the SAP indexed by Infl is the patient, the patient agreement that would normally be expressed by Voice is replaced by the inverse marker (*-iko* ‘INV’ in (16b)).

- | | |
|------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>(16) a. 1PL→3 direct</p> <p><i>wa:pama:ya:hk</i></p> <p>wa:pam <i>-a:</i> -ya:hk</p> <p>see -3OBJ -1PL</p> <p>‘we.EXCL see her’</p> | <p>b. 3→1PL inverse</p> <p><i>wa:pamikoya:hk</i></p> <p>wa:pam <i>-iko</i> -ya:hk</p> <p>see -INV -1PL</p> <p>‘she sees us.EXCL’</p> |
|------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|

At first blush, the SAP inverse looks exactly like the third-person inverse. However, even though the agreement patterns are the same, there is a significant difference in the status of the two constructions. The third-person inverse freely alternates with the third-person direct: a clause such as ‘the wolf sees the rabbit’ can be expressed using either the direct voice (‘wolf.PROX sees.DIR rabbit.OBV’) or the inverse voice (‘wolf.OBV sees.INV rabbit.PROX’). For the SAP inverse, however, there is no alternation: for certain argument configurations involving an SAP, only the SAP direct can be used (e.g. 1PL→3), and for other configurations, only the SAP inverse can be used (e.g. 3→1PL). Rather than being an optional voice construction that highlights a pragmatically prominent patient, the SAP inverse is simply the way that the agreement inflection obligatorily works for certain combinations of arguments. In Givón’s (1994) terms, the SAP inverse is a SEMANTIC INVERSE, conditioned rigidly by the features of the arguments, whereas the third-person inverse is a PRAGMATIC INVERSE, conditioned flexibly by topicality.

There is also a syntactic difference between the two inverse contexts. For the third-person inverse, there is ample evidence that the patient raises to the structural subject position, as discussed above. For the SAP inverse, however, such evidence is sparse, or arguably even nonexistent. The tests involving binding and default word order are not applicable to

SAP arguments, and no other decisive tests have been identified.⁹ We thus have no grounds to assume that the SAP inverse agreement pattern is accompanied by a syntactic reversal of the positions of the arguments. This conclusion mirrors Wolfart’s (1991) observation for Cree that, while the third-person inverse is a kind of passive, the SAP inverse is not.

Overall, then, the SAP inverse is “shallower” than the third-person inverse. The agreement pattern is the same, but in SAP contexts, this pattern is divorced from the pragmatic and syntactic correlates that it bears in third-person contexts. Rather than having a deep structural motivation, the SAP inverse seems to be an arbitrary constraint on the realization of agreement inflection in certain contexts. The arbitrariness of the SAP inverse is underlined by the fact that its distribution varies, unlike the third-person inverse. For example, the Plains Cree SAP forms in (16) above show the direct-inverse pattern, but the equivalent Moose Cree forms in (17) instead both show the neutral pattern: Voice indexes the patient and Infl indexes both arguments, regardless of whether SAP acts on 3 or vice versa.

- | | |
|---------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| <p>(17) a. 1PL→3 neutral</p> <p><i>wa:pamakiht</i></p> <p>wa:pam -Ø -akiht</p> <p>see -3OBJ -1PL:3</p> <p>‘we.EXCL see her’</p> | <p>b. 3→1PL neutral</p> <p><i>wa:pamiyamiht</i></p> <p>wa:pam -i -amiht</p> <p>see -1OBJ -3:1PL</p> <p>‘she sees us.EXCL’</p> |
|---------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|

The correct generalization about the SAP inverse, then, is that the inverse agreement pattern *can* appear when a third person acts on an SAP, but it does not always appear in such contexts. The details vary extensively across the languages, as will be shown in Section 4. From a diachronic perspective, the Moose Cree neutral forms in (17) represent the original pattern. In Pre-Proto-Algonquian, only the third-person inverse existed (Godard 1974:324), likely having developed from an earlier third-person passive construction (McLean 2001). The SAP inverse was a later innovation that spread through the system to different extents in different languages, mimicking the agreement pattern of the third-person inverse without sharing its pragmatic and syntactic underpinnings. According to Givón (1994), this is a universal trajectory for the development of inverse systems.

3.4 Deriving the SAP inverse

An account of the SAP inverse must answer two questions. First, why does the agreement pattern of SAP direct and inverse forms match that of the third-person voice alternation,

⁹Of the six tests for inversion in Ojibwe given by Rhodes (1994), only one—control of obviation in adjunct clauses—is a syntactic diagnostic that is applicable to SAP inverse clauses, and this test relies on subtle grammaticality judgments that were held by only a subset of Rhodes’ consultants and have not been reported for any other Algonquian variety. Bruening (2001:275–276) presents evidence for SAP inversion in Passamaquoddy involving long-distance agreement and island effects, but LeSourd (2019:275) disputes the validity of the relevant data. I do not find that these two questionable diagnostics make a convincing case for SAP inversion, especially in contrast to the much more extensive evidence for third-person inversion. For other viewpoints on this issue, see McGinnis 1999 and Rezac 2011:67ff.

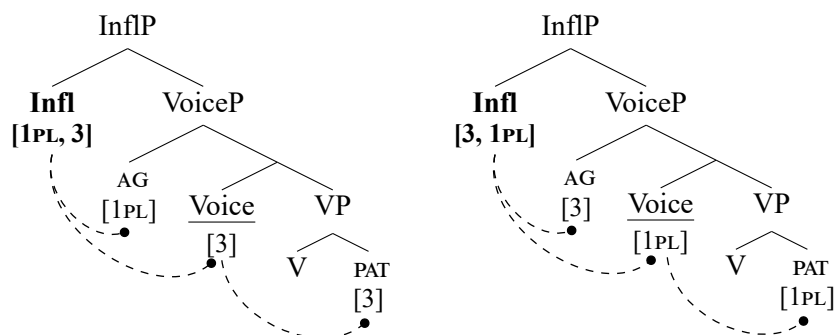
even though the voice contrast does not exist in SAP contexts? Second, why is it possible for the distribution of the SAP inverse to vary? This section considers only the two endpoints of the variation: systems in which no $3 \rightarrow \text{SAP}$ forms are inverse and systems in which all $3 \rightarrow \text{SAP}$ forms are inverse. The full range of variation is taken up in Section 4.

Since the voice alternation that exists in third-person forms is unavailable in SAP contexts, there is no need to posit a contrast between two distinct Voice heads. Let us instead assume that in SAP contexts, only the default Voice head is available.¹⁰ It is then straightforward to derive the patterning of SAP forms. Let us begin with the neutral pattern shown by the Moose Cree forms in (17), in which Voice consistently agrees with the patient and Infl consistently agrees with both arguments. The derivation of the forms in (17) will proceed as in (18). First, Voice agrees with the patient, copying its phi-features. The probe on Infl will then find two equally close goals: the agent DP in the specifier of VoiceP and the patient's phi-features on the Voice head.¹¹ Since nothing favors one goal over the other—they are equidistant from Infl, they both satisfy the probe, and neither has been assigned case—Infl agrees with both goals simultaneously (cf. van Koppen 2005; Oxford 2019). The outcome is a clause in which Voice indexes the patient, Infl indexes both arguments, and the agent remains higher than the patient—just as in the Moose Cree neutral forms in (17).

(18) Moose Cree: Infl probes for $[\phi]$, copies features of both arguments

a. $1\text{PL} \rightarrow 3$ neutral

b. $3 \rightarrow 1\text{PL}$ neutral



In contrast to the neutral agreement pattern in Moose Cree, the corresponding Plains Cree forms show the direct-inverse agreement pattern. The data are repeated in (19). The $1\text{PL} \rightarrow 3$ form is direct: Infl indexes the SAP agent and Voice indexes the patient. The $3 \rightarrow 1\text{PL}$ form is inverse: Infl indexes the SAP patient and Voice is realized as the special inverse marker. In both forms, Infl indexes the SAP argument regardless of its role.

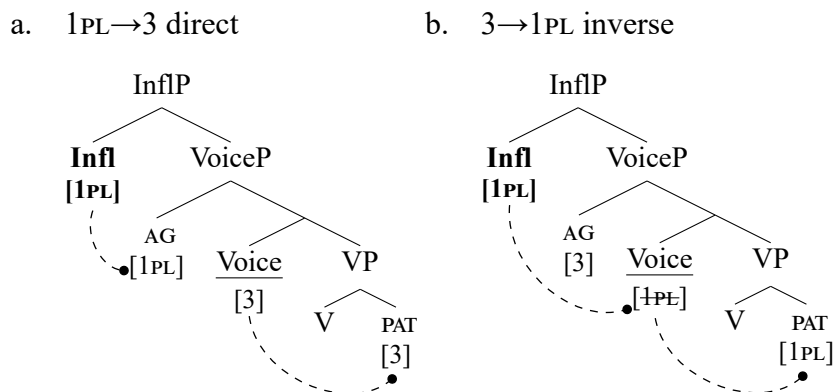
¹⁰Oxford (forthcoming) argues that the case and EPP properties of $\text{Voice}_{\text{ERG}}$ interfere with the licensing of SAP nominals, which accounts for the impossibility of using $\text{Voice}_{\text{ERG}}$ in SAP contexts.

¹¹I assume that a head X and its specifier count as equally close to a higher head, since X and its specifier are dominated by the same set of maximal projections (e.g. Hornstein 2009:40; Branigan 2011:77). I further assume that a given bundle of phi-features can serve as the goal of more than one Agree operation in Algonquian languages, a possibility that Baker (2008, 2013) has argued to exist parametrically in many languages (cf. Carstens 2011); see also Baker & Willie (2010) on the possibility of head-to-head agreement.

- (19) a. 1PL→3 direct
wa:pama:ya:hk
 wa:pam -a: -**ya:hk**
 see -3OBJ -1PL
 ‘we.EXCL see her’
- b. 3→1PL inverse
wa:pamikoya:hk
 wa:pam -**iko** -**ya:hk**
 see -INV -1PL
 ‘she sees us.EXCL’

The Plains Cree pattern can be derived if we assume, in the spirit of Béjar & Rezac (2009), that the specification of probes can vary across languages. In particular, let us assume that Plains Cree differs from Moose Cree in that Infl probes for [PARTICIPANT] rather than just [ϕ] (cf. Oxford 2019). This difference is sufficient to explain why the direct-inverse pattern emerges in the Plains Cree SAP forms in (19). The derivation of these forms is sketched in (20). First, as in Moose Cree, Voice agrees with the patient. As before, the probe on Infl will then be faced with two equidistant potential goals: the agent DP and the patient’s features on Voice. This time, however, the two potential goals are not equally valid: since Infl probes for [PARTICIPANT] in Plains Cree, only the 1PL goal is a match. Infl will thus agree only with the 1PL agent DP in the direct form in (20a) and only with the features of the 1PL patient on the Voice head in the inverse form in (20b).

- (20) Plains Cree: Infl probes for [PARTICIPANT], agrees only with 1PL



The direct and inverse agreement patterns follow from the derivations in (20). The output of the 1PL→3 derivation in (20a) will be a form in which Infl indexes the 1PL agent and Voice indexes the third-person patient. This is the direct pattern. For the 3→1PL derivation in (20b), one additional assumption is needed to derive the inverse pattern. A unique outcome of this derivation, in contrast to the direct and neutral derivations, is that the phi-features on Infl are an exact duplicate of those on Voice. I adopt Oxford’s (2017, 2019) proposal that such configurations trigger a dissimilatory impoverishment operation that deletes the duplicated features from the lower head (cf. Sandalo 2016 for inverse marking in the Waikurúan language Kadiwéu and Carstens 2005:253 for a reminiscent phenomenon in Bantu). The deletion of the phi-features of Voice under identity with those of Infl is indicated by a strikethrough in (20b). With the duplicated features on Voice deleted, the

outcome of the 3→1PL derivation in (20b) will be a form in which Infl indexes the 1PL patient and Voice lacks phi-features altogether. It was posited in (15) above that featureless Voice is realized as the elsewhere form *-iko*, known descriptively as the inverse marker. The derivation in (20b) thus produces the inverse agreement pattern.

We observed earlier that the direct-inverse contrast is “deep” in third-person forms and “shallow” in SAP forms. The proposed analysis captures this difference. In the third-person inverse, the assignment of inherent case to the agent by Voice_{ERG} and the attraction of the patient to the outer specifier of VoiceP unavoidably creates a structure in which the patient is higher than the agent and Infl agrees only with the patient. The direct-inverse agreement pattern is thus an unavoidable consequence of the basic structure of the clause. In the SAP forms, in contrast, the inverse agreement pattern is entirely avoidable, as the absence of case assignment by Voice leaves both nominals active and accessible to Infl. In a language like Moose Cree, where Infl probes only for [ϕ], all SAP forms show the neutral agreement pattern. The direct-inverse pattern will arise only if Infl probes for a more specific feature such as [PARTICIPANT], as in Plains Cree. This “pickier” probe causes Infl to alternate between indexing the agent and the patient, thus producing the direct-inverse agreement pattern—not as a consequence of the basic structure of the clause, but simply as an effect of the phi-features that Infl seeks to agree with.

This analysis explains why the direct-inverse pattern in SAP forms lacks the syntactic and pragmatic correlates that exist in third-person forms. In particular, note that in the SAP inverse form in (20b), where Infl indexes the 1PL patient, it is not actually the patient DP that Infl agrees with, but rather the patient’s features on Voice. The consequent impoverishment of the patient’s features causes Voice to be realized as the elsewhere “inverse” marker, but unlike in third-person forms, the appearance of the inverse marker does not signal that the patient has moved above the agent: in (20b), the patient DP remains in situ. The derivation in (20b) produces the inverse agreement pattern without actually inverting the syntactic positions of the arguments. This is a desirable outcome, since, as discussed above, there is little evidence for syntactic inversion in the SAP inverse, unlike in the third-person inverse, so we need an analysis that can generate SAP inverse morphology without inherently linking it to inverse syntax.¹² The proposed analysis captures the observation that the SAP inverse is an agreement pattern that mimics the third-person inverse voice construction even though the syntax and pragmatics of that voice construction are absent in SAP contexts.

¹²The claim here, to be clear, is that it should be *possible* to generate SAP inverse morphology without syntactic inversion, not that it should be *impossible* for SAP inverse morphology to co-occur with syntactic inversion. It is conceivable that clearer evidence for syntactic inversion in SAP inverse clauses could someday turn up in one Algonquian variety or another. If so, syntactic inversion could be grafted onto the analysis of the SAP inverse in this paper by adding an [EPP] feature to Infl that is satisfied by movement of whichever DP Infl indexes. The important point, however, is that such inversion does not seem to be an inherent component of the SAP inverse, unlike the third-person inverse, so syntactic inversion should not be “baked in” to an analysis of the SAP inverse in the same way that it is for the third-person inverse—contra, for example, the analysis proposed for Plains Cree in Bianchi 2006.

3.5 Summary: Two contexts for the inverse pattern

The inverse agreement pattern has two defining properties: (i) Infl indexes only the patient, and (ii) Voice, rather than indexing the patient as usual, is instead realized as the special inverse marker, which can be analyzed as an elsewhere form that appears whenever Voice lacks phi-features. These properties can arise in two distinct ways, as outlined in Table 2, which summarizes the two inverse contexts and their proposed analyses.

PROPERTY	3RD-PERSON INVERSE	SAP INVERSE
Voice is elsewhere form because...	Voice _{ERG} does not agree	Voice agrees with patient, but features subsequently duplicated by Infl
Infl indexes the patient because...	Voice _{ERG} assigns case to agent	Infl probe matched better by features of patient on Voice than by agent DP
Trigger	patient more topical than agent	patient's features match Infl probe better than agent's features do
Structural subject	patient	agent
Obligatory?	no, speaker choice	yes, for certain argument features
Distribution across languages	whenever speaker selects Voice _{ERG}	varies depending on specification of probe on Infl (e.g. [ϕ] vs. [PART])

Table 2: Proposed analysis of the two inverse contexts

The proposed approach explains why the two inverse contexts show the same agreement pattern but have different syntactic and pragmatic properties and behave differently with respect to variation. In a nutshell, in the third-person inverse, the patient DP is more prominent in every way: morphologically, syntactically, and pragmatically; whereas in the SAP inverse, the patient's *features* are more morphologically prominent, but the patient DP itself does not have special syntactic or pragmatic prominence. The SAP inverse arises whenever the patient's features are the best match for the probe on Infl. Since this outcome depends on both the specification of the probe and the features of the arguments, extensive variation is possible. The next section examines this variation in detail.

4 Variation in the SAP inverse

The main theoretical point of this paper arises from the extensive variation shown by the distribution of the SAP inverse across the Central and Eastern Algonquian languages. This section surveys the variation, augmenting previous surveys by Zúñiga (2006), Oxford (2014b), Cenerini (2017), Jacques & Antonov (2018), and Despić & Hamilton (2018). Section 4.1 introduces the parameters along which the distribution of the SAP inverse can vary. Section

4.2 shows that the set of attested distributions has the shape of a staircase cline. Section 4.3 clarifies that the cline does not extend to forms with two SAP arguments.

4.1 Parameters of variation

The SAP inverse pattern occurs in a subset of the forms in which a third person acts on an SAP. The precise distribution of the pattern depends on the features of both the SAP patient and the third-person agent. The SAP patient can be either first or second person and either singular or plural.¹³ The third-person agent can be either a referential animate (‘she, he, they’),¹⁴ a non-referential impersonal (‘people’),¹⁵ or a referential inanimate (‘it’).¹⁶ Examples of conjunct and independent 3→1PL forms with all three types of agents are given for Proto-Algonquian in Table 3 (inflections follow Goddard 1979:88, 2007:267).

	CONJUNCT (NEUTRAL)	INDEPENDENT (INVERSE)
3AN→1PL	<i>se:kihiyamenči</i> se:kih - <u>i</u> - ament -i scare - <u>1OBJ</u> - 3AN:1PL -IND ‘she scared us’	<i>nese:kihekona:na</i> ne- se:kih - <u>ekw</u> - wena:n -a 1- scare - <u>INV</u> - 1PL -3AN.SG ‘she scared us’
3IMP→1PL	<i>se:kihinamenki</i> se:kih - <u>i</u> - en - amenk -i scare - <u>1OBJ</u> - IMP - 3:1PL -IND ‘someone scared us’	<i>nese:kiheko:hmena:</i> ne- se:kih - <u>eko:</u> - ehmena: 1- scare - <u>INV.IMP</u> - 1PL ‘someone scared us’
3IN→1PL	<i>se:kihiyamenki</i> se:kih - <u>i</u> - amenk -i scare - <u>1OBJ</u> - 3:1PL -IND ‘it scared us’	<i>nese:kihekone:na:ni</i> ne- se:kih - <u>ekw</u> - ene:na:n -i 1- scare - <u>INV</u> - 1PL -3IN.SG ‘it scared us’

Table 3: Proto-Algonquian 3→1PL forms with animate, impersonal, and inanimate agents

¹³There is also a distinction between exclusive first-person plural (1PL) and inclusive first-person plural (conventionally notated “21PL”). For brevity, this paper considers only forms with 1PL patients. Forms with 21PL patients generally show the same agreement pattern as forms with 1PL and 2PL patients. In languages that treat forms with 1PL and 2PL patients differently, there is variation in whether 21PL patterns with 2PL (Swampy Cree and the Northern Algonquin dubitative) or 1PL (Mi’kmaq doculect in Fidelholtz 1999).

¹⁴The PROX-OBV contrast on animate third persons (§3.1) has no effect on the patterning of forms in which a third person interacts with an SAP. The agreement pattern that is used when the third person is PROX—be it direct, inverse, or neutral—is also used when the third person is OBV, sometimes with an added OBV marker.

¹⁵Forms with impersonal agents could theoretically be translated as either ‘people see me’ or ‘I am seen’. Among Algonquianists it is controversial whether such forms should be analyzed as transitives with an impersonal agent or as detransitivized passives (see e.g. Goddard 1969:118–121; Dryer 1996; Hockett 1996; Wolvengrey 2011:185–190). The most standard view, followed in this paper, is to regard them not as a passive construction, but rather as a transitive “indefinite actor” construction (e.g. Hockett in Bloomfield 1958:vi).

¹⁶Strictly speaking, the inanimate external argument in a clause such as ‘it woke me up’ is not truly an agent, but the precise semantic role of the external argument has no effect on the agreement pattern.

As indicated by the sample in Table 3, the Proto-Algonquian 3→SAP forms show a simple pattern: the conjunct 3→SAP forms are all neutral while the independent 3→SAP forms are all inverse (Goddard 1967:94, 1979:88). In the neutral conjunct forms, Voice indexes the patient and Infl indexes both arguments; in the inverse independent forms, Voice is realized as the special inverse marker and Infl indexes only the patient. Diachronically, the conjunct paradigm is older than the independent (Goddard 1974:323), so the neutral pattern is the original one; the inverse pattern shown by the independent forms is an innovation.

The sharp distinction in the patterning of 3→SAP forms between the conjunct and independent is retained in the most conservative languages. The majority of the languages, however, have analogically extended the innovative inverse pattern from the independent to at least some of the corresponding conjunct forms, replacing the original neutral pattern. An example of this change is given in Table 4, which shows the conjunct 3→1PL forms in Kickapoo and Plains Cree. The Kickapoo forms are direct reflexes of the Proto-Algonquian neutral forms in Table 3, with Voice indexing the patient and Infl indexing both arguments. The Plains Cree forms have been completely rebuilt to follow the inverse agreement pattern, such that Voice is realized as the inverse marker and Infl indexes only the patient.

	KICKAPOO (NEUTRAL)	PLAINS CREE (INVERSE)
3AN→1PL	<i>θe:kihiameči</i> θe:kih -i - amet -i scare -1OBJ - 3AN:1PL -IND ‘she scared us’	<i>se:kihikoya:hk</i> se:kih - iko - ya:hk scare -INV - 1PL ‘she scared us’
3IMP→1PL	<i>θe:kihi:ameki</i> θe:kih -i - en - amek -i scare -1OBJ - IMP - 3:1PL -IND ‘someone scared us’	<i>se:kihikawiya:hk</i> se:kih - ikawi - ya:hk scare -INV.IMP - 1PL ‘someone scared us’
3IN→1PL	<i>θe:kihiameki</i> θe:kih -i - amek -i scare -1OBJ - 3:1PL -IND ‘it scared us’	<i>se:kihikoya:hk</i> se:kih - iko - ya:hk scare -INV - 1PL ‘it scared us’

Table 4: Crosslinguistic variation in conjunct 3→1PL forms

Most Algonquian languages have, like Plains Cree, rebuilt at least some of the conjunct 3→SAP forms along inverse lines. The languages differ widely, however, in the precise extent of this rebuilding. Table 5 surveys the distribution of the inverse pattern in conjunct 3→SAP forms across the Central and Eastern Algonquian languages. Each row represents a different language or group of languages, identified by a code that begins with “C” for Central languages and “E” for Eastern languages; the languages subsumed under each code are listed in the next section. Each column represents a different configuration of arguments (e.g. animate third acting on 1SG). The notations “I” and “N” indicate whether the agreement pattern is inverse or neutral; a dash indicates that data is unavailable.

LANGUAGE	3ANIM acting on...				3IMPERS acting on...				3INAN acting on...			
	1SG	2SG	1PL	2PL	1SG	2SG	1PL	2PL	1SG	2SG	1PL	2PL
C1	N	N	N	N	N	N	N	N	N	N	N	N
C2	N	N	N	N	N	N	N	N	I	I	I	I
C3	N	N	N	N	I	I	I	I	I	I	I	I
C4	N	N	N	I	I	I	I	I	I	I	I	I
C5	N	N	I	I	I	I	I	I	I	I	I	I
C6	N	I	N	I	I	I	I	I	I	I	I	I
C7	I	I	I	I	I	I	I	I	I	I	I	I
E1	N	N	N	N	N	N	N	N	N	N	N	N
E2	N	N	N	I	–	–	–	–	N	N	N	I
E3	N	N	I	I	–	–	–	–	–	–	–	–
E4	N	I	I	I	N	I	I	I	N	I	I	I
E5	N	I	I	I	N	I	I	I	I	I	I	I
E6	N	I	I	I	I	I	I	I	I	I	I	I
E7	I	I	I	I	I	I	I	I	I	I	I	I

Table 5: Distribution of inverse agreement in conjunct 3→SAP forms

4.2 A cline of inverse extensions

As even a cursory glance at Table 5 will reveal, the variation in the distribution of the inverse pattern, though extensive, is far from haphazard. Between the two extremes in which the conjunct 3→SAP forms are either all neutral or all inverse, the languages fall along a strikingly regular staircase cline, although the details play out slightly differently in the Central languages (C1–C7) and the Eastern languages (E1–E7). The following paragraphs describe this cline, grouping together languages that show related patterns.

Central languages with inverse conditioned by agent (C1–C3). In the Central languages in the first three rows of the table, the distribution of inverse agreement in conjunct 3→SAP forms is conditioned solely by the features of the third-person agent. In **C1** (Kickapoo), the inverse pattern is never used, as in Proto-Algonquian. In **C2** (Meskwaki), the inverse pattern is extended to forms with inanimate agents. In **C3** (Menominee and most dialects of Cree and Ojibwe), the inverse pattern is extended to forms with inanimate and impersonal agents, leaving only animate-agent forms showing the original neutral pattern.¹⁷

Central languages with inverse conditioned by agent and patient (C4–C7). The remaining Central languages use the C3 distribution as a jumping-off point: all forms with

¹⁷The other Central languages, Miami-Illinois, Shawnee, and Potawatomi, cannot be classified with certainty, as the available data does not include forms with inanimate and/or impersonal agents, but none of the attested data contradict the cline in Table 5. The attested Miami-Illinois data are consistent with either C1 or C2. The attested Shawnee and Potawatomi data are consistent with either C1, C2, or C3.

an inanimate or impersonal agent are inverse. Starting from this baseline, the languages in C4–C7 gradually extend the inverse pattern into the set of forms with animate agents. The extensions are conditioned by the features of the SAP patient. The inverse pattern is triggered by a 2nd-person plural patient in C4 (Woods Cree), by all SAP.PL patients in C5 (Plains Cree and Parry Island Ojibwe), by all 2nd-person patients in C6 (Northern Algonquin dubitative mode), and by all SAP patients in C7 (alternative pattern in Parry Island Ojibwe), where the extension of the inverse pattern has gone to completion.

Eastern languages with inverse conditioned by patient (E1–E4). The Eastern languages also show a staircase cline of inverse distributions, but the conditioning is slightly different. In the Central languages, the first few steps of the cline are conditioned solely by the agent, and only after all forms with inanimate and impersonal agents have become inverse do the features of the SAP patient start to play a role. In the Eastern languages it is exactly the opposite: the first few steps of the cline are conditioned solely by the patient. In E1 (Passamaquoddy-Maliseet and conservative Mi’kmaq), all forms retain the original neutral pattern. The inverse pattern is extended to forms with 2PL patients in E2 (Mi’kmaq variety in Fidelholtz 1999, documented in the 1960s), plus 1PL patients in E3 (contemporary Mi’kmaq variety in Quinn 2012),¹⁸ plus 2SG patients in E4 (19th century Unami Delaware), leaving only forms with 1SG patients showing the original neutral pattern.

Eastern languages with inverse conditioned by patient and agent (E5–E7). After E4, all that remains is to extend the inverse pattern to the forms with 1SG patients. Here the features of the agent begin to play a role. In E5 (modern Delaware), the inverse pattern is extended to 3→1SG forms with an inanimate agent. In E6 (some speakers of Mahican and modern Munsee Delaware), the inverse pattern is extended further to 3→1SG forms with an impersonal agent. Finally, in E7 (some speakers of Mahican and Massachusetts), the inverse pattern is extended even further to 3→1SG forms with an animate agent, thus completing the extension of the inverse pattern to the entire 3→SAP paradigm.

4.3 A limit to the cline: No “you-and-me” inverse

The staircase cline of inverse distributions in 3→SAP forms is the focus of this paper. But an analysis of this cline would be incomplete if it did not also account for one additional fact: the cline does not extend to forms in which both arguments are SAPs, known as “you-and-me forms” by Algonquianists (Goddard 1967:67). In contrast to 3→SAP forms, which have a propensity to show the inverse agreement pattern, the you-and-me forms are resolutely non-inverse (with only one exception, discussed at the end of this section).

Across the Central and Eastern Algonquian languages, you-and-me forms consistently show the neutral agreement pattern in which Voice indexes the patient and Infl flexibly indexes either the agent, the patient, or both arguments, depending on the available mor-

¹⁸For E2, data is unavailable for impersonal agents; for E3, data is unavailable for both impersonal and inanimate agents. The expected pattern of inverse agreement in these forms is shown by grey shading in Table 5, based on the otherwise exceptionless generalization that whenever a particular 3AN→SAP form shows inverse agreement, the corresponding 3IMP→SAP and 3IN→SAP forms show inverse agreement as well.

phological resources. The Plains Cree conjunct forms in (21) are representative. In the 2PL→1SG form in (21a), Voice indexes the patient and Infl indexes the agent. In the opposite 1SG→2PL form in (21b), Voice indexes the patient and Infl indexes both arguments.¹⁹

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>(21) a. 2PL→1SG neutral</p> <p style="margin-left: 2em;">wa:pamiye:k</p> <p style="margin-left: 2em;">wa:pam -i̇ -ye:kw</p> <p style="margin-left: 2em;">see -1OBJ -2PL</p> <p style="margin-left: 2em;">‘you.PL see me’</p> | <p>b. 1SG→2PL neutral</p> <p style="margin-left: 2em;">wa:pamitakok</p> <p style="margin-left: 2em;">wa:pam -iṫ -akok</p> <p style="margin-left: 2em;">see -2OBJ -1SG:2PL</p> <p style="margin-left: 2em;">‘I see you.PL’</p> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

For Plains Cree in particular, however, it is surprising that the 1SG→2PL form in (21b) should show the neutral pattern. In the survey of 3→SAP forms in Table 5 above, we saw that Plains Cree is a language in which plural SAP patients trigger the inverse pattern. Evidently this generalization does not extend to the you-and-me forms: a plural SAP patient triggers the inverse pattern *when the agent is a third person*, but not when the agent is also an SAP, as in (21b). This point holds not only for Plains Cree, but quite generally across the languages: no matter how the inverse is conditioned in 3→SAP forms, that conditioning does not extend to SAP→SAP forms, which simply do not make use of inverse morphology. An analysis that derives the cline of inverse distributions in 3→SAP forms must therefore be constrained so that it does not inaccurately predict a parallel cline of inverse distributions in SAP→SAP forms. The conditions that give rise to inverse agreement evidently exist only in 3→SAP configurations, not also in SAP→SAP configurations.

There is one exception to the generalization that you-and-me forms are resolutely non-inverse. In certain varieties of Ojibwe, inverse morphology has been extended to forms in which 1PL acts on 2, as discussed by McGinnis (2008:180). These innovative forms are anomalous in multiple ways, most notably in that they are homophonous with impersonal-agent forms: the innovative inverse form that means ‘we see you’ also means ‘someone sees you’. As McGinnis observes, the use of an impersonal form to express 1PL parallels the use of *on* ‘one’ to express ‘we’ in French. Such homophony is not displayed by the 3→SAP inverse forms that make up the staircase cline. For this and other reasons, I suggest that the innovative Ojibwe you-and-me inverse should be treated as a distinct phenomenon from the staircase cline of 3→SAP inverse forms. Given the syncretism with impersonal-agent forms, the correct explanation for the Ojibwe you-and-me inverse may well lie at the morphological level, perhaps along the lines proposed by Despić & Hamilton (2018).

¹⁹Some authors have seen a direct-inverse pattern in such forms, describing the 2→1 form in (21a) as direct and the 1→2 form in (21b) as inverse (e.g. Wolfart 1973; Blain 1998), but this analysis is not viable, for reasons that have been discussed elsewhere and will not be repeated here (see e.g. Hockett 1992; Macaulay 2009:368ff). Suffice it to observe that, under the definition of the inverse agreement pattern adopted in this paper, the form in (21b) clearly does not qualify as inverse: Voice indexes the patient rather than surfacing as the special inverse marker, and Infl indexes both arguments rather than just the patient. This is a canonical example of the neutral agreement pattern (§2.2).

4.4 Summary: Variation in the SAP inverse

Algonquian $3 \rightarrow \text{SAP}$ forms (but not $\text{SAP} \rightarrow \text{SAP}$ forms) show extensive variation in the distribution of inverse agreement. The shape of this variation reflects two factors: (i) whether the inverse is triggered by features of the agent only, the patient only, or a combination of the two, and (ii) which particular feature values trigger the inverse. Despite this variation, several exceptionless generalizations can be stated as implicational hierarchies:

- (22) Implicational hierarchies for inverse agreement in $3 \rightarrow \text{SAP}$ forms
- a. **animate > impersonal > inanimate**
 - (i) if $3_{\text{AN}} \rightarrow \text{SAP}$ is inverse, so are $3_{\text{IMP}} \rightarrow \text{SAP}$ and $3_{\text{IN}} \rightarrow \text{SAP}$
 - (ii) if $3_{\text{IMP}} \rightarrow \text{SAP}$ is inverse, so is $3_{\text{IN}} \rightarrow \text{SAP}$
 - b. **1 > 2**
 - (i) if $3 \rightarrow 1_{\text{SG}}$ is inverse, so is $3 \rightarrow 2_{\text{SG}}$
 - (ii) if $3 \rightarrow 1_{\text{PL}}$ is inverse, so is $3 \rightarrow 2_{\text{PL}}$
 - c. **SG > PL** (cf. Jacques & Antonov 2018)
 - (i) if $3 \rightarrow 1_{\text{SG}}$ is inverse, so is $3 \rightarrow 1_{\text{PL}}$
 - (ii) if $3 \rightarrow 2_{\text{SG}}$ is inverse, so is $3 \rightarrow 2_{\text{PL}}$

The crispness of these hierarchies invites explanation. Although the extension of inverse marking in conjunct $3 \rightarrow \text{SAP}$ forms is extrinsically motivated—driven by analogy with the corresponding independent forms—something apparently forces this analogical process to follow the particular channels identified in (22). A satisfactory analysis must therefore not only accommodate the twelve distinct distributions of inverse marking shown in Table 5; it must also explain why all of the attested distributions are in line with the hierarchies in (22), and why no distributions that contradict these hierarchies exist. I propose in the next section that we have the tools to formulate an analysis that does exactly this.

5 Deriving variation in the SAP inverse

This section introduces Deal’s (2015) “interaction and satisfaction” model of Agree (§5.1) and shows that this model enables a simple account of the full cline of $3 \rightarrow \text{SAP}$ inverses: each different distribution of inverse agreement reflects a different pair of interaction and satisfaction conditions on Infl (§5.2). The absence of a parallel cline of $\text{SAP} \rightarrow \text{SAP}$ inverses is then shown to follow from a minimal addition to this model (§5.3).

5.1 Formal assumptions

In order to account for the full range of SAP inverse distributions, we must make some assumptions about the representation of phi-features and the mechanics of the Agree operation. I assume the set of phi-features shown in the geometry in (23a) (cf. Harley & Ritter 2002; Béjar 2003; Deal 2015). This geometry represents the entailment relations among

features; it is not a syntactic object in its own right. The feature bundles that define the relevant categories of argument DPs are listed in (23b).

- (23) a.
- b. 3INAN [φ]
3IMPERS [φ, AN]
3ANIM [φ, AN, PERS]
1 [φ, AN, PERS, PART]
2 [φ, AN, PERS, PART, ADDR]
(plus [PL] as relevant)

How do probes seek and copy these features? Building on the observation that a probe whose patterning is driven by some particular feature may nevertheless copy other features as well (Béjar & Rezac 2009; Preminger 2014), Deal (2015, 2020) proposes that the featural specification of a probe *P* is divided into two conditions. The *INTERACTION* condition identifies the categories of features that *P* is able to copy (e.g. [φ]). The *SATISFACTION* condition identifies the particular features that, when copied to *P*, result in the termination of further probing by *P* (e.g. [PART]). The search for features proceeds incrementally. *P* begins by assessing the closest goal in its search domain and copying any features that meet *P*'s interaction condition. If one of these features also meets *P*'s satisfaction condition, the search is over. If not, *P* moves on to assess the next-closest goal in its domain, and so on until either its satisfaction condition is met or no further goals remain in its domain.

To extend this model to the Infl probe in Algonquian, I make two additional assumptions. The first assumption involves the search domain of Infl. In order to explain why Infl can index the external argument or the highest internal argument, but no arguments lower than this, I assume that probing by Infl is constrained by the Phase Impenetrability Condition (Chomsky 2000): Infl cannot search beyond the specifier and head of VoiceP. The second assumption is required by my earlier proposal that the occurrence of agreement on Voice presents Infl with two equidistant goals: the agent DP in the specifier of VoiceP and the patient's features on the Voice head (§3.4). How does the incremental search process work in such contexts of equidistance? For explicitness, let us attribute the incrementality of the search process to the minimality principle in (24).

- (24) A probe *P* cannot interact with a goal *Z* unless *P* has already interacted with any valid goals that are closer to *P* than *Z* is.

There are thus two distinct reasons why a probe might copy features from a goal:

- (25) Probe *P* copies features from goal *X* if *X* meets the interaction condition of *P* and:
- the features of *X* satisfy *P*, or
 - the features of *X* do not satisfy *P*, and thus the search needs to continue beyond *X* in the hope of satisfaction by a more distant goal *Z*.

Consider how these motivations play out when the first step of the search finds two equidistant goals, X and Y, as proposed earlier for Algonquian Infl (§3.4). If both goals meet the probe's interaction condition but not its satisfaction condition, the probe will copy the features of both goals due to motivation (25b): interaction with both X and Y is necessary in order for the search to continue beyond these unsatisfactory goals. The outcome is different, however, if one of the two equidistant goals, X, does meet the probe's satisfaction condition. In this case, the probe will copy the features of X due to motivation (25a). But there is no reason for the probe to copy the features of the other equidistant goal, Y. Motivation (25a) does not apply, since the features of Y do not satisfy the probe, and motivation (25b) also does not apply, since the satisfaction of the probe by X leaves no need for the search to continue. We may assume, then, that in contexts where one equidistant goal satisfies the probe and the other does not, the probe agrees only with the satisfactory goal. That is, in contexts of equidistance, satisfying interaction bleeds non-satisfying interaction.²⁰

An analysis of the neutral, direct, and inverse agreement patterns was developed in Section 3. In brief, the neutral pattern arises when Infl agrees with both the agent DP and the patient's features on Voice, the direct pattern arises when Infl agrees only with the agent DP, and the inverse pattern arises when Infl agrees only with the patient's features on Voice. This approach enables a simple account of crosslinguistic variation in the distribution of the inverse pattern: for each language, the trick is to specify the probe on Infl such that it will agree only with the patient's features in precisely the contexts in which the inverse pattern is attested. There is no guarantee, of course, that such an account will actually be workable, let alone elegant or explanatory—but in fact, an account along these lines is remarkably successful. The remainder of this section shows how each of the SAP inverse distributions in Table 5 can be derived by varying the interaction and satisfaction conditions of Infl.

(26)		1SG	2SG	1PL	2PL		Infl C1	Agent	Patient
	3AN	N	N	N	N		[int: ϕ]	3IN	2PL
	3IMP	N	N	N	N				
	3IN	N	N	N	N				

²⁰I thank Julie Anne Legate (p.c.) for suggesting this idea to me.

with an inanimate agent, Infl will interact only with the SAP patient, thus giving rise to the inverse pattern. In all other forms, the results are the same as in C1.

(27)

	1SG	2SG	1PL	2PL
3AN	N	N	N	N
3IMP	N	N	N	N
3IN	I	I	I	I

Infl C2	Agent	Patient
[int: ANIM]	3IN	2PL
		•
		└───┘

C3: Inverse when agent is INAN or IMPERS. If the interaction condition is changed to [PERS], Infl will not interact with nominals that lack [PERS]—i.e., inanimates and impersonals. Consequently, in forms with inanimate or impersonal agents, Infl will interact only with the features of the SAP patient, thus giving rise to the inverse pattern. In forms with animate agents, which do have [PERS], Infl will continue to interact with both goals.

(28)

	1SG	2SG	1PL	2PL
3AN	N	N	N	N
3IMP	I	I	I	I
3IN	I	I	I	I

Infl C3	Agent	Patient
[int: PERS]	3IMP	2PL
		•
		└───┘

C4: Inverse when agent is INAN or IMPERS, and when ANIM acts on 2PL. As in C3, the interaction condition [PERS] triggers the inverse pattern in all forms with inanimate or impersonal agents. In forms with animate agents, the addition of the satisfaction condition [ADDR,PL] means that when a 3ANIM agent acts on a 2PL patient, the features of the 2PL patient satisfy the probe while the features of the 3ANIM agent do not. As posited above, satisfaction bleeds interaction in such contexts, so Infl agrees only with the 2PL patient, thus triggering the inverse pattern in 3AN→2PL forms. The same outcome does not arise in the other 3ANIM agent forms because the features of the patient (1SG, 2SG, 1PL) do not satisfy the probe and thus do not bleed interaction with the agent. Infl continues to copy the features of both arguments in these forms, producing the neutral pattern.

(29)

	1SG	2SG	1PL	2PL
3AN	N	N	N	I
3IMP	I	I	I	I
3IN	I	I	I	I

Infl C4	Agent	Patient
[int: PERS sat: ADDR,PL]	3AN	2PL
		•
		└───┘

C5: Inverse when agent is INAN or IMPERS, and when ANIM acts on SAP.PL. The derivation proceeds as in C4, except that in forms with animate agents, the broadening of the satisfaction condition from [ADDR,PL] to [PART,PL] causes the inverse pattern to arise whenever the patient is a plural SAP, i.e. in both 3AN→2PL and 3AN→1PL forms.

(30)		1SG	2SG	1PL	2PL		Infl C5	Agent	Patient
	3AN	N	N	I	I		$\left[\begin{array}{l} \text{int: PERS} \\ \text{sat: PART,PL} \end{array} \right]$	3AN	1PL
	3IMP	I	I	I	I				
	3IN	I	I	I	I				

C6: Inverse when agent is INAN or IMPERS, and when ANIM acts on 2. The derivation again proceeds as in C4, except that in forms with animate agents, the broadening of the satisfaction condition from [ADDR,PL] to [ADDR] causes the inverse pattern to arise whenever the patient is a second person, i.e. in both 3AN→2PL and 3AN→2SG forms.

(31)		1SG	2SG	1PL	2PL		Infl C6	Agent	Patient
	3AN	N	I	N	I		$\left[\begin{array}{l} \text{int: PERS} \\ \text{sat: ADDR} \end{array} \right]$	3AN	2SG
	3IMP	I	I	I	I				
	3IN	I	I	I	I				

C7: Inverse in all 3→SAP forms. The broadening of the satisfaction condition to [PART], a feature that, in 3→SAP forms, is only ever borne by the patient, means that only the features of the patient will satisfy the probe in all forms, thus bleeding interaction with the agent and triggering the inverse pattern across the entire paradigm.

(32)		1SG	2SG	1PL	2PL		Infl C7	Agent	Patient
	3AN	I	I	I	I		$\left[\begin{array}{l} \text{int: PERS} \\ \text{sat: PART} \end{array} \right]$	3AN	1SG
	3IMP	I	I	I	I				
	3IN	I	I	I	I				

E1: No inverse. Turning to the Eastern languages, E1 is the same as C1 and can be derived in the same way: Infl interacts with $[\phi]$ and has no satisfaction condition.

E2: Inverse when patient is 2PL. The addition of the satisfaction condition [ADDR,PL] means that in forms with a 2PL patient, only the features of the patient will satisfy the probe, thus triggering the inverse pattern. In the rest of the paradigm, neither the agent nor the patient's features satisfies the probe, and the interaction condition $[\phi]$ does not favor one goal over the other, so Infl interacts with the features of both, giving the neutral pattern.

(33)		1SG	2SG	1PL	2PL		Infl E2	Agent	Patient
	3AN	N	N	N	I		$\left[\begin{array}{l} \text{int: } \phi \\ \text{sat: ADDR,PL} \end{array} \right]$	3AN	2PL
	3IMP	N	N	N	I				
	3IN	N	N	N	I				

E3: Inverse when patient is SAP.PL. The derivation proceeds as in E2, except that the broadening of the satisfaction condition from [ADDR,PL] to [PART,PL] triggers the inverse pattern with both 2PL and 1PL patients.

(34)

	1SG	2SG	1PL	2PL
3AN	N	N	I	I
3IMP	N	N	I	I
3IN	N	N	I	I

Infl E3	Agent	Patient
$\begin{bmatrix} \text{int: } \phi \\ \text{sat: PART,PL} \end{bmatrix}$	3AN	1PL

E4: Inverse when patient is 2PL, 1PL, 2SG. The set of patients that trigger inverse marking in E4 is not a natural class. Instead, it consists of two overlapping classes: plural SAPs and second persons. This system can be modelled if we posit that Infl has two alternative satisfaction conditions: [PART,PL], which will trigger the inverse pattern when the patient is 2PL or 1PL, and [ADDR], which will trigger the inverse pattern when the patient is 2PL or 2SG. Only when the patient is 1SG will the inverse pattern not appear, since the 1SG patient meets neither of the probe's satisfaction conditions, thus leaving the probe to interact with both the agent and the patient's features on an equal basis.

(35)

	1SG	2SG	1PL	2PL
3AN	N	I	I	I
3IMP	N	I	I	I
3IN	N	I	I	I

Infl E4	Agent	Patient
$\begin{bmatrix} \text{int: } \phi \\ \text{sat: PART,PL} \\ \text{sat: ADDR} \end{bmatrix}$	3AN	2SG

E5: Inverse when patient is 2PL, 1PL, 2SG, and when INAN acts on 1SG. As in E4, the satisfaction conditions [PART,PL] and [ADDR] trigger the inverse pattern whenever the patient is 2PL, 1PL, or 2SG. In the forms with 1SG patients, the narrowing of the interaction condition from $[\phi]$ to [ANIM] means that in a 3IN→1SG form, only the 1SG patient will qualify to interact with the probe, thus triggering the inverse pattern here as well. The 3IMP→1SG and 3AN→1SG forms will continue to show the neutral pattern, since both arguments are animate and thus qualify to interact with the probe but neither satisfies the probe.

(36)

	1SG	2SG	1PL	2PL
3AN	N	I	I	I
3IMP	N	I	I	I
3IN	I	I	I	I

Infl E5	Agent	Patient
$\begin{bmatrix} \text{int: ANIM} \\ \text{sat: PART,PL} \\ \text{sat: ADDR} \end{bmatrix}$	3IN	1SG

E6: Inverse when patient is 2PL, 1PL, 2SG, and when INAN or IMPERS acts on 1SG. The derivation proceeds as in E5, except that the further tightening of the interaction condition to [PERS] rules out interaction with an impersonal agent, thus extending the inverse pattern to the 3IMP→1SG form, leaving only the 3AN→1SG form showing the neutral pattern.

(37)

	1SG	2SG	1PL	2PL
3AN	N	I	I	I
3IMP	I	I	I	I
3IN	I	I	I	I

Infl E6	Agent	Patient
$\begin{bmatrix} \text{int: PERS} \\ \text{sat: PART,PL} \\ \text{sat: ADDR} \end{bmatrix}$	3IMP	1SG

E7: Inverse in all 3→SAP forms. E7 is the same uniformly inverse distribution as C7 and, like C7, can be derived by broadening the satisfaction condition to [PART]. The interaction condition could be either [ϕ] as in E1–E4, [ANIM] as in E5, or [PERS] as in E6.²¹

It should be noted that all of the languages show the C7/E7 distribution in their independent paradigms, regardless of which distribution they show in their conjunct paradigms. Most of the languages therefore have different distributions of inverse marking in the independent and conjunct. This means, under the analysis proposed here, that most of the languages have different probes on Infl in the independent and conjunct. Positing such language-internal variation is not problematic, since the independent/conjunct contrast is conditioned by clause type, which is encoded by C, and the probe on Infl is thought to be inherited from C (Chomsky 2008). We thus need only say that the version of C that conditions conjunct inflection transmits a different probe to Infl than does the version of C that conditions independent inflection (cf. Lochbihler & Mathieu 2016 for Ojibwe).

5.3 Deriving the absence of a “you-and-me” inverse

The analysis in the preceding section derives the inverse cline in 3→SAP forms, but as it stands, the analysis incorrectly predicts that SAP→SAP forms should show a similar inverse cline. This section proposes an addition to the interaction and satisfaction model that eliminates the incorrect prediction and explains why SAP→SAP forms are impervious to inverse agreement. In brief, the proposal is that the need for SAP licensing can drive a probe to agree with an SAP argument even when such agreement is not strictly required by the probe’s satisfaction conditions. In SAP→SAP configurations, the outcome is that Infl will always agree with both SAP arguments regardless of its satisfaction conditions. This outcome guarantees that SAP→SAP forms will always show the neutral agreement pattern even when the parallel 3→SAP forms show the inverse pattern.

For concreteness, consider the Plains Cree conjunct forms in (38). Both forms involve a 2PL patient. Since Plains Cree is a language in which plural SAP patients trigger the SAP inverse (§4.2), the 3→2PL form in (38a) is inverse. However, the corresponding 1SG→2PL form in (38b) is not inverse, a property that holds across all SAP→SAP forms (§4.3).

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>(38) a. 3→2PL inverse</p> <p><i>wa:pamikoye:k</i></p> <p>wa:pam <u>-iko</u> -ye:kw</p> <p>see <u>-INV</u> -2PL</p> <p>‘s/he sees you.PL’</p> | <p>b. 1SG→2PL neutral</p> <p><i>wa:pamitakok</i></p> <p>wa:pam <u>-it</u> -akok</p> <p>see <u>-2OBJ</u> -1SG:2PL</p> <p>‘I see you.PL’</p> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|

The analysis proposed above accounts for the inverse form in (38a) by positing that in

²¹Since the satisfaction condition [PART] will trigger the inverse pattern across the entire 3→SAP paradigm regardless of whether the interaction condition is [ϕ], [ANIM], or [PERS], the precise specification of the interaction condition cannot be ascertained in the E7 system (nor in C7). For the purposes of the summary in Table 6 below, it will be assumed that the interaction condition is [PERS] in C7 and [ϕ] in E7, reflecting the most common interaction conditions in the Central and Eastern languages, respectively.

Plains Cree, the probe on Infl is specified as [*int*: PERS; *sat*: PART,PL] (§5.2). In contexts where the patient is a plural SAP and the agent is not, only the patient meets the probe's satisfaction condition. Infl will thus agree only with the patient's features on Voice, producing the inverse agreement pattern. This analysis correctly derives the inverse pattern in the 3→2PL form in (38a). The problem is that it incorrectly predicts the same inverse pattern in the 1SG→2PL form in (38b), since here, too, only the patient meets the probe's satisfaction condition. But this is not the right outcome. Instead of agreeing only with the patient in the 1SG→2PL form, Infl evidently agrees with both arguments, as indicated by the lack of an inverse marker and the realization of Infl as a portmanteau agreement suffix (-*akok* '1SG:2PL'). This is a general problem that applies across the entire dataset: regardless of the probe specifications needed to derive the distribution of inverse agreement in 3→SAP forms, Infl always agrees with both arguments in SAP→SAP forms. Why?

A possible answer comes from the well-established idea that SAPs are subject to stricter licensing constraints than third persons, as expressed by the Person Licensing Condition (PLC) of Béjar & Rezac (2003:53):

- (39) **Person Licensing Condition:** An interpretable 1st/2nd person feature must be licensed by entering into an Agree relation with a functional category.

The PLC gives us a way to understand why Infl must agree with both the agent and patient in an SAP→SAP form even when the features of the patient alone are sufficient to satisfy the probe. The key is that if Infl were to agree only with the patient, then the SAP agent would be left without agreement altogether, in violation of the PLC. The absence of the inverse pattern in SAP→SAP forms thus follows from the PLC: the inverse pattern arises when Infl agrees only with the features of the patient, but in order for the derivation of an SAP→SAP form to converge, Infl must agree with the SAP agent as well.

It is, of course, not sufficient to conclude that Infl “must” agree with the SAP agent; we also need to show how this outcome can be derived. This can be accomplished with a slight modification to the list of triggers for the Agree operation. In (25) above, the first two triggers in (40) were posited: Agree takes place either to satisfy the probe or to allow the probe to continue searching for satisfaction. Let us now add the more altruistic trigger in (40c): Agree also takes place to license a goal that would otherwise go unlicensed.

- (40) Probe P copies features from goal X if X meets the interaction condition of P and:
- a. the features of X satisfy P, or
 - b. the features of X do not satisfy P, and thus the search needs to continue beyond X in the hope of satisfaction by a more distant goal Z, or
 - c. copying the features of X will license X.

With the model thus revised, let us revisit the Plains Cree data in (38), in which the 3→2PL form is inverse but the 1SG→2PL form is neutral. Assume, as before, that Infl probes for [*int*: PERS; *sat*: PART,PL] and the features of both arguments are equidistant. In the 3→2PL form, none of the triggers in (40) apply to the third-person agent, but the trigger in

(40a) applies to the 2PL patient. Infl thus agrees only with the features of the 2PL patient, producing the inverse pattern. In the 1SG→2PL form, in contrast, the trigger in (40c) applies to the 1SG agent, while the trigger in (40a) still applies to the 2PL patient. Infl thus agrees with both goals, producing the neutral pattern. This analysis explains the absence of the inverse pattern in SAP→SAP forms even when the parallel 3→SAP forms are inverse.

In conclusion, the consistent absence of inverse agreement in SAP→SAP forms can be understood as a consequence of the PLC. The inverse pattern arises when Infl fails to agree with the agent, but in SAP→SAP forms, the PLC requires the agent to be agreed with, thus making the inverse pattern impossible. This requirement can be incorporated into the analysis by adding licensing to the list of triggers for Agree. With this refinement, we explain why the complex distributions of inverse agreement in 3→SAP forms across the Central and Eastern Algonquian languages have no parallel in the patterning of SAP→SAP forms. The resolutely neutral agreement pattern of SAP→SAP forms follows from the special licensing condition on SAP arguments, which forces the same outcome—agreement with both SAP goals—regardless of what happens in 3→SAP contexts.

5.4 Summary: Deriving variation in the SAP inverse

In contexts where Infl is equidistant from the features of the agent and patient, the SAP inverse agreement pattern arises whenever Infl agrees only with the patient’s features, an outcome that is possible in 3→SAP forms but not in SAP→SAP forms, where agreement with the SAP agent is forced by the PLC. Under an interaction and satisfaction model of the Agree operation, there are two routes to patient-only Infl agreement in 3→SAP forms: either (i) the interaction condition is not met by the third-person agent, thus leaving agreement with the patient as the only option, or (ii) the satisfaction condition is met by the SAP patient, thus bleeding interaction with the agent. These two routes correspond neatly to the two parameters that condition the distribution of the 3→SAP inverse: the features of the third-person agent (inanimate, impersonal, or animate) and the features of the SAP patient (first or second, singular or plural). Variation conditioned by the agent, as in the “horizontal” distribution shown by C2 and C3, is controlled by narrowing the probe’s interaction condition from $[\phi]$ to [ANIM] to [PERS]. Variation conditioned by the patient, as in the “vertical” distribution shown by E2–E4, is controlled by adding SAP features to the probe’s satisfaction condition: [PART] and/or [ADDR], with or without [PL]. Variation conditioned along both dimensions, as in the combined horizontal and vertical distributions shown by C4–C6 and E5–E6, is controlled by both narrowing the interaction condition and adding an SAP satisfaction condition. The distinction between interaction and satisfaction thus provides an excellent fit for the behavior of the SAP inverse agreement pattern. The distribution of this pattern varies in exactly the ways that we would expect if interaction and satisfaction were separate parameters that can be independently manipulated.

6 Assessing the analysis

To what extent is the proposed analysis of variation in the SAP inverse explanatory, and how does it compare to alternative approaches? This section argues that the proposed analysis has strong predictive power (§6.1) and is preferable to alternatives involving postsyntactic operations (§6.2), including a recent account by Despić & Hamilton (2018) (§6.3). Other potential implementations of the syntactic Agree operation are also discussed (§6.4).

6.1 Predictive power of the interaction and satisfaction account

The preceding section showed that variation in the SAP inverse agreement pattern can be adeptly handled in an interaction and satisfaction framework. But is this account truly explanatory, or is it simply a post-hoc restatement of the description in formal terms, providing no real insight into why the data show precisely the patterns in Table 5?

I contend that the proposed account is strongly predictive. To see how this is the case, consider Table 6, which lists the set of probes that were posited to account for the crosslinguistic variation. If the account were indeed a post-hoc rationalization, we would not expect to observe any interesting patterns in this list. But in fact, the list shows a striking exhaustivity: within certain parameters, the set of probes instantiates almost all conceivable combinations of interaction and satisfaction features. There is a family of patterns in which Infl interacts with [ϕ] and either lacks a satisfaction condition or is satisfied by one of [ADDR] or [PART], or by one of these features plus [PL], or by both features plus [PL]. There is a parallel family of patterns in which Infl interacts with [PERS] and shows exactly the same range of

PROBE ON INFL	LANGUAGE
[<i>int</i> : ϕ]	C1, E1
[<i>int</i> : ϕ ; <i>sat</i> : ADDR]	unattested
[<i>int</i> : ϕ ; <i>sat</i> : ADDR,PL]	E2
[<i>int</i> : ϕ ; <i>sat</i> : PART]	E7
[<i>int</i> : ϕ ; <i>sat</i> : PART,PL]	E3
[<i>int</i> : ϕ ; <i>sat</i> : PART,PL; <i>sat</i> : ADDR]	E4
[<i>int</i> : PERS]	C3
[<i>int</i> : PERS; <i>sat</i> : ADDR]	C6
[<i>int</i> : PERS; <i>sat</i> : ADDR,PL]	C4
[<i>int</i> : PERS; <i>sat</i> : PART]	C7
[<i>int</i> : PERS; <i>sat</i> : PART,PL]	C5
[<i>int</i> : PERS; <i>sat</i> : PART,PL; <i>sat</i> : ADDR]	E6
[<i>int</i> : ANIM]	C2
[<i>int</i> : ANIM; <i>sat</i> : PART,PL; <i>sat</i> : ADDR]	E5

Table 6: Summary of crosslinguistic variation in the specification of Infl

satisfaction conditions. And there is a third parallel family of patterns for interaction with [ANIM], although this family, unlike the other two, is incomplete, likely in reflection of the fact that the patterns generated by an [ANIM] probe differ only slightly from those generated by a more prototypical [PERS] probe.

It should be acknowledged that there do appear to be certain restrictions on the composition of probes in Table 6. The interaction features are always fairly broad ([ϕ], [ANIM], [PERS]) and the satisfaction features are always fairly narrow ([PART], [ADDR], [PL]). Furthermore, the [PL] feature only ever appears in conjunction with SAP features. Within these limits, however, almost every logically possible combination of interaction and satisfaction features is attested by an actual Algonquian language. There is thus a remarkably tight fit between the systems that the model makes available and the systems that actually exist.

The proposed analysis also derives the implicational generalizations governing the distribution of inverse agreement that were identified in (22). Consider, for example, the generalization that if a form with an impersonal agent is inverse in a given language, the corresponding form with an inanimate agent will be inverse as well. Under the proposed analysis, impersonal-agent forms show the inverse pattern when the interaction condition of Infl is restricted to [PERS], a feature that the impersonal agent lacks. Infl will thus interact only with the SAP patient, producing the inverse pattern. Since the feature [PERS] is lacking not only from impersonal agents, but also from inanimate agents, this analysis predicts that whenever impersonal agents trigger inverse agreement, inanimate agents should do the same—a prediction that accurately reflects the data. The analysis provides no way of deriving a system in which impersonal agents trigger inverse agreement but inanimate agents do not, and this is a beneficial outcome, as no such system is attested in any Central or Eastern Algonquian language. The same is true for all of the implicational generalizations in (22): the systems that contradict these generalizations cannot be formulated under the proposed analysis. The derivation of each generalization is sketched in Table 7.

GENERALIZATION	EXPLANATION
if 3 _{AN} →SAP is inverse, so are 3 _{IMP,IN} →SAP	inverse in 3 _{AN} →SAP is derived by [<i>sat</i> : PART], which forces inverse in all forms with an SAP patient
if 3 _{IMP} →SAP is inverse, so is 3 _{IN} →SAP	inverse with IMPERS agents is derived by [<i>int</i> : PERS], which forces inverse with INAN agents as well
if 3→1 _{SG} is inverse, so are all other 3→SAP	inverse with 1 _{SG} patients is derived by [<i>sat</i> : PART], which forces inverse with all SAP patients
if 3→1 _{PL} is inverse, so is 3→2 _{PL}	inverse with 1 _{PL} patients is derived by [<i>sat</i> : PART,PL], which forces inverse with 2 _{PL} patients as well
if 3→2 _{SG} is inverse, so is 3→2 _{PL}	inverse with 2 _{SG} patients is derived by [<i>sat</i> : ADDR], which forces inverse with 2 _{PL} patients as well

Table 7: Derivation of implicational generalizations regarding inverse agreement

I conclude that an Agree-based analysis of variation in inverse agreement, implemented in the interaction and satisfaction framework, has exactly the right level of predictive power. The analysis neither under-predicts nor over-predicts: it generates all attested patterns and rules out most unattested patterns—no mean feat, given the complexity of the data.

6.2 Comparison with a postsyntactic approach

Although an Agree-based analysis is successful, one might wonder whether the same facts could also be explained postsyntactically. In one sense, a postsyntactic analysis of the SAP inverse agreement pattern is attractive, since, as discussed above, the SAP inverse lacks the syntactic and pragmatic correlates shown by the third-person inverse (§3.3). Under an Agree-based analysis, the shallowness of the SAP inverse is attributed to the lack of movement of the patient DP, which remains in the VP rather than moving to InflP as in the third-person inverse (§3.4). The same result would automatically obtain under a postsyntactic analysis in which the SAP inverse pattern has no syntactic trigger at all.

To see how a postsyntactic analysis could derive variation in the SAP inverse, let us compare the 3AN→1PL forms of Moose Cree and Plains Cree. The Moose Cree form in (41a) shows the neutral agreement pattern: Infl indexes both arguments and Voice indexes the patient. The equivalent Plains Cree form in (41b) instead shows the inverse agreement pattern: Infl indexes only the patient and Voice is the inverse marker.

- (41) a. Moose Cree: 3→1PL neutral b. Plains Cree: 3→1PL inverse
- | | |
|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| <p><i>wa:pamiyamih</i>
 wa:pam -i -amih
 see -1OBJ -3:1PL
 ‘she sees us.EXCL’</p> | <p><i>wa:pamikoya:hk</i>
 wa:pam -iko -ya:hk
 see -INV -1PL
 ‘she sees us.EXCL’</p> |
|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|

Under the syntactic account proposed above, the only difference between Moose and Plains Cree is the specification of the probe on Infl, as sketched in (42). In Moose Cree, Infl is specified as [*int*: PERS] and thus interacts with the features of both the 3SG agent and the 1PL patient, producing the neutral pattern. In Plains Cree, Infl is specified as [*int*: PERS; *sat*: PART,PL] and thus interacts only with the features of the 1PL patient, an outcome that triggers the inverse pattern: Infl indexes only the patient, and the resulting identity of the phi-features on Voice and Infl causes Voice to be realized as the elsewhere inverse marker.

- (42) a. Moose Cree: [*int*: PERS] b. Plains Cree: [*int*: PERS; *sat*: PART,PL]
- | | |
|----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| <p>Infl Voice
 [3SG, 1PL] - - - - • [1PL]
 ⋮ ⋮
 Agent Patient
 [3SG] [1PL]</p> | <p>Infl Voice
 [1PL] - - - - • [1PL]
 ⋮ ⋮
 Agent Patient
 [3SG] [1PL]</p> |
|----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|

This approach attributes all crosslinguistic variation in the distribution of the SAP inverse to the specification of the probe on Infl. What if we instead wished to attribute this variation to the postsyntactic component of the grammar? Under such an analysis, Moose Cree and Plains Cree would share exactly the same underlying syntax—presumably the Moose Cree derivation in (42a), in which Voice agrees with the patient and Infl acquires the features of both arguments. In Moose Cree, the outcome of this derivation is realized transparently by the neutral agreement pattern, in which all of the phi-features of both Infl and Voice are overtly expressed. To explain why the inverse pattern emerges in Plains Cree, we would have to posit that the postsyntactic component whittles down the representations of Infl and Voice, preventing some of their phi-features from being realized. In principle, this can easily be accomplished by an operation such as impoverishment (Halle & Marantz 1993). In practice, however, an analysis along such lines turns out to be highly inelegant. The problem is that the inverse pattern involves a correlation between Infl and Voice: at the same time as Infl indexes only the patient, Voice ceases indexing the patient and is instead realized as an elsewhere form. To achieve this pair of outcomes by impoverishing the representation in (42a), two separate rules are needed: one rule to remove the agent's features from Infl in certain contexts, as in (43a), thus ensuring that Infl will index only the patient, and another rule to remove the patient's features from Voice in exactly the same contexts, as in (43b), thus ensuring that Voice will be realized as the elsewhere inverse marker.

- (43) a. When Infl and Voice both have [1PL], delete [3SG] from Infl.
 b. When Infl and Voice both have [1PL], delete [1PL] from Voice.

A fully postsyntactic analysis along these lines is problematic in several ways. First, it requires us to posit a potentially lengthy bank of impoverishment rules, whereas the proposed Agree analysis requires only a single general impoverishment rule that dissimilates identical phi-feature specifications on Infl and Voice. Second, the postsyntactic analysis does not explain why a rule like (43a), which deletes the agent's features from Infl, is always accompanied by a rule like (43b), which deletes the patient's features from Voice: why can one rule not exist without the other? Third, the shared conditioning of the rules in (43) is entirely arbitrary: why should the rule that affects Infl have the same conditioning as the rule that affects Voice? This shared conditioning is fundamental to the proposed Agree analysis, in which the distribution of inverse marking on Voice is determined by the same probe that would need to be posited in any case to capture the patterning of agreement on Infl. Finally, the outcome of the rules in (43) is also entirely arbitrary: why, for example, does one rule delete features from Infl while the other deletes features from Voice?

These points all follow directly from an Agree analysis in which certain specifications of the probe on Infl cause Infl to duplicate the features of Voice. Under a postsyntactic analysis, however, they are all just arbitrary stipulations that give us no real insight into the systematic nature of the inverse pattern. The absence of any clear limits on the content or number of such stipulations means that a postsyntactic analysis lacks the strong predictive power of the Agree analysis: rules like (43) can derive a wide range of outcomes, such as the unattested alternatives raised in the preceding paragraph, whereas the actual set of outcomes, as we

have seen, is strongly restricted, forming a neat staircase cline that aligns well with the predictions of the Agree analysis. I conclude that, in every respect, an Agree analysis of the SAP inverse is both simpler and more explanatory than a postsyntactic analysis of the same data. This conclusion provides support for the position that agreement patterns, even when complex and variable, can be creatures of the narrow syntactic derivation.

6.3 Comparison with Despić & Hamilton 2018

Despić & Hamilton (2018), henceforth DH, present an account of variation in the Algonquian inverse that employs both syntactic and postsyntactic mechanisms. DH restrict their attention to the three distributions of the SAP inverse identified in Table 8, which all involve animate agents; forms with impersonal and inanimate agents are not considered.

PATTERN	$3_{AN} \rightarrow \text{SAP.SG}$	$3_{AN} \rightarrow \text{SAP.PL}$
No inverse	N	N
Partial inverse	N	I
Full inverse	I	I

Table 8: Distributions of inverse agreement analyzed in Despić & Hamilton 2018

Following Oxford (2017), DH regard the inverse marker as the elsewhere realization of Voice, spelled out when the patient features that Voice normally realizes are absent. To implement this idea, DH posit a syntactic derivation in which Voice agrees both downwards with the patient and upwards with the agent. The two sets of features on Voice are distinct: only the features from the patient, which DH label as “[ϕ]AGREE”, can be spelled out. The features from the agent, which DH label as “[ϕ]MERGE”, cannot be spelled out, but they are available to condition postsyntactic operations that may affect the spellout of [ϕ]AGREE.

In neutral forms, where Voice indexes the patient, the morphology directly reflects the syntax: the patient marker realizes the [ϕ]AGREE features of Voice. In inverse forms, where Voice is realized as the elsewhere inverse marker, it must be the case that the [ϕ]AGREE features of Voice have been deleted. DH propose that this deletion is triggered by language-particular statements of contextual markedness that apply across the two sets of features on Voice. To derive the “full inverse” distribution in Table 8, in which all $3 \rightarrow \text{SAP}$ forms show the inverse agreement pattern, DH posit the markedness statement in (44).

$$(44) \quad [+PART]_{AGR} \text{ is marked in the context of } [-PART]_{MERGE}$$

In other words, when Voice has the features of a third-person agent ($[-PART]_{MERGE}$) and an SAP patient ($[+PART]_{AGR}$), the $[+PART]$ feature from the patient gains a special marked status. DH take this marked status to require resolution, which is effected by deleting $[+PART]_{AGR}$, thus leaving Voice to be spelled out as the elsewhere inverse marker.

Similarly, to derive the “partial inverse” distribution in which $3 \rightarrow \text{SAP.PL}$ forms are inverse but $3 \rightarrow \text{SAP.SG}$ forms are not, DH posit the markedness statement in (45).

(45) $[+PART]_{AGR}$ accompanied by $[PL]$ is marked in the context of $[-PART]_{MERGE}$

In other words, when Voice has the features of a third-person agent and a plural SAP patient, the features from the patient become marked and consequently undergo deletion, thus producing the inverse pattern in $3 \rightarrow SAP.PL$ forms but not in $3 \rightarrow SAP.SG$ forms.

The overall model proposed by DH, then, is one in which variation in the distribution of the inverse agreement pattern reflects variation in the content of markedness statements such as (44) and (45), which are part of the postsyntactic component but make crucial reference to the syntactic distinction between $[\phi]_{AGR}$ and $[\phi]_{MERGE}$. There are several considerations that make this approach less than fully satisfactory.

First, DH consider only a small subset of the contexts in which the inverse pattern occurs. This on its own is not a problem, but one wonders if the account might become unwieldy when extended to more complex systems such as C5 in Table 5, where the inverse pattern is triggered by inanimate and impersonal agents and also by $SAP.PL$ patients.

Second, there is a sense in which the markedness statements in (44) and (45) simply restate the description. The statement in (44), for example, effectively says that “an SAP patient triggers inverse marking in the context of a third-person agent.” Are we truly gaining insight from this, or are we just rephrasing the description in a technical-sounding way?

Third, the account requires a formal distinction between features gained from downwards Agree ($[\phi]_{AGR}$) and spec-head Agree ($[\phi]_{MERGE}$). In order for the analysis to work, these feature bundles must be tagged by diacritics indicating their syntactic origin, and it must also be stipulated that only $[\phi]_{AGR}$ can actually be spelled out. An analysis that does without these novel assumptions would be preferable.

Fourth, the analysis focuses entirely on deriving the appearance of the inverse marker in the Voice position and says nothing about the other half of the inverse agreement pattern: the indexing of the patient by Infl. The analysis is fundamentally oriented around a view of the Algonquian inverse as a *morpheme*, but in fact the inverse is an agreement pattern that involves Infl just as much as it involves Voice. If an analysis does not explain why Infl always indexes the patient in inverse forms, the analysis is inadequate.

For these reasons, I conclude that the postsyntactic account proposed by DH is not an attractive alternative to an Agree-based account, although it may provide a good fit for exceptional cases of inverse marking that lie outside the staircase cline, such as the Ojibwe $1PL \rightarrow 2$ forms discussed in Section 5.3. The problems faced by DH’s account emphasize the point that was made in Section 6.2: the patterning of the Algonquian inverse, both within and across languages, simply does not align well with a postsyntactic analysis.

6.4 Comparison with other syntactic approaches

The main theoretical claim of this paper is that a syntactic Agree-based account of the Algonquian SAP inverse is preferable to a postsyntactic account. A subsidiary claim is that, within the realm of Agree-based accounts, Deal’s (2015, 2020) interaction and satisfaction model is especially well suited to capturing the patterns in the data. This section briefly considers other models of Agree that have been applied to the Algonquian inverse and sim-

ilar phenomena. While I do not aim to demonstrate conclusively that the interaction and satisfaction model is superior, some benefits of this model can be identified.

Much existing work on the Algonquian inverse builds on Béjar & Rezac’s (2009) analysis, which attributes the direct-inverse alternation to an *articulated* probe on v —that is, a probe with multiple unvalued features standing in an entailment relation: [u Pers, u Part, u Addr]. Goals thus differ not only in *whether* they match the probe, but also in the *degree* to which they match the probe. Béjar & Rezac formulate an account in which the inverse marker appears whenever the patient matches more of the probe’s features than the agent does. This mechanism has been adopted in subsequent work on the Algonquian inverse by Lochbihler (2012) and Oxford (2014a, 2019) and may be compared with the use of articulated or relativized probes in the analysis of portmanteau and omnivorous agreement (Nevins 2011; Georgi 2013; Preminger 2014) and Person-Case Constraint effects (Anagnostopoulou 2005; Nevins 2007; Foley & Toosarvandani forthcoming).

Béjar & Rezac’s analysis was an important step forward in understanding the Algonquian inverse, but it cannot easily capture the full range of variation shown by the SAP inverse. An account that posits an articulated probe such as [u Pers, u Part, u Addr] deftly handles variation along a single dimension such as person, deriving inverse marking in contexts such as $2 \rightarrow 1$ and $1 \rightarrow 3$ depending on the degree of articulation, but it is harder to see how such an account can handle variation that is conditioned along two dimensions, such as pattern E3 in Table 5, in which the patient must be both an SAP and plural in order to trigger inverse marking. Coon & Bale (2014) propose, for Mi’kmaq, that this pattern can be captured if we allow probes to be *fused* in addition to articulated: a fused probe that is specified for both [PL] and [PART, SPKR] will be satisfied only if it finds a goal that matches both its number feature and (at least a portion of) its person features. This proposal derives the correct result, but at the cost of requiring detailed enrichments of both the structure of probes and the mechanism of probing. Under an interaction and satisfaction analysis, the same pattern can be captured simply by positing the satisfaction condition [PART, PL]. No notions of articulation, fusion, or partial matching are needed to derive the correct result: all that matters is whether or not the goal meets the satisfaction condition. This benefit does, however, come with a cost of its own, since it requires acceptance of the richer set of assumptions involved in the interaction and satisfaction model of Agree.

Articulated probing also runs into trouble with hybrid patterns such as C5, in which inverse marking is triggered whenever the patient is SAP.PL, as in pattern E3, but also whenever the agent is inanimate or impersonal, as in pattern C3. The interaction and satisfaction account is simple: the SAP.PL trigger reflects the satisfaction condition [PART, PL] while the inanimate/impersonal trigger reflects the interaction condition [PERS]. The coexistence of [PART] and [PERS] on Infl may seem similar to an articulated probe, but there is a crucial difference: in the interaction and satisfaction model, there is no entailment relationship between the [PART] feature in the satisfaction condition and the [PERS] feature in the interaction condition. The two conditions are entirely independent. This is beneficial, since, in addition to systems in which the satisfaction condition [PART, PL] is accompanied by the interaction condition [PERS], such as C5, there are also systems in which the same satisfaction

condition is unaccompanied by an interaction condition, such as E3. The interaction and satisfaction model makes it possible for two distinct features to affect the outcome of Agree without standing in an entailment relation—a possibility that does not follow naturally from an articulated probe, but is required by the Algonquian data.

7 Conclusion

The Algonquian languages have an inverse agreement pattern in which patient agreement disappears from Voice and appears on Infl. The appearance of this pattern when a third person is acted upon by a less topical third person is invariant across the Algonquian family and is best regarded as a marked ergative-like voice construction. The same agreement pattern also appears in some contexts in which an SAP is acted upon by a third person, but here the languages show extensive variation. The overall shape of this variation is predicted by an analysis that attributes the distribution of the SAP inverse pattern to the specification of the probe on Infl (cf. Foley & Toosarvandani (forthcoming) for variation in PCC effects across Zapotec). A postsyntactic analysis, in contrast, is not restricted enough to capture the clear limitations on the range of variation. I conclude that even though the SAP inverse has no obvious effect on the phrasal syntax—the patient DP, for example, does not appear to move above the agent DP, unlike in the third-person inverse—a syntactic analysis involving the Agree operation still provides the best account of the agreement pattern.

Deal’s (2015, 2020) interaction and satisfaction model of Agree provides a particularly elegant analysis of the patterning of the SAP inverse. The distribution of the inverse pattern is conditioned by both the features of the third-person agent (inanimate, impersonal, animate) and the features of the SAP patient (second or first, plural or singular). The interaction and satisfaction conditions, provide, in effect, two dials that can be adjusted to capture the two dimensions of variation: the interaction condition determines which of the agent’s features trigger the inverse pattern and the satisfaction condition does the same for the patient’s features. Although the inverse agreement pattern is quite different from the kinds of data that originally motivated the interaction and satisfaction model (Deal 2015, 2020), the fit between the model and the Algonquian data is strikingly close.

This is not to say that the analysis is free of controversial assumptions. In particular, it was necessary to posit that agreement alone does not necessarily render a goal’s features inactive (Baker 2008:155; Carstens 2011), that a probe can agree with another head in the clausal spine (Baker & Willie 2010), and that such head-to-head agreement configurations are subject to dissimilatory impoverishment of the lower head (Oxford 2019). The equidistance of a head and its specifier also plays a crucial role in enabling the inverse pattern by providing the probe on Infl with a “choice” between the features of the agent DP in the specifier of VoiceP and the features of the patient on Voice. For other similar uses of equidistance to enable hierarchy effects of various types, see, e.g., van Koppen 2005; Nevins 2011; Oxford 2014a; Zubizarreta & Pancheva 2017; Longenbaugh & Polinsky 2018. Finally, when the contrast between first and second persons is relevant to the inverse pattern, the languages consistently behave as though [addressee] rather than [speaker] is the active feature

value (cf. Béjar & Rezac 2009:43; Deal 2020:29). Given that all of these assumptions have antecedents in the literature, I contend that they do not unduly diminish the adequacy of the proposed analysis. The Algonquian SAP inverse, in all its variable forms, is a clear example of a complex agreement pattern that must be derived in the syntax.

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