Deriving degrees of accessibility in Algonquian peripheral agreement

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Abstract: In the Probe-Goal framework, in order for Agree to take place, two questions need to be considered: is the goal visible to the probe (i.e., accessibility) and is the goal needed by the probe (i.e., matching)? Several mechanisms, such as phases (Chomsky 2000, 2001), horizons (Keine 2019), and the Activity Condition (Chomsky 2000, 2001) overlap on tackling the issue of accessibility. However, it is not clear how much these mechanisms may interact with each other in the same language. This paper investigates this question through the lens of Algonquian by focusing on an agreement suffix, known as peripheral agreement (Goddard 1979). I argue that the cross-linguistic behaviors of this agreement suffix cannot be determined by a single mechanism but result from interactions of multiple mechanisms, which can be syntactic and morphological.

Keywords: accessibility, phases, horizons, Activity Condition, impoverishment, Algonquian

1 Introduction

This paper investigates the issue of accessibility for agreement using the rich variations of an Algonquian agreement suffix called PERIPHERAL AGREEMENT (Goddard 1979). Peripheral agreement occurs at the right periphery of the verb and typically indexes nominal features (number, gender, obviation) of a 3rd person object. As illustrated in Menominee example in (1a), the peripheral suffix (in boldface) -an ‘IN.PL.’ indexes the inanimate object. However, divergence arises in Plains Cree. As shown in (1b), the inanimate object is no longer indexed by peripheral agreement. Consequently, the number distinction of the inanimate object is neutralized in Plains Cree. The next variation arises from the third person forms (i.e. both the subject and the object are a third person). As exemplified in Ojibwe in (2a), the inanimate object is accessible for peripheral

   nepō‘na’n-an
   ne-po’n-a’-n-an
   1-put.in-0.OBJ-1SG-IN.PL
   ‘I put them,IN in the pot.’

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* My deepest gratitude goes to Will Oxford for his unfailing support and valuable feedback. I also thank Jila Ghomeshi, David Pentland, Natalie Weber, Peter Grishin, the audiences of WSCLA 25 for their useful comments and questions. All errors are my own.
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1 Peripheral agreement also can index 3rd person subjects but such forms use the inverse inflection.
2 The abbreviations used are: 1=first person, 2=second person, 3=third animate proximate person, 3’/OBV=third animate obviative person, 0=inanimate person, APPL=applicative, OBJ=object, PL=plural, PROX=proximate, SAP=speech act participant, SG=singular, SUBJ=subject, TA=transitive animate, TA+O=transitive animate verb taking a theme, TI=transitive inanimate.

agreement and therefore is indexed by the peripheral suffix -an ‘IN.PL’. What is interesting is the pattern shown by Menominee in (2b): the inanimate object is not accessible. Unlike (1b) where peripheral agreement is entirely missing, peripheral agreement does appear in (2b), but it indexes the animate subject, indicated by the peripheral suffix -ak ‘AN.PL’. Consequently, the inanimate object in (2b) no longer distinguishes number as it is not indexed by peripheral agreement.

(2) a. Ojibwe (Valentine 2001:312)
wwaabndaanaawaan
o-waabd-aa-naawaa-an
3-see-0.OBJ-3PL-IN.PL
‘They see them,IN.’

b. Menominee (Bloomfield 1962:159)
op-namok
po-nam-w-ak
put.in-0.OBJ-3-AN.PL
‘They,AN put it/them,IN in the pot.’

Plains Cree patterns with Menominee with peripheral agreement also indexing the 3rd person subject. The Plains Cree example is omitted here and will be shown in (24) in Section 4. Focusing on Menominee, the inanimate object is accessible in (1a) but becomes inaccessible in (2b). This shift suggests that object’s accessibility may be interfered with by the external argument because the former involves a SAP (Speech Act Participant, i.e. 1st or 2nd person) subject while the latter involves a third person subject.

The last key variation concerns TA+O verbs (Goddard 1979) in the Algonquian literature. As a side note, Algonquian monotransitive verbs are specified for two classes, TA (transitive animate) and TI (transitive inanimate), distinguished by the gender of the object. TA verbs take an animate object, whereas TI verbs take an inanimate object. TA+O verbs are ditransitive verbs taking two internal arguments: a goal and a theme. Peripheral agreement appears in TA+O verbs in all languages, but it differs in which of the two objects it indexes. Only in Unami Delaware (Unami hereafter) can the theme be indexed by peripheral agreement, e.g. -al ‘IN.PL’ in (3a). In the other three languages (Ojibwe, Menominee, Plains Cree), peripheral agreement indexes the goal. Because the exponent of the 3SG peripheral agreement is unmarked in these languages, to show the contrastive pattern, Meskwaki is exemplified because it has the overt realization for the 3SG peripheral suffix. As given in (3b), the peripheral suffix -a ‘AN.SG’ indexes the animate goal not the inanimate theme.

(3) a. Unami (Goddard 2020:104)
nami-lâ-na
na-mi-l-a--n-al
1-give-3.OBJ-1SG-IN.PL
‘I gave them to her/him.’

b. Meskwaki (Dahlstrom 2009:231)
nepye-tahwa-wa
ne-pye-tahw-a-w-a
1-bring-3.OBJ-1SG-AN.SG
‘I bought it for him/her.’

The above cross-linguistic patterns on whether the given object can be indexed by peripheral agreement is summarized in Table 1.

<table>
<thead>
<tr>
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<th>TI SAP on 0</th>
<th>TI 3 on 0</th>
<th>TA+O theme</th>
</tr>
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<tbody>
<tr>
<td>Unami</td>
<td>✓</td>
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<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Menominee</td>
<td>✓</td>
<td>✓</td>
<td>X</td>
</tr>
<tr>
<td>Plains Cree</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
In understanding Table 1, three patterns can be identified: pattern 1 is where the object is indexed by peripheral agreement (indicated by a check mark), pattern 2 is where peripheral agreement never appears on the verb (indicated by an X mark), and pattern 3 is where peripheral agreement occurs on the verb but does not index the given object (indicated by an X mark with gray shading). The cross-linguistic cline in Table 1 suggests that the availability of objects for peripheral agreement varies, conditioned by animacy, person of the external argument, and argument configuration. More variations will be discussed in detail in Section 3 and Section 4.

In Chomsky’s (2000, 2001) probe-goal framework, PROBES are the core functional categories (C, T, v) introduced in the syntax with a set of uninterpretable φ-features (uF) which need to be valued and GOALS are the elements bearing the corresponding interpretable features on the probe. In this system, Agree is a syntactic operation that establishes a configuration between the probe and the closest c-commanded goal. As summarized in (4), Agree operates in three steps. First, it probes downward and finds a nominal phrase that bears a matching F. Next, F is copied from the goal to the probe. And finally, when the uF of the probe is valued, the operation of Agree completes. Boiling down, in order for valuation in (4c) to succeed, two criteria need to be met: accessibility and feature-matching. Accessibility concerns whether a goal is visible for the probe and the feature-matching concerns whether the goal contains the matching features needed by the probe.

(4) Agree proceeds in 3 steps (Deal 2015:179)
   a. Search: a probe initiates a search for an element with matching features (a goal).
   b. Copying: Features are copied from the goal to the probe.
   c. Valuation: The probe’s features are valued, and the search is halted.

Several mechanisms exist in the literature and they overlap on tackling the issue of accessibility. Concretely, PHASES (Chomsky 2001, 2008) and HORIZONS (Keine 2019) both concern the permissible syntactic areas that a probe may search into but differ significantly regarding where the separating boundary is in the structure. On the other hand, the ACTIVITY CONDITION (AC, Chomsky 2000, 2001), as a completely different mechanism, attributes a goal’s availability to whether or not it has been previously valued by a probe. However, it is not clear which theoretical claim holds true in Algonquian and how much these mechanisms may interact with each other in the same language. The richness of the Algonquian data provides the perfect opportunity to channel the theoretically distinct claims through applications of genetically related yet grammatically divergent languages. The purpose of this paper thus is to pinpoint which mechanism plays a central role in conditioning the accessibility of the internal arguments for peripheral agreement in Algonquian languages, and additionally, to explore the interactions of these mechanisms, if any, within the same language family.

The paper is structured as follows: Section 2 provides the necessary background on Algonquian verb inflection and relevant theoretical claims. Section 3 argues that the model of HORIZONS is the deterministic mechanism explaining the TA+O patterns. Section 4 proposes that feature-matching coupled with the AC accounts for the variations seen in the transitive verbs. Section 3 briefly discusses that a post-syntactic operation may affect accessibility in some verb inflection in Menominee. Section 6 briefly concludes the paper.

2 Background

Section 2.1 introduces Algonquian morphosyntax needed to accurately describe and discuss the agreement patterns that follow. Section 2.2 sketches the theoretical mechanisms.
2.1 Algonquian morphosyntax

Algonquian languages are polysynthetic. Morphemes in the verb inflection in Algonquian are argued to correspond to functional heads in the syntax (see Halle and Marantz 1993 for Potawatomi). The template of a transitive verb is shown in the first line of (5a): the Root is followed by a derivational morpheme called FINAL (Bloomfield 1946:104-111) and three agreement morphemes, THEME SIGN (TS, Bloomfield 1946:98-102, underlined), CENTRAL ENDING (Goddard 1979:38), and PERIPHERAL ENDING (Goddard 1979:38, bolded) respectively. Since the prefix and the central suffix index the same argument, I will use central agreement to refer to this prefix-suffix combination. The second line of (5a) schematizes the morpheme-syntax correspondence. Following previous work, I regard finals as v (e.g. Brunening 2001:122; Brittain 2003), theme signs as v/Voice (e.g. Béjar and Rezac 2009; Oxford 2014), central agreement as Infl (e.g. Coon and Bale 2014; Oxford 2014), and peripheral agreement as C (Halle and Marantz 1993; Branigan and MacKenzie 1999). Note, Infl demonstrating the discontinuous morphology is explained by the post-syntactic operation – fission (Harbour 2008; Oxford 2019).

(5) a. pfx-Root-FINAL-T.S.-CENTRAL-PERIPHERAL
   … Root- v -Voice-Infl -C

b. o- waab -nd -aa -naawaa-an
3-v see -TI -0.OBJ -3PL -IN.PL
‘They see them.’

(Ojibwe, Valentine 2001:312)

The Ojibwe example (previous (2a)) in (5b) illustrates the realization of the template. The final -nt verbalizes the Root and categorizes the verb stem as TI requiring an inanimate object. The theme sign -aa is an object marker indicating the object is an inanimate 3rd person. Central agreement consists of the prefix o- indicating the person feature and the central suffix -naawaa specifing the number feature for the same argument. Lastly, the peripheral suffix -an provides the nominal features of the inanimate object. The clausal spine in (5) also applies to TA verbs which select an animate object. The Ojibwe TA example is omitted here but will be provided in (23b).

The argument configuration of monotransitive verbs (i.e. TA/TI) is schematized in (6). As described above, v verbalizes the Root. The functional head, Voice (Chomsky’s little v), has been argued to introduce the external argument (Hirose 2003; Béjar and Rezac 2009; Oxford 2014; Tollan and Oxford 2018). The precise base-position of the internal argument is not clear from the literature. Here I simplify by treating the object DP as occupying a vP-internal position and ignoring its exact base-position by leaving out the RootP. Note that some papers have treated the internal argument as in the RootP/VP (such as complement of VP in Brunening 2001:122 or specifier of VP in Lochbihler 2012:44) while Hirose (2003) has argued for Plains Cree that it could also be base-generated in the specifier of vP.

(6) Argument configuration: TA/TI verbs
C [ [v Infl [v Root DP_{v}] Voice [v DP_{v}] ... ]]]

Let us turn to TA+O verbs which commonly are derived by adding an applicative/benefactive final, -amaw, to a TI stem (Valentine 2001:463-465). Algonquian Appl corresponds to Pylkkänen (2008)’s high applicative (Quinn 2006; Lochbihler 2012), located below Voice and above v. The clausal spine of TA+O verbs is shown in (7a) which basically parallels that of TA/TI verbs with the additional ApplP projection. The example in (7b) provides an example from Plains Cree.
The argument configuration of TA+O verbs is schematized in (8): the subject is introduced by Voice, the goal is introduced by Appl, and the theme is inside the vP.

(8) Argument configuration: TA+O verbs

\[
\begin{array}{l}
C \left[ [\text{vP} \infl \left[ [\text{vP} \text{DP} \text{subj} \text{Voice} \left[ [\text{ApplP} \text{DP} \text{goal} \text{Appl} \left[ [\text{vP} \text{DP} \text{theme} \text{...}] \right] \right] \right] \right] \right] \right] \\
\end{array}
\]

2.2 Theoretical mechanisms of accessibility

In Chomsky’s Agree model, considering the accessibility of a goal for the probe, certain conditions need to be satisfied. First, the goal is required to follow a locality condition involving the notion of phase (Chomsky 2000, 2001). A phase is a structural domain in the derivation of a clause that gets sent off to PF and LF at the same time. CP and vP are assumed to be different phases. To qualify for accessibility, the goal needs to be in the same phase with the probe or at least at the edge of the next phase, which is known as Phase Impenetrability Condition (PIC, Chomsky 2000) and is stated in (9). Suppose a probe is in CP, a nominal will be inaccessible if it is lower than the edge of the next phase, namely, lower than Spec-vP.

(9) Phase Impenetrability Condition (Chomsky 2000:108)

In phase $\alpha$ with head $H$, the domain of $H$ is not accessible to operations outside $\alpha$, only $H$ and its edge are accessible to such operations.

In addition, in order to be counted as an eligible goal, a DP has to be active. The status of being an active DP is formally understood as not having its feature valued by previous probes. Chomsky’s (2000, 2001) Activity Condition (AC) therefore relates the accessibility of the argument to Case valuation. As stated in (10), only DPs whose Case feature is unvalued are “active” and may undergo A-movement. In contrast, once a DP has received Case, it becomes “inactive” and therefore unable to undergo further A-processes. The outcome of the AC is to prevent a probe from agreeing with a goal that some other probe has already agreed with.

(10) Activity Condition (Chomsky 2000:123, 127; Chomsky 2001:6)

DPs whose case feature is valued become inactive and thereby unable to undergo subsequent A-processes.

It is worth mentioning Baker’s (2008, 2011) Structural Condition on Person Agreement (SCOPA), as it is relevant to the question of accessibility. The SCOPA suggests that probes may differ in the locality requirement depending on what type of features they search for. Specifically, it implies that agreement in person-features cannot take place at a distance while agreement in gender- and number-features can. In this way, if the probe searches for person features, the goal must be strictly local. In contrast, if the probe searches for other $\phi$-features, such as number and gender, the goal need not follow such a strict configuration constraint. The SCOPA captures the overall behavior of peripheral agreement in indexing 3rd persons and never 1st or 2nd persons. However, as pointed out by den Dikken (2019:1), the SCOPA is merely an empirical observation on asymmetries of agreement but by itself it offers no explanation for these asymmetries. Situated
in Algonquian, the SCOPA does not offer insights on what kind of 3rd person object is accessible for C and what kind is not accessible for C.

Turning to Keine’s (2019) proposal, horizon is a boundary that delimits a probe’s search space. Keine (2019) examined the selective opacity phenomenon (asymmetries of syntactic operations to different kinds of clauses) in Hindi, arguing that the capacity of probes to access goals is determined by the height of the probe. Namely, the higher the structural position of a probe is in the clausal spine, the more structures are accessible to it. Implicationally, as shown in (11), the higher probe $\pi_2$ has wider search space, capable of accessing elements that are further down in the structure than the lower probe $\pi_1$.

(11) Search space of different probes (Keine 2019:36)

$$
\begin{array}{c}
\text{search space of } \pi_2 \\
\text{search space of } \pi_1 \\
\end{array}
$$

The horizon proposal at the first glimpse appears to resemble the idea of phases as both accounts prevent certain areas of the structure from being targeted by syntactic operations including Agree. The significant difference differentiating them is that the horizon model does not assume the delimiting edge to be a fixed boundary while the phase model does. The next section argues in favor of the horizon account over the phase account through the lens of variations in Algonquian peripheral agreement.

3 The edge: horizons vs phases

This section argues that horizon is the fundamental mechanism accounting for the cross-linguistic patterns, especially the variations of TA+O verbs. In what follows, Section 3.1 presents the data comparing the patterns of peripheral agreement in TA verbs with those of TA+O verbs. Then Section 3.2 proceeds to the conflict faced by the phase account. Section 3.3 will show that the conflict is resolved by the horizon account.

3.1 Comparison: TA vs. TA+O

Peripheral agreement shows the broadest cross-linguistic distribution in TA forms with an SAP subject (i.e. forms with a 1st/2nd person subject and a 3rd person animate object). As the 1s→3p examples illustrate in (12), the 3p object is invariantly indexed by the peripheral suffix -ak/-ag in all four languages.

(12) a. Unami (Goddard 1979:171)
   namí látak
   nə-mi'l-a'-w-ak
   1-give.to.TA-3.OBJ-1SG-AN.PL
   ‘I give to them,AN.’

b. Ojibwe (Valentine 2001:287)
   nwaabmaag
   n-waabm-aa-Ø-ag
   1-see.TA-3.OBJ-1SG-AN.PL
   ‘I see them,AN.’

c. Menominee (Bloomfield 1962:152)
   ne-na'wak
   ne-na'n-a'-w-ak
   1-fetch.TA-3.OBJ-1SG-AN.PL
   ‘I fetch them,AN.’

d. Plains Cree (Wolfart 1973:41)
   niwâpamâwak
   ni-wâpam-â-w-ak
   1-see.TA-3.OBJ-1SG-AN.PL
   ‘I see them,AN.’
However, a very different pattern is seen in TA+O forms. Previously, Section 1 has introduced that Unami Delaware is the only one among the four languages using peripheral agreement to index the theme, while for the other three languages, it is the goal that is indexed by peripheral agreement, cf. (3). The examples in (13) provide the complete supporting data for the TA+O patterns. Even though the peripheral suffixes are unmarked in (13b-d), its preceding central suffix (Ø in Ojibwe and -w in Menominee and Plains Cree) provides the evidence that peripheral agreement indexes the animate goal, because if the inanimate theme was indexed by peripheral agreement, the central suffix would have been -n, cf. (13a).

(13) a. Unami (Goddard 2020:104)
nami-lá·na
l-give.TA-3.OBJ-1SG-IN.PL
‘I gave them.IN to her/him.’

b. Ojibwe (Valentine 2001:658)
ngii-noojmotmawaa
gii-noojmot-amaw-aa-Ø-Ø
l-PAST-cure.TI-APPL-3.OBJ-1SG-AN.SG
3-child-3’
‘I cured his child.for him/her.’

c. Menominee (Bloomfield 1946:92)
newe·htamowa·w
ne·we·ht-amow-a-Ø
l-tell.TI-APPL-3.OBJ-1SG-AN.SG
‘I tell it for him/her.’

d. Plains Cree (Bloomfield 1946:92)
ni·wíhtamawâw
ni-wíht-amaw-â-Ø
l-tell.TI-APPL-3.OBJ-1SG-AN.SG
‘I tell it for him/her.’

Now adding the invariant TA pattern, the cross-linguistic cline of objects indexed by peripheral agreement is updated in Table 2. This “staircase” table shows that peripheral agreement with the object is most widespread in TA SAP forms and becomes progressively less widespread for the object of a TI SAP form, the object of a TI third person form, and the theme of a TA+O form.

<table>
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<td>✓</td>
<td>X</td>
</tr>
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<td>✓</td>
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</tr>
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<td>Plains Cree</td>
<td>✓</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

3.2 The problem of phases

Like mentioned previously, Keine’s (2019) proposal on horizons shares a similar character with Chomsky’s (2000, 2001) phases in that they both assume that certain areas of the structure are unavailable to the probe, but they fundamentally differ in what constitutes the delimiting edge. In the phase theory, CP and vP are phases (Chomsky 2000, 2001). Whether a nominal is accessible for the probe is crucially determined by the PIC (see (9)). The implication of the PIC is: the probe
in the CP phase could only access the nominals within the CP domain or domains that are not syntactically lower than Spec-vP.

Taking the schema in (14) for an illustration, if a probe is on C, the nominals, DP₁ and DP₂, are accessible for the probe because DP₁ is inside the CP-phase and DP₂ is at the phase edge. In contrast, DP₃ is inaccessible for the probe since it is below Spec-vP, too far to be accessed.

(14) Accessible areas of the Probe on C

Now relating to the issue of peripheral agreement, the PIC is compatible with the invariant pattern seen in the TA SAP forms. The Plains Cree example is repeated as (15a) and its schematic representation is provided in (15b). As introduced in Section 2, the theme sign (underlined) -â realizes Voice which hosts the probe to value the [uPerson] feature and is argued in Oxford (2014) to have the [EPP] feature triggering the object to land in the specifier of VoiceP. As shown in (15b), the object DP moves to Spec-VoiceP after its [Person] feature is valued by Voice. Ignoring the Agree operation on Infl, at this point, the 3PL object is accessible for C in that it is in Spec-VoiceP, at the edge of the phase. Bear in mind that Chomsky’s little v corresponds to Voice in Algonquian.

(15) a. …Root -Voice-Infl -C
    ni-wâpam-â -w -ak
    1-see.TA -3.OBJ -1SG-AN.PL
    ‘I see them.AN.’

    b. C [vP Infl [vP DP subj DP oov (Voice [uPerson v DP oov ... ])]

The phase-based analysis is also compatible with the TA+O forms in the three languages where peripheral agreement indexes the goal rather than the theme, i.e. (13b-d). The Plains Cree example is repeated in (16a). As schematized in (16b), the inability of C accessing the theme is well handled by the PIC because the theme is in the domain that the C probe is unable to penetrate. In contrast, the goal is in a configuration accessible for C because it has been moved to Spec-VoiceP after being valued by Voice.

(16) a. …Root-Appl -Voice-Infl -C
    ni-whtamaw-â -w -Ø
    1-tell.TI-APPL-3.OBJ-1SG-AN.SG
    ‘I tell it for him/her.’

    b. C [vP Infl [vP DP subj DP oov (Voice [uPerson v DP oov ... ])]

        Appl [uPerson v DP oov ... ]]

However, the TA+O pattern in Unami is seriously problematic to the PIC because peripheral agreement apparently indexes the theme rather than the goal, recall (13a). The problem is as follows: the schema in (16b) shows that the theme is in the area that is impossible for C to access given that Agree is not supposed to go past the phase edge. The Unami pattern clearly challenges the notion of phases. After all, the edge of the phase, Spec-VoiceP, is no longer a boundary that delimits the search of C.

3.3 The flexible solution: Horizons

The account of horizons excels over the PIC in that it nicely captures the conflict arising from the Unami TA+O form. In addition, the empirical observations regarding different Algonquian probes’ search capacity are profoundly in line with a horizon theory. The observations are summarized in (17) and they essentially reflect the implication of horizons: the higher the probe is located in the structure, the more elements are accessible to it.

(17) Overall empirical patterns of Algonquian probes
- Voice indexes the primary object (the object of TA/TI, the goal of TA+O) only
- Infl indexes the subject and the primary object (in the inverse)
- C can index the subject, the primary object, and the secondary object (the theme of TA+O)

The elements accessible for various Algonquian probes are exactly what the horizons entail about the search space of probes in accordance to their syntactic height. Previously in (11), the higher probe $\pi_2$ has a wider search space than the lower probe $\pi_1$. Extending Keine’s model to Algonquian argument configuration, the search space of Voice is confined to areas above $vP$. While C is syntactically higher, its search space is then assumed to be wider than that of Voice, implying that it is capable of accessing elements that Voice cannot, namely, the $vP$-internal theme here.

(18) Search space of different probes (based on (11))

I return now to the Unami TA+O form, repeated here as (19a). The derivation for this example is shown in (19b). Starting from the lowest probe, Voice targets the 3SG goal rather than the 0PL theme not only because the inanimate theme lacks the [Person] feature (see their feature representations in (21)), but more importantly, Voice cannot search into the element past the $vP$. After the person feature of the 3SG goal is copied to Voice, it moves to Spec-VoiceP because of the [EPP] requirement. Turning to Infl, it is argued to value $[uPart, uPers]$ (Oxford 2014). For central agreement, even though the subject and the goal are equally close to Infl, the 1st person DP is targeted simply because it better matches the articulated Infl-probe for the [Part] feature than the 3rd person DP. At this point, we can see that the probes on Voice and Infl never reach past $vP$, suggesting that $vP$ may be a horizon delimiting the search capacity of Voice/Infl.

(19) a. ...Root-Appl-Voice-Infl -C
    na-mi-l -a- n -al
    1-give.TA -3.OBJ -1SG-IN.0PL
    ‘I gave them.IN to her/him.’
As laid out in (18), the search space of the highest probe on C is wider than the lower probes, so that more structures are accessible for C. This explains why the inanimate theme can be indexed by peripheral agreement in Unami in (19). Note that the 3rd person goal is also accessible for C. The factors that determine the outcome of agreement on C are taken up in more detail in the next section.

Keine’s model is flexible as horizons are probe specific. In Unami, vP is a horizon for Voice/Infl but not for C. Another flexibility of horizons is showing micro-parameters from these closely related languages. Unlike the C-probe in Unami which is not bound by any areas, vP in the other three languages forms a horizon for C, resulting in the unavailability of the theme for peripheral agreement in these languages.

The PIC cited up to this point is known as the Strong PIC. Chomsky (2001:14) has proposed a weak version delaying Spell-Out of a phase complement until the next highest phase head is merged. The Weak PIC essentially bestows one extra phase length to play with and therefore seems promising to explain the problematic TA+O patterns. However, the Weak PIC still is not a favorable analysis because of conflicts dealing with different probes in Unami Delaware. Simply put, Infl cannot index the theme, therefore we need to assume that its domain ends with the edge of the following VoiceP (i.e. the Strong PIC). Whereas to explain why C can index a theme, we must assume that its domain continues on past the edge of VoiceP (i.e. the Weak PIC). But the PIC cannot be both strong and weak at the same time, instead, it has to be one or the other. Therefore, the conflicting demands of Infl and C make it impossible to use phases. Alternatively, as argued in length in this subsection, horizons offer consistent and systematic explanations for peripheral agreement in patterns of TA+O as well as the overall locality-height connection of various probes in Algonquian.

4 Relativization of probes and the Activity Condition

This section investigates the variations of the primary objects: the object of TI SAP forms and that of TA/TI third person forms. As introduced in Section 1, accessibility explains whether a nominal is visible for the probe, but it does not necessarily determine if the nominal will be valued eventually. Therefore, beyond the criterion of accessibility, Agree has to further consider how DPs value probes. In the remainder of this section, I present the analysis for distinct languages, arguing that the different patterns reflect two micro-parameters: one on relativization of the probe features and the other on the Activity Condition (AC).

As a recap of the peripheral agreement cline, previous Table 2 is repeated as Table 3.

<table>
<thead>
<tr>
<th></th>
<th>TA SAP on 3</th>
<th>TI SAP on 0</th>
<th>TI/TA 3 on 0/3'</th>
<th>TA+O theme</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unami</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Ojibwe</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Menominee</td>
<td>✓</td>
<td>✓</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Plains Cree</td>
<td>✓</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
Note the third person forms also include TA verbs in which the object is an obviative person (3') which makes reference to a non-topical animate person. The examples will be given in (23).

The TI SAP pattern diverges in two ways: the inanimate object is indexed by peripheral agreement in languages like Unami (20a), Ojibwe (20b), and Menominee (20c), while it is not indexed by peripheral agreement at all in Plains Cree as in (20d).

(20) a. Unami (Goddard 1979:171)
    mponamâna
    na-pan-am-an-al
    1-look.at.TI-0.OBJ-1SG-IN.PL
    ‘I look at them,IN.’
    b. Ojibwe (Valentine 2001:287)
    nwaabndaanan
    n-waabd-aa-n-an
    1-see.TI-0.OBJ-1SG-IN.PL
    ‘I see them,IN.’
    c. Menominee (Bloomfield 1962:158)
    nepo ’nan
    ne-po’n-a-n-an
    1-put.in.TI-0.OBJ-1SG-IN.PL
    ‘I put them,IN in the pot.’
    d. Plains Cree (Wolfart 1973:41)
    niwâpahtên
    ni-wâpaht-ê-n
    1-see.TI-0.OBJ-1SG
    ‘I see it/them,IN.’

The feature specification of Algonquian persons in the nominal spine is given in (21). As listed below, all persons have a πP-projection but third persons (3, 3’, 0) have an extra DP-projection above the πP (Déchaine and Wiltschko 2002). Following Harley and Ritter’s (2002) feature geometry, the SAP person features are more articulated as [Part, Pers]. The person features of the 3rd animate (proximate) person is less articulated as [Pers, Prox] (Lochbihler 2012). The 3rd obviative person is even less as [Pers], and the inanimate person simply lacks person features with only ϕP-DP projections in the spine.

(21) Feature specification of Algonquian nominal spines (based on Harley and Ritter 2002; Déchaine and Wiltschko 2002; Lochbihler 2012)

a. 2: [πP Person, Participant, Addressee]  
   2nd person
b. 1: [πP Person, Participant]  
   1st person
c. 3: [DP [πP Person, Proximate]]  
   proximate
d. 3': [DP [πP Person]]  
   obviative
e. 0: [DP [πP]]  
   inanimate

Following Oxford (2015), the probe on C in Plains Cree is more specified as [uD, uProx]. As schematized in (22a), peripheral agreement in a TA SAP form indexes the 3PL object because it perfectly matches the [D, Prox] features needed by the probe. C does not value the 1st person DP since it does not satisfy the [D] feature. As for the Plains Cree TI SAP form, peripheral agreement is missing because again C wishes to value [uD, uProx]. As illustrated in (22b), neither arguments contain the matching features since the 1SG subject lacks [D] and the 0 object lacks [Prox]. As a result, C is not valued at all giving rise to absence of peripheral agreement.

(22) a. Plains Cree: 1SG→3PL: I see them

    ni-wâpaht-ê-n-ak pro pro
    1-see-3.OBJ-1SG-AN.PL 1SG 3PL

    ↓ [D, PROX]
b. Plains Cree: 1SG→0PL: I see it/them

ni-wâpaht-ê-n pro pro
1-see-3.OBJ-1SG 1SG 0PL

As for the other three languages, peripheral agreement capable of indexing the objects of either genders is accounted by a flat probe (cf. Oxford 2015). C is to value the \([uD, uDef]\) feature in these languages. All 3rd persons match the probe feature, recall (21), thus are targeted and successfully spelled out. For space reasons, the schematized representations are omitted.

In third person forms, starting with 'TA verbs, taking 3PL→3' (proximate subject, obviative object) in (23a-b) for instance, peripheral agreement indexes the obviative object in Unami (-al) and Ojibwe (-an). However, Menominee joins with Plains Cree in failing to index the obviative object via peripheral agreement, exemplified in (23c-d). Peripheral agreement does appear on the verb in these forms, but it indexes the subject (-ak) rather than the obviative object.

(23) a. Unami (Goddard 1979:171)

mwi'la'wâawâč
w-mi'l-a-wâ-w-al
3-give.TA-3.OBJ-3PL-3'
'They\_PROX look at her/them\_OBJ.'

b. Ojibwe (Valentine 2001:287)

wwaabmaawaan
w-waabm-aa-waa-an
3-see.TA-3.OBJ-3PL-3'
'They\_PROX look at her/them\_OBJ.'

c. Menominee (Bloomfield 1962:159)

na'ne-wâk
na'ne-a'-w-ak
fetch.TA-3.OBJ-3-AN.PL
'They\_PROX fetch her/them\_OBJ.'

d. Plains Cree (Wolfart 1973:41)

wâpahtamwak
wâpam-â-w-ak
see.TA-3.OBJ-3-AN.PL
'They\_PROX see her/them\_OBJ.'

TI third person forms share the same pattern as TA third person forms: peripheral agreement in Unami and Ojibwe indexes the object as in (24a-b). Again, in Menominee and Cree, the peripheral suffix does not index the object but the subject as in (24c-d). Consequently, the inanimate object ends up with its number distinction neutralized.

(24) a. Unami (Goddard 1979:179)

pwnamane-yâ-i
w-pon-am-ane-wa-w-i-l
3-look.at.TI-0.OBJ-3PL-IN.PL
'They\_AN look at them\_IN.'

b. Ojibwe (Valentine 2001:312)

wwaabndaanaawaan
o-waabnd-aa-naawa-an
3-see.TI-0.OBJ-3PL-IN.PL
'They\_AN see them\_IN.'

c. Menominee (Bloomfield 1962:159)

po'namok
po'nam-â-w-ak
put.in.TI-0.OBJ-3-AN.PL
'They\_AN put it/them\_IN in the pot.'

d. Plains Cree (Wolfart 1973:43)

wâpahtamwak
wâpaht-am-w-ak
see.TI-0.OBJ-3-AN.PL
'They\_AN see it/them\_IN.'

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3 The probe on C in Unami Delaware is specified as \([uD, uDef]\) (Oxford 2015) in that peripheral agreement indexes the object only when it is definite. If the object is indefinite, it is not indexed by peripheral agreement. This paper omits the details for Unami due to page limit.
In terms of third person forms, using Ojibwe as an example, both the external argument and the internal argument match the [D] feature required by the flat probe. It is the AC that explains why the probe on C targets the internal argument rather than the external argument. Because the 3rd person subject has already been valued by the previous probe on Infl, it would become inactive and inaccessible to the subsequent probe on C. In contrast, the object is considered active and therefore is accessible for C. The Ojibwe 3PL→3′ example is schematized in (25), in which central agreement realizes Infl valuing the 3PL DP, indicated by the prefix w- and the suffix -waa combination. Opposely, the 3′ DP has not been valued by Infl and thus is accessible for C.

(25) Ojibwe: 3PL→3′: They_PROX look at her/them_OBJ

The AC not only explains the third person forms in Unami and Ojibwe TA/TI verbs but also plays an important role for Unami TA+O verbs when both the goal and the theme are third persons. The reason why the theme is preferred by peripheral agreement over the goal in Unami in (19) is tied to the AC in that the theme is not valued by any probes while the goal was once valued by Voice.4

However, this account cannot apply in Plains Cree and Menominee where the AC is clearly violated with peripheral agreement indexing the subject rather than the object, i.e. (23c-d) and (24c-d). The Plains Cree pattern is easy to explain as the inanimate/obviative DPs do not have the [Prox] feature matching with the probe. On the other hand, the 3PL subject DP satisfies the [uProx] feature needed by C therefore is indexed by peripheral agreement. The probe on C in Plains Cree targeting the subject DP implies that the AC is violable. Similarly, for Menominee, the AC is also violable. Although the subject and the object both satisfy the [uD] feature of the probe, the 3PL subject is indexed by peripheral agreement in (23c) and (24c), suggesting that C in Menominee prefers the DP that is syntactically closer to the probe.

Overall, the variations of the TA/TI third person forms demonstrate two micro-parameters across four Algonquian languages. The first micro-parameter arises from relativization of the probes. Namely, C is more specified in Plains Cree as [uD, uProx] (and in Unami as [uD, uDef]) but is flat in Ojibwe and Menominee as [uD]. The second micro-parameter concerns the AC: the AC in Unami and Ojibwe is inviolable but in Menominee and Plains Cree is violable.

5 Impoverishment

This section briefly shows that the variation of peripheral agreement may not always result from syntax (horizons, feature-matching, the AC) but can be a consequence of morphology. To show this argument, I focus on an unexpected form from Menominee in which peripheral agreement is blocked in certain TI SAP forms. We have seen that inanimate objects are accessible for C in Menominee’s TI SAP forms, previous (20c) is repeated as (26a). However, the pattern that the inanimate object is available for C in fact holds only for forms in which the SAP subject is singular. If the SAP subject is plural, as in (26b), peripheral agreement disappears, again with the number of the inanimate object being neutralized.

4 The object DP is considered active for C in TA/TI forms as its number/gender features are not deleted. In contrast, the subject DP is inactive as its person and number features have been used up by Infl: see (25), w- discharges the person feature and -waa discharges the number feature.
(26) a. nepo'na'n (Bloomfield 1962:158)
   ne-p'o-n-a'-n-an  ne-p'o-n-e'-menaw
   1-put.in.TI-0.OBJ-1SG-IN.PL  1-put.in.TI-0.OBJ-1PL
   'I put them in the pot.'

   b. nepo'n-menaw (Ibid. 159)
   ne-p'o-n-e'-menaw
   1-put.in.TI-0.OBJ-1PL
   'We put it/them in the pot.'

I follow Halle and Marantz's (1993) proposal to attribute this particular disappearance of peripheral agreement to the post-syntactic adjustment – IMPOVERISHMENT. Impoverishment is a rule that deletes morphosyntactic features in a particular context. The effect of impoverishment is that, once the features are deleted, vocabulary items associated with the deleted features cannot be inserted. Applying it to Menominee, the vocabulary item, -menaw ‘1PL’ blocks peripheral agreement, as formulated in the rule in (27), because it deletes the features valued by C. Regarding the disappearance of peripheral agreement in (26b), the 0PL object was agreed with by C in the narrow syntax, but feature deletion in C leads to the failure of vocabulary insertion for -an.

(27) C → Ø / -menaw __

6 Conclusion

In this paper, I explore the conditioning mechanisms deriving the cline of peripheral agreement in terms of its ability to index objects in Unami Delaware, Ojibwe, Menominee, and Plains Cree. To disentangle the challenge faced by the PIC since the probe is able to target the theme below the edge of the lower phase, I argue in support of horizons based on two reasons. First, it gives flexibility to allow for probe-specific boundaries in accessing elements in the structure. Second, it captures the profound locality-height connection between probes’ search space and their syntactic height in the language with the complex agreement system. This paper thus confirms that locality is fundamentally constrained by horizons rather than phases. As for the divergences seen in TA/TI forms, relativization of the probes works hand-in-hand with the Activity Condition explaining why inanimate/obviative DPs fail to show peripheral agreement in Plains Cree and Menominee. Lastly, the blocking effect triggered by the plural SAP actor in Menominee results from impoverishment, specifically, due to vocabulary insertion of -menaw. To conclude, the rich cross-linguistic patterns in Algonquian peripheral agreement help to clarify the interactions of distinct theoretical claims regarding accessibility, that is, a given DP’s accessibility for the probe reflects both syntactic and morphological mechanisms.

References


