Probe competition as a source of ergative person splits[*]

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1. Introduction

This paper proposes that person-based split ergativity can arise through PROBE COMPETITION. The term "competition" is used metaphorically to refer to structures in which a single nominal is the optimal goal for two distinct probes. I will show that when such structures occur in the Algonquian languages, only the agreement morphology that tracks the higher probe is spelled out. In a metaphorical sense, the higher probe "wins" the competition.

The competition effect will be illustrated by comparing related but distinct agreement patterns in three Algonquian languages: Ojibwe, Cree, and Delaware. In Ojibwe, probe competition gives rise to an agreement alternation that presents as canonical person-based split ergativity. However, minor alterations to the features of the higher probe in Cree and Delaware give rise to slightly different agreement alternations that are not canonically split-ergative. The probe competition approach allows a unified analysis of all three agreement systems, which is desirable in light of the extensive similarities between the systems. I conclude that the apparent split-ergative agreement pattern in Ojibwe is simply one particular instantiation of a more general probe interaction effect.

Section 2 of the paper provides empirical and analytical background on Algonquian agreement. Section 3 shows how the probe competition approach allows us to understand the variation in agreement patterns in Ojibwe, Cree, and Delaware.

2. Background: Algonquian agreement

This section describes the agreement morphology that appears in the patterns that will be examined in this paper (§2.1) and sets out an analytical framework for understanding the overall patterning of Algonquian agreement (§2.2).

2.1 Agreement morphology

This paper focuses on two agreement slots in the Independent Indicative verb form of the Algonquian languages (Bloomfield 1946; Goddard 1967, 2007; Pentland 1999): the PERSON PREFIX and the PERIPHERAL SUFFIX, which occur at the left and right edges of the inflected verb. These slots are shown in bold in the Proto-Algonquian (PA) verb form in (1).[1] (In this paper, asterisks indicate reconstructed PA forms, not ungrammaticality.)

(1) *newa·pama·wena·naki*
    ne- wa·pam -a· -w -ena·n **-aki**
    1- see   -DIR -3 -1P **-3P**
    'We see them.' (1P—3P)

The prefix marks person (*ne-* 1, *ke-* 2, *we-* 3). The suffix indexes 3rd-person arguments only; this property is thought to reflect the diachronic origin of the suffix as a definite article (Goddard 2007:265). Three forms of the suffix are relevant to this paper: 3rd-person proximate singular *-a* (3s), 3rd-person proximate plural *-aki* (3P), and 3rd-person obviative *-ari* (3′).[2] When a transitive clause contains two animate 3rd-person arguments, only one can receive proximate marking; the other must receive obviative marking.

    This paper considers data from three Algonquian languages: Ojibwe (Valentine 2001), Cree (Wolfart 1973), and Delaware (Goddard 1979). The forms of the person prefix and peripheral suffix in these languages are shown in (2). All three languages have the same inventory of contrasts; the minor differences in form are due to regular sound change.

(2) *Same inventory of agreement markers in each language*

		Person prefix					Peripheral suffix			
	PA	Ojibwe	Cree	Delaware			PA	Ojibwe	Cree	Delaware
1	*ne-*	ni-	ni-	nə-		3s	*-a*	-Ø	-Ø	-Ø
2	*ke-*	gi-	ki-	kə-		3P	*-aki*	-ag	-ak	-ak
3	*we-*	o-	o-	wə-		3′	*-ari*	-an	-a	-al

Since final vowel deletion has caused the proximate singular (3s) form of the peripheral suffix to be null in Ojibwe, Cree, and Delaware, it is clearer to use the morphologically overt proximate plural (3P) form in the display of agreement patterns. To see the 3s form that corresponds to any 3P form given in this paper, simply replace the 3P suffix with -Ø.

    What is interesting about the morphology in (2) is that although the inventories of agreement markers are identical, the distribution of the markers differs in the three languages. In particular, there is variation in whether certain 3rd-person arguments get indexed by a

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[1] 1, 2, 3 = 1st, 2nd, 3rd person; 3′ = obviative 3rd person; DEF = definite; DIR = direct; IND = indefinite; INV = inverse; s = singular; SUBJ = subject; OBJ = object; P = plural.
[2] PA *-ari* in fact marked obviative *singular* (3′s), contrasting with obviative plural *-ahi* (3′P). In the languages studied in this paper, this contrast has been lost, making the reflex of *-ari* number-neutral (3′).

3rd-person prefix or a 3rd-person suffix. This variation is the central concern of the paper and will be dealt with in section 3. Before considering the variation, however, it is necessary to set out some assumptions about the analysis of Algonquian agreement.

2.2 Analysis of Algonquian agreement

This section summarizes the analysis of Algonquian agreement developed in Oxford 2014. I propose that the features marked on the prefix and suffix are determined by two phi-agreement probes. The prefix reflects a probe on $Infl^0$ that targets whichever argument has a richer person feature. The suffix reflects a probe on T^0 that targets a 3rd-person DP.

The analysis makes no reference to grammatical functions such as subject and object because these functions play almost no role in Algonquian agreement. For example, in the Proto-Algonquian form in (1) above, repeated in (3a), the prefix indexes the subject, but in (3b), the prefix instead indexes the object. We thus cannot say that the prefix is dedicated to a particular grammatical function. Instead, the correct generalization is that the prefix always indexes whichever argument ranks higher on the person hierarchy $2 > 1 > 3$. The grammatical function of this argument is indicated by a distinct morpheme known as the THEME SIGN: the DIRECT theme sign *-a·* in (3a) indicates that the prefix indexes the subject while the INVERSE theme sign *-ekw* in (3b) indicates that the prefix indexes the object.

(3) a. *newa·pama·wena·naki*
         ne- wa·pam -a· -w -ena·n -aki
         1- see   -DIR -3 -1P   -3P
         '**We** see them.' (**1P**—3P)

     b. *newa·pamekwena·naki*
         ne- wa·pam -ekw -w -ena·n -aki
         1- see   -INV -3 -1P   -3P
         'They see **us**.' (3P—**1P**)

The forms in (3) make it clear that the person prefix and peripheral suffix alone are not the full story on Algonquian agreement: the two suffixes that follow the theme sign, known as the FORMATIVE and CENTRAL SUFFIX (Goddard 2007), are also agreement markers, and the theme sign itself functions as part of the agreement system. Despite the abundance of morphology, however, the system is not as complex as it may first appear, as the agreement markers fall into two sets. One set, consisting of the prefix, theme sign, and central suffix, indexes the argument that ranks higher on the person hierarchy (=1P in (3)). The other set, consisting of the formative and peripheral suffix, indexes a 3rd-person argument (=3P in (3)). This systematic shared patterning means that although there are five separate agreement slots, an analysis only really needs to recognize two separate instances of agreement.

Such an analysis is developed in Oxford 2014 and sketched in (4) for the form in (3a). I propose that the theme sign is $Infl^0$ and the formative is T^0 and that these two heads each carry a probe that underlies one of the sets of agreement.[3] $Infl^0$ carries the articulated person probe [uPerson, uProximate, uParticipant] (Bejar & Rezac 2009, Lochbihler 2012), which targets whichever argument has the richer person specification. T^0 carries the probe [uD], which targets a 3rd-person argument, on the assumption that only 3rd-person arguments

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[3]I follow Bruening (2005) in analyzing the theme sign as $Infl^0$. Since the theme sign functions solely as part of the agreement system, with no obvious semantic content, another possible label is Agr^0 (or simply F^0). I analyze the formative as T^0 because it marks a tense contrast in Plains Cree (Oxford 2014:199–203).

have a DP layer in Algonquian (cf. van Gelderen 2013 for English).[4] The remaining agreement markers are dependent on these two probes: the person prefix and central suffix track the goal of $Infl^0$ while the peripheral suffix tracks the goal of T^0.[5]

(4) *Analysis of *newa·pama·wena·naki 'we see them' (1P—3P)*

Slot	Person prefix	Verb stem	Theme sign	Formative	Central suffix	Peripheral suffix
Form	*ne-* 1	*wa·pam* see	*-a·* DIR	*-w* 3	*-ena·n* 1P	*-aki* 3P
Analysis	Tracks $Infl^0$		**= Infl⁰** **[*u*Pers, *u*Prox, *u*Part]** (→1P SUBJ)	**= T⁰** **[*u*D]** (→3P OBJ)	Tracks $Infl^0$	Tracks T^0

The analysis in (4) accounts for the patterning of agreement into two sets but it does not explain why these sets are not tied to particular grammatical functions, as illustrated in (3) above. Why is $Infl^0$ able to target either the subject or the object rather than being bound by locality to target only the subject? I propose that an earlier step of person agreement on $Voice^0$ triggers A-movement of the object to Spec-VoiceP, making the subject and object equidistant with respect to all further grammatical operations (cf. Chomsky 1995, 2000; Richards 2001:102; Hornstein 2009:43–44), as shown in (5). With locality out of the picture, the probe is free to target whichever argument best matches its uninterpretable features.

(5)

Specifiers of VoiceP are equidistant from higher heads (Oxford 2014:101–5)
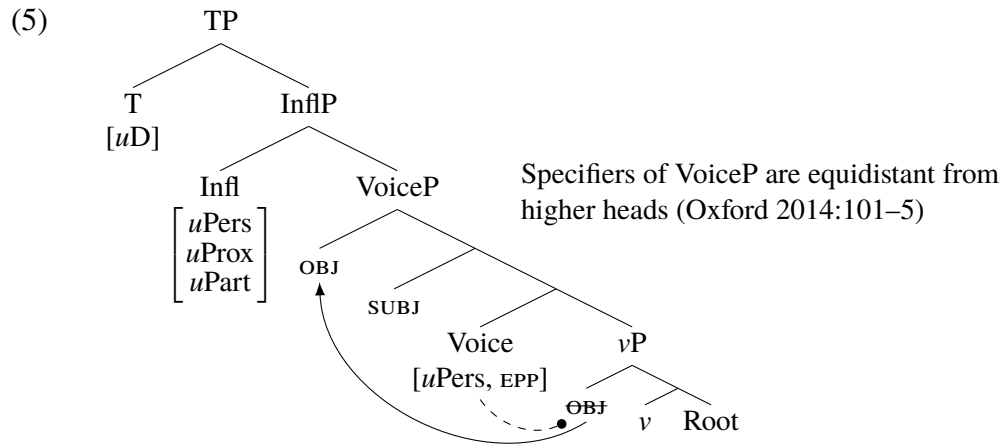
In summary, the analysis is as follows. There is an articulated person probe on $Infl^0$ that targets the highest-ranked person and a D probe on T^0 that targets 3rd-person only. Because the two arguments are equidistant specifiers of VoiceP, either probe can target either argument. Agreement is spelled out on the probe-bearing heads $Infl^0$ and T^0 and also on additional dependent agreement markers that systematically track a particular probe: the person prefix tracks the goal of $Infl^0$ while the peripheral suffix tracks the goal of T^0.

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[4] I analyze 3rd persons as [DP [PersP …]] and 1st/2nd persons as [PersP …]. No DP layer is needed on 1st/2nd persons because their [Participant] feature is sufficient to link them to the discourse.

[5] The dependent agreement may be understood as DM-style Agr nodes or as clitic doubling (or both).

For the purposes of this paper, the upshot of the analysis is that we can use the person prefix and peripheral suffix as a shortcut for identifying the arguments targeted by Infl^0 and T^0 respectively. It is thus possible to examine the patterning of Algonquian agreement without having to keep track of five separate morphemes. I will accordingly show only the prefix and suffix in the agreement data presented in section 3. Abstracting away from the surface complexity in this way makes the agreement patterns far easier to take in.

3. Three agreement patterns

This section introduces the variation in agreement (§3.1) and presents an analysis of the varying agreement patterns in Ojibwe (§3.2), Cree (§3.3), and Delaware (§3.4).

3.1 Variation in agreement

To illustrate the variation in agreement, I will compare two sets of forms in each language: (i) intransitive forms with 1st/2nd/3rd-person subjects, and (ii) transitive direct forms with 1st/2nd/3rd-person subjects and 3rd-person objects. For concreteness, (6) shows how such forms would be glossed for the verb stems meaning 'sleep' and 'see'.[6]

(6)

	Intransitive		Transitive
1	'I sleep'	1—3	'I see them'
2	'you sleep'	2—3	'you see them'
3	'they sleep'	3—3′	'they (prox.) see him/her/them (obv.)'

This paper examines the patterning of these forms in three languages that, together, are representative of most of the Algonquian family. The Ojibwe pattern also occurs in Shawnee, Passamaquoddy, and Penobscot. The Cree pattern also occurs in Miami-Illinois, Meskwaki, Menominee, and Arapaho. The Delaware pattern also occurs in Mahican, Massachusett, and Western Abenaki. Of the major Algonquian languages, only Blackfoot, Cheyenne, and Mi'gmaq do not neatly display one of the three patterns.

A preview of the patterns is shown abstractly in (7), where a boxed "S" indicates the location of subject agreement and "O" indicates the location of object agreement. There are two types of variation: (i) whether the subject is indexed by the prefix or the suffix, and (ii) whether the object is indexed at all. The following sections examine each language in detail.

(7)

	Intransitive (all languages)		Ojibwe transitive		Cree transitive		Delaware transitive DEF OBJ		INDEF OBJ
1	S -V	1–3	S -V-O	1–3	S -V -O	1–3	S -V-O	1–3	S -V
2	S -V	2–3	S -V-O	2–3	S -V -O	2–3	S -V-O	2–3	S -V
3	V- S	3–3′	S -V-O	3–3′	V- S	3–3′	S -V-O	3–3′	V- S

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[6]As mentioned above (§ 2.1), I use plural rather than singular for proximate 3rd-person arguments because the 3s form of the peripheral suffix is null in Ojibwe, Cree, and Delaware. Beyond making the morphology more visible, this choice has no effect on the agreement pattern; 3s forms pattern the same as 3P forms.

3.2 The Ojibwe agreement pattern

The Ojibwe pattern is shown in (8) (Valentine 2001); boxes highlight subject agreement.

(8)

	Intransitive			Transitive		
1	*ni-* 1	V		1—3	*ni-* 1	V	*-ag* 3P
2	*gi-* 2	V		2—3	*gi-* 2	V	*-ag* 3P
3		V	*-ag* 3P	3—3′	*o-* 3	V	*-an* 3′
	1/2SUBJ	3SUBJ			SUBJ	OBJ

When the subject is 1st/2nd-person (the first two rows in (8)), the agreement pattern is nominative/accusative: the prefix indexes subjects and the suffix indexes objects. But when the subject is 3rd-person (the final row in (8)), the agreement pattern is ergative/absolutive: the prefix indexes transitive subjects and the suffix indexes transitive objects and intransitive subjects. Ojibwe thus provides a canonical example of a person-based split-ergative agreement pattern. (The same observation is made by Bruening (2007) for Passamaquoddy, which shares the Ojibwe agreement pattern.)

The key to an analysis of the Ojibwe pattern is the absence of locality effects in Algonquian agreement: either probe can, in principle, target either argument (§2.2). Rather than locality, it is pure feature matching that determines the alignment of agreement: the prefix probe (Infl^0) targets the argument with the most richly-specified person feature, giving the descriptive hierarchy $2 > 1 > 3 > 3'$, while the suffix probe (T^0) targets a 3rd-person DP.[7]

The **transitive** forms in (8) all contain sufficient arguments to satisfy both probes. The prefix probe targets the argument that ranks highest on the person hierarchy, which in these forms is consistently the subject. The remaining argument, the object, is a 3rd-person DP, so it is a suitable target for the suffix probe. The outcome, schematized in (9), is a uniform pattern in which the prefix indexes the subject and the suffix indexes the object.

(9)

	1—3			2—3			3—3′	
	Prefix	Suffix		Prefix	Suffix		Prefix	Suffix
	[*u*Pers/Prox/Part]	[*u*D]		[*u*Pers/Prox/Part]	[*u*D]		[*u*Pers/Prox/Part]	[*u*D]
	●	●		●	●		●	●
	1	3		2	3		3	3′

The **1st/2nd-person intransitive** forms in (8) are only slightly less straightforward. The prefix probe targets the argument that ranks highest on the person hierarchy, which in these forms is the *only* argument, the 1st/2nd-person subject. The suffix probe, which is specified as [*u*D], targets a 3rd-person DP. However, no such goal is available here, as 1st/2nd persons

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[7]Although the prefix and suffix are not probes (§2.2), I will, for simplicity, refer to Infl^0 and T^0 as the "prefix probe" and "suffix probe" respectively, meaning the probes whose features are tracked by the prefix/suffix.

do not have a DP layer (§2.2). Suffix agreement therefore fails to occur. The outcome is that the prefix indexes the subject and the suffix simply does not appear, as schematized in (10).

(10)

	Prefix	Suffix		Prefix	Suffix
	[uPers/Prox/Part]	[uD]		[uPers/Prox/Part]	[uD]

  ⋮   ×   ⋮   ×
  •   •
  1   2
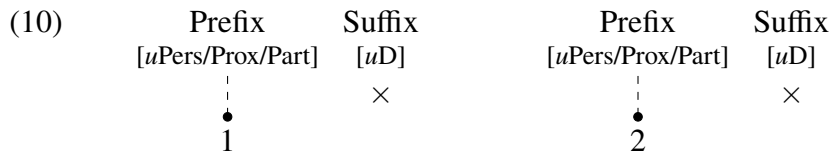
The **3rd-person intransitive** form in (8) is the only form in which the subject is indexed by the suffix rather than the prefix. Importantly, it is also the only form in which both probes "compete" to agree with the same argument. The prefix probe targets the argument that ranks highest on the person hierarchy, which in this form is the 3rd-person subject (the *only* argument). The suffix probe targets a 3rd-person DP, which in this form is again the 3rd-person subject. We thus expect both probes to agree with the subject, as in (11).

(11)

	Prefix	Suffix
	[uPers/Prox/Part]	[uD]

  • •
  3
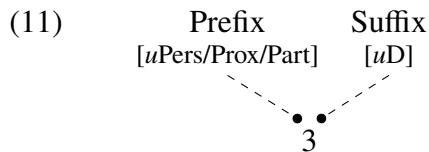
The agreement in (11) suggests that the subject should be indexed by both the prefix and the suffix. However, this is not the case: as we see in (8) above, only the suffix appears. This outcome is the source of my "probe competition" metaphor: when the prefix and suffix "compete" to agree with a particular 3rd-person subject DP, as in (11), it is the suffix that "wins" the competition and gets to index the DP. The surface result of this competition is that a 3rd-person intransitive subject ends up being indexed by morphology (i.e. the suffix) that otherwise indexes the object, a pattern that is descriptively split-ergative.

Although the competition metaphor is convenient as a mnemonic, I propose that the two probes do not actually compete in any meaningful sense, but are instead in an overwriting relationship. In the analysis of Algonquian agreement that was set out above (§2.2), the prefix probe is located on Infl^0 and the suffix probe—which "wins the competition" in (11)—is located on the higher head T^0. In other words, it is the structurally higher probe that wins the competition in (11). I suggest that this is not a coincidence. Consider Pesetsky's (2013) proposal that Russian is actually a case stacking language in which only the final case morpheme to merge with a nominal is spelled out. The Algonquian "competition" phenomenon can be understood in a parallel way: when two probes agree with the same nominal, only the morphology that correlates with the final probe to agree (i.e. the structurally highest probe) is spelled out. Under this view, what I have called "probe competition" is in fact the agreement equivalent of abstract case stacking. This mechanism is the ultimate source of the split-ergative agreement pattern in Ojibwe.
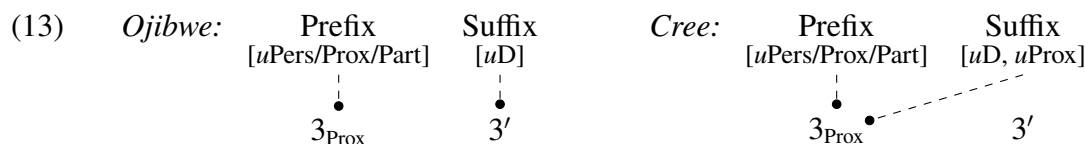
3.3 The Cree agreement pattern

The Cree agreement pattern is shown in (12) (Wolfart 1973).

(12)

	Intransitive		Transitive		
1	*ni-*₁ V		1—3	*ni-*₁ V *-ak*₃ₚ	

Intransitive:

- 1 [*ni-*] V (1)
- 2 [*ki-*] V (2)
- 3 V [*-ak*] (3P)

Transitive:

- 1—3 [*ni-*] V *-ak* (1 / 3P)
- 2—3 [*ki-*] V *-ak* (2 / 3P) } OBJ
- 3—3′ V [*-ak*] (3P)

1/2SUBJ   3SUBJ   1/2SUBJ   3SUBJ

When the subject is 1st/2nd-person (the first two rows in (12)), the agreement pattern is identical to that of Ojibwe: the prefix indexes subjects and the suffix indexes objects, a nominative/accusative pattern. The pattern differs from Ojibwe, however, when the subject is 3rd-person (the final row in (12)). In the Ojibwe 3rd-person forms in (8), the suffix indexed intransitive subjects and transitive objects. In the Cree 3rd-person forms in (12), the suffix indexes *all subjects*, both intransitive and transitive, and objects are unmarked. Since the Cree 3rd-person pattern treats all subjects one way and all objects another, it must be characterized as nominative/accusative. What this means is that although the Cree agreement pattern is split, it is not split-ergative. Instead, there are two distinct nominative/accusative patterns, one for 1st/2nd-person subjects (subject prefix, object suffix) and one for 3rd-person subjects (subject suffix, object unmarked).

The Cree pattern is unusual, and although it does not strictly qualify as split-ergative, it remains reminiscent of ergativity in that a subset of subjects are marked by what is canonically an object marker (i.e. the suffix). The probe competition approach gives us a simple way to understand the difference between Ojibwe and Cree. I propose that whereas the Ojibwe suffix probe is specified as [*u*D] and thus targets any 3rd-person DP, the Cree suffix probe is slightly more articulated: it is specified as [*u*D, *u*Prox] and will thus preferentially target a 3rd-person *proximate* DP rather than an obviative DP when possible.

This small difference in the specification of the suffix probe is sufficient to derive the Cree agreement pattern. Consider the crucial transitive 3—3′ form, which is the one place where Ojibwe and Cree differ. In both languages, the prefix probe targets the argument that ranks highest on the person hierarchy, which is the proximate 3rd-person subject. In Ojibwe, the suffix probe seeks only [*u*D] and is thus fully satisfied to agree with the obviative 3rd-person object. In Cree, however, the suffix probe seeks [*u*D, *u*Prox], which makes its best match the proximate 3rd-person subject rather than the obviative object. This means that in the Cree transitive 3—3′ form, both probes will target the subject, as schematized in (13).

(13) *Ojibwe:*   Prefix   Suffix   *Cree:*   Prefix   Suffix
              [*u*Pers/Prox/Part]   [*u*D]   [*u*Pers/Prox/Part]   [*u*D, *u*Prox]

                     3$_{\text{Prox}}$ 3′   3$_{\text{Prox}}$ 3′

We can now explain why the Ojibwe and Cree agreement patterns differ. In Ojibwe, the two probes compete to agree with the subject in the intransitive 3rd-person form only. In Cree, the two probes compete to agree with the subject in both the intransitive 3rd-person form and the transitive 3—3′ form. In all forms in which this competition arises, the outcome is the same: the suffix probe "wins" and the 3rd-person subject ends up being indexed by suffix agreement, like a canonical object. The particular distribution of this effect in Ojibwe creates a surface agreement pattern that can be described as split-ergative, but in Cree we see that the same effect can also extend more broadly through the agreement pattern.

3.4 The Delaware agreement pattern

The Delaware agreement pattern is shown in (14) (Goddard 1979).

(14)

	Intransitive			Definite object				Indefinite object		
1	$n\partial$- $_1$	V		1—3$_\text{DEF}$	$n\partial$- $_1$	V	-ak $_\text{3P}$	1—3$_\text{IND}$	$n\partial$- $_1$	V
2	$k\partial$- $_2$	V		2—3$_\text{DEF}$	$k\partial$- $_2$	V	-ak $_\text{3P}$	2—3$_\text{IND}$	$k\partial$- $_2$	V
3		V	-ak $_\text{3P}$	3—3′$_\text{DEF}$	$w\partial$- $_3$	V	-al $_{3'}$	3—3′$_\text{IND}$		V -ak $_\text{3P}$
	1/2SUBJ	3SUBJ			SUBJ		OBJ		1/2SUBJ	3SUBJ

The intransitive agreement pattern in Delaware is identical to that of Ojibwe and Cree, but the transitive agreement displays differential object marking. Definite objects trigger a consistent Ojibwe-type pattern in which the prefix indexes the subject and the suffix indexes the object. Indefinite objects are unindexed by agreement; we instead get the familiar intransitive-type pattern in which 3rd-person subjects are indexed by the suffix.

The descriptive characterization of the Delaware system depends on which sets of forms we compare: the pattern can be described as split-ergative if we compare intransitive and transitive definite forms, but not if we compare intransitive and transitive indefinite forms.

We can account for the Delaware pattern by positing that the suffix probe is specified as [uD, uDef]. This probe will be satisfied to agree with the object in definite-object forms but not in indefinite-object forms. Indefinite-object forms will thus give rise to the same competition for 3rd-person subject agreement that occurs in intransitives.

4. Conclusion

This paper has shown that split ergativity can arise from a probe that normally targets objects but is able to target a subject when a suitable object is not available, thereby producing a form in which the subject is indexed by what appears to be object agreement. The variation across the three languages falls out from a minor difference in the specification of the probe: [uD] in Ojibwe, [uD, uProx] in Cree, and [uD, uDef] in Delaware. Under this analysis, there is nothing deeply ergative about the canonical split-ergative pattern in Ojibwe: it is simply a special case of a probe interaction effect that occurs more broadly in Cree and Delaware.

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