VERBAL AGREEMENT IN KANYEN'KEHA

VERBAL AGREEMENT IN KANYEN'KEHA: A CATALOGUE OF THE TRANSITIVE PARADIGM, AND A PROPOSAL FOR SUBJECT-OBJECT AGREEMENT BY ONE PROBE WITH MULTIPLE AGREE

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A Thesus Submitted to the School of Graduate Studies in Partial Fulfilment of the Requirements for the Degree Masters of Science

McMaster University MASTER OF SCIENCE (2022) Hamilton, Ontario (Cognitive Science of Linguistics)

TITLE: Verbal Agreement in Kanyen'keha: A Catalogue of the Transitive Paradigm, and a Proposal For Subject-Object Agreement by One Probe with Multiple Agree AUTHOR: Kurtis Commanda, B.A. (Mcmaster University) SUPERVISOR: Professor Ivona Kucerova NUMBER OF PAGES:

Lay Abstract

This thesis describes the verbal agreement of Kayen'keha in greater detail than has previously been done. This thesis also evaluates the claims of previous work done on verbal agreement of Kanyen'keha, describing where such work accurately accounts for the agreement and where it does not. Finally, this thesis proposes a novel analysis of Kanyen'keha verbal agreement.

Abstract

This work catalogues the verbal agreement paradigm of Kanyen'keha in greater detail than has previously been done. The cataloguing includes the complete intransitive, transitive, and reflexive paradigms, and description of all argumental contrasts to which the verbal agreement is sensitive. It also describes in detail the contexts where feature sensitivity is blunted, and the patterns of syncretism in the verbal agreement. Based off of this descriptive work, this work evaluates the accuracy with which previous analyses treat verbal agreement in Kanyen'keha. Finding room for improvement in these analyses, this work proposes a new analysis of Kanyen'keha, which claims all verbal agreement in transitive contexts to be realized from one agreement probe, which enters into Multiple Agree with subjects and objects. This style of analysis allows for many aspects of the agreement to be accounted for, including person hierarchy effects, distribution of portmanteau morphology, and complex dependency between the multiple morphemes which comprise the agreement.

Acknowledgements

I must first thank my advisor, Dr. Ivona Kučerová. I would not have pursued a master's degree without her encouragement, and neither could I have possibly completed this thesis without her guidance. I admire and respect both her immense sense of practicality and her open-mindedness towards my esoteric tendencies. I thank Dr. Susana Bejar, both for the respect she has shown me as a scientist and for her serious engagement with my work as a member of my thesis committee, and Dr Alison Biggs, for chairing my defense and ensuring my thesis completes in all our lifetimes. I thank also all other members of AriEAL and McMaster's Department of Linguistics and Languages, each for their part in creating a welcoming and supportive environment. Finally, I thank my cohort of fellow grad students, who I appreciate both as supportive friends and as talented scientific peers.

Outside of McMaster proper, I am supported by a village or an army. Their contributions to my health and happiness form the stable foundation of my entire existence, and so also my scientific work. I thank, among others: Madi, whose importance to me I cannot say; Alex, identically so; Kaiden, to whom I owe my life; Babs, who has always made me happier; everyone I've met in Hamilton; Friendland.

I thank also Santee Smith and Ryan DeCaire, for their part in introducing me to the Kaianere’kó:wa, the Great Law of Peace, guaranteeing growth in my power and benevolence for the rest of my life. I thank Suzanne Collins, Jeff Vandermeer, and many other authors, for ensuring I never ossify.

helix tears

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List of Abbreviations

Agreement glosses	Non-agreement glosses	Technical abbreviations
1 = 1st person	BEN = benefactive	PLC = Person Licensing
2 = 2nd person	FAC = factual mood	Condition
3 = 3rd person	FUT = future	EA = External argument
MASC = masculine	HAB = habitual mood	IA = Internal argument
N = Neuter	LK =linker	VI = Vocabulary Item
SING = singular	NEG = negative	NI = Noun incorporation
SUBJ = Subject	NK = noun suffix	
OBJ = Object	OPT = optative	
	PUNC = punctual mood	
	Q = question	
	REFL = reflexive	
	RECP = reciprocal	

Portmanteau/unsegmented agreement glossing

Many of the agreement forms in this work are glossed by the total agreement context that they realize, rather than by the features explicitly realized. An example of this style of glossing is given below, glossing the agreement morpheme *ra-* as MsS.IsO, to be read as "masculine singular subject and inanimate singular object" :

Ra-nuhwe'-s

MsS.IsO-like-HAB

"He likes it."

This format uses slightly different abbreviations than those shown on the previous page.

1 = 1st person	s = singular	S = subject
1I = 1st person inclusive	d = dual	O = object
1E = 1st person exclusive	p = plural	P = possessor
2 = 2nd person		
3 = 3rd person		
M= masculine 3rd person		
F= feminine 3rd person		
I= inanimate 3rd person		

1. Introduction

In this section, I will present some basic aspects of Kanyen'keha, and lay out the structure of this thesis. Older scholarship on Kanyen'keha, such as Postal (1979) and Baker (1991), has reported that Kanyen'keha word order is highly unconstrained, allowing every possible ordering of subject, verb, and object, as demonstrated below in (1).

(1) Kanyen'keha (from Baker 1991a)

a. Sak ra-nuhwe'-s ako-atya'tawi. SVO
Sak MsS.IsO-like-HAB FsP-dress
"Sak likes her dress."

b. Sak ako-atya'tawi ra-nuhwe'-s SOV
Sak FsP-dress MsS.IsO-like-HAB

c. Ra-nuhwe'-s Sak ako-atya'tawi. VSO
MsS.IsO-like-HAB Sak FsP-dress

d. Ra-nuhwe'-s ako-atya'tawi ne Sak. VOS
MsS.IsO-like-HAB FsP-dress NE Sak

e. Ako-atya'tawi ra-nuhwe'-s ne Sak. OVS
FsP-dress MsS.IsO-like-HAB NE Sak

f. Ako-atya'tawi Sak ra-nuhwe'-s. OSV
FsP-dress Sak MsS.IsO-like-HAB

DeCaire, Johns & Kučerová (2017) discuss word order in Kanyen'keha in more detail, demonstrating instead that that word order is not free. They find word order restrictions in Kanyen'keha connected to information structure concerns, and the process of noun incorporation (NI). NI refers to the process

whereby inanimate objects of some verbs are morphologically incorporated into the verbal complex. NI can be seen in (2a), where *honw*, "boat," the inanimate object of *hninon*, "buy," is incorporated into its verb, rather than standing freely like *ako-atya'tawi*, "her dress," in (1) above. Noun incorporation in Kanyen'keha is obligatory where possible, introducing a basic restriction on word order. Semantic focus, such as triggered by questions, induces movement of elements to SpecCP, requiring other words to appear after the focused element, and prevents otherwise obligatory noun incorporation. Examples in (2) demonstrate question focus rendering incorporation infelicitous, and examples in (3) demonstrate that wh-words must move to SpecCP.

(2) Kanyen'keha (from DeCaire, Johns & Kučerová 2017)

a. Q: Wahahonwahní:non' ken ne Sewátis? NI
wa-ha-honw-a-hninon-' ken ne Sewatis
FAC-MsS.IsO-boat-LK-buy-PUNC Q NE John
"Did John buy a boat?"

b. A1: Iah. Kà:sere wahahní:non' non-NI
iah. ka-'ser-e' wa-ha-hninon-'
No. N-car-NS FAC-MsS.IsO-buy-PUNC
"No. He bought A CAR."

c. A2: # Iah. Waha'serehtahní:non'. NI
iah. wa-ha-'sereht-a-hninon-'
No FAC-MsS.IsO-car-LK-buy-PUNC
"No. He bought a car."

(3) Kanyen'keha (from DeCaire, Johns & Kučerová 2017)

a. Ónhka wa'ehní:non'?

onhka wa’-e-hninon-’

who FAC-FsS.IsO-buy-PUNC

“Who bought it?”

b. * Wa’ehní:non ónhka?

wa’-e-hninon-’ onhka?

FAC-FsS.IsO-buy-PUNC who

“Who bought it?”

c. Oh nahò:ten wa’ehní:non’?

oh naho’ten wa’-e-hninon-’?

Q what FAC-FsS.IsO-buy-PUNC

“What did she buy?”

d. * Wa’ehní:non’ oh nahò:ten?

wa’-e-hninon-’ oh naho’ten?

FAC-FsS.IsO-buy-PUNC Q what

“What did she buy?”

Another defining property of Kanyen'keha is that context-recoverable subjects and objects are both able to be elided, resulting in a freestanding fully inflected verb that serves as a complete sentence. These properties of word order and argument dropping have both been connected to the complex verbal agreement inflection present on Kanyen'keha verbs. Such agreement can be seen realized in (1) as *ra-*, glossed as MsS.IsO[1], indicating a masculine singular subject (in this case, Sak) and an inanimate singular object (in this case, her dress). This agreement indexes both arguments, ensuring that the

1 In many cases, it is possible to decompose Kanyen'keha verbal agreement realizations into multiple distinct morphemes. For the sake of simplicity, I will gloss verbal agreement as one segment in most cases until I begin to describe my novel analysis in section 4.

sentence still contains information about the deleted subject and object. The examples below in (4) demonstrate this complete deletion, and how it can occur in additional contexts with different verbal inflection forms. This thesis will use fully argument-dropping sentence examples like those in (4) primarily, as they do not create semantic focus and allow for precise examination of solely what information the verbal agreement expresses about the arguments of the verb.

(4) Kanyen'keha (from Baker 1991a)

a. Ra-nuhwe'-s
MsS.IsO-like-HAB
"He likes it."

b. Rake-nuhwe'-s
MsS.1sO-like-HAB
"He likes me."

c. Kwa-nuhwe'-s
1sS.2pO-like-HAB
"I like you all."

Kanyen'keha's complex verbal agreement will be the primary object of analysis for this thesis. Previous work on Kanyen'keha has noted that the language has obligatory agreement with both subject and object and attributed licensing of subject and object dropping, as in (4) above, to it (Bonvillain 1973, Baker 1996, Markman 2009). Morphological analyses have analyzed the agreement in some cases as portmanteau, meaning that a single non-decomposable morpheme represents both arguments, and in some cases as consisting of multiple morphemes (Bonvillain 1973, Baker 1996, Bejar & Rezac 2009). Baker (1996) syntactically analyzes the verbal agreement as a result of straightforward agreement by the Infl and v heads each with subject and object arguments respectively. Bejar & Rezac (2009) posits

that the verbal agreement is a realization of the v head only, introducing additional operations to account for the sensitivity of the agreement to both subject and object, as the agreement of a single head is traditionally restricted to a single argument. These analyses will be discussed in greater detail in section 3.

No prefixes attach closer to the verb than the verbal agreement, with the exception of a refleixve markers, though incorporated nouns do appear closer to the verb than the verbal agreement. Additional verbal prefixes attach to the verb outside of the verbal agreement. Following Lounsbury (1953), Bonvillain's previous analysis (1973) of Kanyen'keha verbal morphology names the verbal agreement prefixes as pronominal prefixes, and then names additional verbal morphology as prepronominal prefixes. These prepronominal prefixes include a number of different functions, rather than any single natural class, including tense, mood, and aspect related prefixes, discussed in more detail by Baker & Travis (1997, 1998), and various non-temporal prefixes, including a negation prefix, and deictic prefixes, including “cislocative” and “translocative” prefixes, discussed in more detail in Bonvillain (1981). Examples below in (5) demonstrate the verbal agreement's position relative to prepronominal prefixes for negation and tense or mood. (5a) additionally demonstrates an incorporated noun appearing between the verbal agreement and the verb itself.

(5) Kanyen'keha (from Baker 1996)

a. Uwári yáhtv th-a-yu-[a]ther-a-hnínu-’
Mary not NEG-OPT-FsS-basket-Ø-buy-PUNC
“Mary will not buy a basket.”

b. Eso kvtsu v-tewa-k-e’
a lot fish FUT-1IpS-eat-PUNC
“We’d eat lots of fish.”

Complex verbal agreement, as appears in Kanyen'keha, seems to be a common feature to Iroquoian languages, identified in several other Iroquoian languages as pronominal prefixes, including at least Oneida (Lounsbury 1953), Seneca (Chafe 2015), and Tuscarora (Hill 2020). Analysis of these pronominal prefixes in these works is largely restricted to morphological cataloguing of the forms and their context-correspondences. Some syntactic analyses greatly departing from minimalist syntax have been motivated by Oneida (Koenig & Michelson 2012, Diaz, Koenig & Michelson 2019). Based on the degree of similarity of forms between Kanyen'keha and other Iroquoian languages, it may be possible to roughly extend a single syntactic analysis over multiple Iroquoian languages, as Oxford (2019) does for Algonquian languages. Performing the necessary analysis to do so lies outside the scope of this thesis, but may be an appealing future research question.

This thesis will offer several new contributions to the literature on Kanyen'keha and on verbal agreement. The first is a new description of Kanyen'keha's verbal agreement, including description of its sensitivity to various argument features and of the problems it poses to analysis. The second is an investigation into the suitability of previous analyses of Kanyen'keha verbal agreement over a wider range of data than they were originally presented with. The third is a new morphological and syntactic analysis, which will contain a new complete morphological decomposition and correctly generate a greater portion of the verbal agreement realizations than previous analyses are able to.

Before this thesis' new analysis of Kanyen'keha verbal agreement can be presented, the basic facts of the agreement must be examined. The second section of this thesis will discuss these basic facts, including an overview of the actual set of agreement realizations. This will also entail elaboration of the argument features that the agreement is generally sensitive to, and discussion of what contexts cause agreement to lose sensitivity to some features. Relevant argument features that will require discussion include person, number, grammatical gender, and animacy.

The third section of this thesis will outline and discuss two previous analyses of Kanyen'keha's verbal agreement, those of Baker (1996) and Bejar & Rezac (2009), laying out their basic assumptions and and demonstrating the extent to which they are able to predict the forms of the verbal agreement. I will also demonstrate where they do not predict the form of the verbal agreement, or where their presuppositions fails by other means.

The fourth section of this thesis will present my new analysis of Kanyen'keha verbal agreement. This will include a new morphological parse of the complex agreement forms and a description of the problems posed by the surface morphology of Kanyen'keha verbal agreement. It will include a syntactic structure which describes the verbal domain of Kanyen'keha, and a description of the agreement mechanics which feed the morphology, and a brief comparison to the syntactic analysis of Oxford (2019). It will also include a Distributed Morphology module which spells-out Kanyen'keha verbal agreement, a description of the feature geometries which I assume for Kanyen'keha, and a listing of all the Vocabulary Items which comprise the surface form of the agreement, and the argument features they realize.

The majority of data that I use as a foundation for my analysis and that I cite as examples for this thesis' analysis come from teaching material provided to me by Onkwawenna Kentyohkwa, a Kanyen'keha immersion learning program (Owennatekha 2019). Onkwawenna Kentyokhwa is located in Ohsweken, on the territory of the Six Nations of the Grand River in southern Ontario, and their material follows the Ohsweken dialect. Previous data used in analysis of Kanyen'keha by Mark Baker (1991, 1992, 1996) originates from Kahnawake, a different Haudenosaunee community located in Quebec. Nancy Bonvillain (1973) uses data from Akwesasne, a Haudenosaunee community located on the border of Ontario and Quebec. This thesis will not seek to categorize or catalogue any dialectal differences between these three communities, but such differences do exist.

2. Overview of Kanyen'keha verbal agreement

2.1. Introduction and section overview

Table 1, on page 9, presents the different verbal agreement contexts distinguished in Kanyen'keha and their matching realizations. This chart contains every possible realization of the verbal agreement for all transitive contexts, as well as all intransitive contexts, due to intransitive contexts sharing agreement forms with transitive contexts involving inanimate arguments, as will be discussed further on.

This thesis is based primarily upon simple transitive and intransitive constructions, i.e. those having a subject, or a subject and a direct object. In all such constructions, the verbal agreement realizes the subject and any direct object if present. In different types of constructions, it is possible for Kanyen'keha's verbal agreement to realize other types of arguments, such as indirect objects in ditransitive constructions. Such constructions will be described further in sub-section 2.7.

Kanyen'keha's tense, mood, and aspect systems lie outside the scope of this thesis, but have been described in detail by previous researchers (Baker & Travis 1997, 1998). This thesis is focused on simple declarative sentences, using data in habitual and punctual aspects, which do not interact with verbal agreement. Kanyen'keha's stative aspect induces a change of verbal agreement form, the nature of which will be described in sub-section 2.3.

Kanyen'keha's verbal agreement appears as an obligatory prefix attaching to the verb whose arguments it realizes. The verbal agreement realizes the arguments of the verb in the sense that the verbal agreement's form varies in correspondence with the features of those arguments, allowing it to communicate information about the persons involved in the event described by the verb, and their roles in the event. For example, when a Kanyen'keha sentence describes an action performed by a 3rd person masculine singular subject onto an inanimate object, its verb must have the verbal agreement form

Table 1											
Kanyen'keha verbal agreement realization by context											
Obj. Subj.	1st sing.	1st dual	1st pl.	2nd sing.	2nd dual	2nd pl.	3rd masc. sing.	3rd fem. sing.	3rd inan. sing.	3rd masc pl.	3rd fem pl.
1st sing.				kon	keni	kwa	ri	khe	ke	khe	khe
1st dual excl.				keni	kwa	kwa	shakeni	yakhi	yakeni	yakhi	yakhi
1st pl. excl.				kwa	kwa	kwa	shakwa	yakhi	yakwa	yakhi	yakhi
1st dual incl.							etshiteni	yethi	teni	yethi	yethi
1st pl. incl.							etshitewa	yethi	tewa	yethu	yethi
2nd sing.	take	takeni	takwa				etshe	she	se	she	she
2nd dual	takeni	takwa	takwa				etshiseni	yetshi	seni	yetshi	yetshi
2nd pl.	takwa	takwa	takwa				etshisewa	yetshi	sewa	yetshi	yetshi
3rd masc. sing.	rake	shonkeni	shonkwa	ya	etshiseni	etshisewa	ro	shako	ra	shako	shako
3rd fem. sing.	yonke	yonkhi	yonkhi	yesa	yetshi	yetshi	ronwa	yontate	ye	ronwati	konwati
3rd inan. sing.	wake	yonkeni	yonkwa	sa	seni	sewa	ro	yako	ka	roti	yoti
3rd masc. dual	yonke	yonkhi	yonkhi	yesa	yetshi	yetshi	ronwa	shakoti	ni	ronwati	konwati
3rd fem. dual	yonke	yohkni	yonkhi	yesa	yetshi	yetshi	ronwa	yakoti	keni	ronwati	konwati
3rd masc. pl.	yonke	yonkhi	yonkhi	yesa	yetshi	yetshi	ronwa	shakoti	rati		
3rd fem. pl.	yonke	yonkhi	yonkhi	yesa	yetshi	yetshi	ronwa	yakoti	konti		

corresponding to such arguments, *ra-*. Because the verbal agreement realizes both the subject and object of a verb, the subject and object of sentences are clear even in the absence of explicit nominal

arguments.

In intransitive contexts, the form of the verbal agreement depends on only one argument, and so is completely determined by that argument. Examples in (6) demonstrate intransitive verbal agreement, and the complete change of form that accompanies complete change of argument between first, second, and third persons.

(6) Kanyen'keha (from Owennatekha 2019)

a. K-ónnhe (1st person subject)
1sS-be alive
“I am alive.”

b. S-ónnhe (2nd person subject)
2sS-be alive
“You are alive.”

c. R-ónnhe (3rd person subject)
MsS-be alive
“He is alive.”

In transitive contexts, the form of the verbal agreement is dependent on both the subject and the object. Examples in (7) demonstrate changes of verbal agreement form in transitive contexts with change of person in either argument, as there is a unique form for each shown combination of a first, second, or third person subject with a first, second, or third person object.

(7) Kanyen'keha (from Owennatekha 2019)

a. Kon-nòn:we’-s (1→ 2)
1sS.2sO-like-HAB
“I like you.”

b. Ri-nòn:we'-s (1 → 3)
1sS.MsO-like-HAB
"I like him."

c. Take-nòn:we'-s (2 → 1)
2sS.1sO-like-HAB
"You like me."

d. Etshe-nòn:we'-s (2 → 3)
2sS.MsO-like-HAB
"You like him."

e. Rake-nòn:we'-s (3 → 1)
MsS.1sO-like-HAB
"He likes me."

f. Ya-nòn:we'-s (3 → 2)
MsS.2sO-like-HAB
"He likes you."

Dependency on both arguments can be blamed for much of the complexity of the verbal agreement, as the amount of unique contexts it is possible for the agreement to be sensitive to expands exponentially when both arguments are part of the context. Kanyen'keha has a total of 26 unique intransitive verbal agreement forms corresponding to each of the 26 different intransitive contexts that the language's features allow distinction of, and it has a total of 62 unique transitive verbal agreement forms, which correspond to 132 different possible transitive contexts. 34 additional reflexive transitive contexts exist but do not appear in the chart above. Reflexive morphology will be discussed further ahead in this section.

This thesis' new analysis will provide a model that derives these forms in their correct contexts using a morphological module that realizes argument features through insertion of morphemes. The many distinct verbal agreement forms arise from combinations of morphemes from multiple smaller sets, allowing for simple underlying general principles to generate immense surface complexity.

The form of Kanyen'keha's verbal agreement can in general be analyzed as a cluster of 1, 2, or 3 different morphemes. These morphemes are always strictly adjacent to each other, and together generally realize person, gender, case, and number for both the subject and object. Not all features are always explicitly expressed, resulting in loss of distinction and ambiguity for some features in some contexts. Despite ambiguity and apparent feature loss, there is significant identifiable patterning in the form of the verbal agreement, allowing it to be divided into morphemes. This section aims to describe all such ambiguities and the contexts in which they occur.

The examples below in (9) briefly present the sort of data clusters that allow morphemes to be identified. The examples all include a 1st person argument, paired first with an inanimate object, then with a 3rd person masculine subject, then a 2nd person subject. The only commonality between all three contexts is a 1st person argument, and the only commonality between all three verbal agreement realizations is *ke-*, appearing on its its own in (9a), between morphemes *shon-* and *-ni* in (9b), between morphemes *ta-* and *-wa* in (9c), where it is also reduced to *-k-* due to phonological rules. This co-occurrence between a 1st person argument and *ke-* gives rise to a basic intuition that *ke-* is a morpheme corresponding to a first-person argument. Because the focus of this section is the basic behaviour of the verbal agreement and elaboration of what featural distinctions it is sensitive to, the complete segmentation and cataloguing of morphemes that appear in the verbal agreement cluster will be restricted to the fourth section of this thesis.

(9) Kanyen'keha (from Owennatekha 2019)

a. Ke-nòn:we’-s

1-like-HAB

“I like it.”

b. Shon-ke-ni-nòn:we’-s

3.MASC.SING.SUBJ-1-DUAL-like-HAB

“He likes us both.”

c. Ta-k-wa-nòn:we’-s

2.OBJ-1-PLURAL-like-HAB

“You all like me.”

While the verbal agreement takes many forms and is sensitive to a wide breadth of features, it also contains a great deal of syncretism, where multiple contexts produce the same realized form, demonstrated below in (10); (10a) demonstrates two possible interpretations of a single verbal agreement form. In one interpretation, (10a,i) there is a 3rd person feminine singular object, and in the other interpretation, (10a,ii) there is a 3rd person plural object, with no specified gender. In (10b) the same non-distinction is made between 3rd person feminine singular subjects and 3rd person plural subjects. This is a loss of distinction spread over both gender and number features, as there is ambiguity between singular and plural number contexts, and between feminine and unspecified gender contexts. In other cases, the ambiguity only affects one feature. The loss of distinction may affect features on only one argument, or on both arguments.

(10) Kanyen'keha (from Owennatekha 2019)

a. Khe-nòn:we’-s

1sS.3O-like-HAB

i. “I like her.”

ii. “I like them.”

b. Yonke-nòn:we’-s

3S.1sO-like-HAB

i. “She likes me.”

ii. “They like me.”

I note a loss of distinction as present because in other contexts, varying those single features does produce different forms, such that the number feature of a 3rd person argument is in some cases contrasted, demonstrated below in (11). In (11), 3rd person feminine singular arguments and 3rd person plural arguments yield different forms when paired with an additional 3rd person feminine argument rather than a 1st person argument. In these cases, gender distinction is also retained for the plural argument. Thus, (11a) is analogous to (11a,i), and (11b-c) are analogous to (11a,ii).

(11) Kanyen'keha (from Owennatekha 2019)

a. Yontate-nòn:we’-s

FsS.FsO-like-HAB

“She likes her.”

b. Ronwati-nòn:we’-s

FsS.FpO-like-HAB

“She likes those women.”

c. Konwati-nòn:we’-s

FsS.MpO-like-HAB

“She likes those men.”

d. Yakoti-nòn:we’-s

FpS.FsO-like-HAB

"Those women like her."

e. Shakoti-nòn:we'-s

MpS.FsO-like-HAB

"They like her."

Syncretisms such as those demonstrated above render analysis of the agreement system difficult, because they create ambiguity and uncertainty in what features the system is realizing, and in turn what features it has access to. Embick & Noyer (2007) offers that systematically distributed syncretism arises either from underspecification of vocabulary items, such that the vocabulary items available to express a set of features are only able to express a subset of them, or from Impoverishment rules, which neutralize features in their application, nullifying the possibility of expressing a given distinction even when the appropriate morphology is available. In the case of Kanyen'keha, the distribution of syncretism is best explained through pervasive underspecification of vocabulary items.

With basics of the form of the verbal agreement described, including its location and dependence on the arguments of the verb, I will now describe the sets of features to which the agreement is sensitive in more detail, and describe the distributions of syncretism and loss of feature sensitivities, beginning with person features.

2.2. Distinctions of person

Kanyen'keha verbal agreement is sensitive to the person features of arguments it agrees with, and distinguishes between 1st person, 2nd person, and 3rd person, for both arguments, in all cases, such that the person of both arguments is always communicated by the verbal agreement. In almost every case, verbal agreement in Kanyen'keha is entirely unambiguous with respect to person, which is to say that each verbal agreement form corresponds to one and only one combination of persons, and that

changing either argument to be one of a different person will always result in a different form. The examples in (12) below demonstrate the verbal agreement's sensitivity to person of both arguments in several singular cases, and demonstrate how changes to the person feature of either argument results in a different form.

(12) Kanyen'keha (from Owennatekha 2019)

a. Kon-nòn:we'-s (1 → 2)
1sS.2sO-like-HAB
"I like you."

b. Ri-nòn:we'-s (1 → 3)
1sS.MsO-like-HAB
"I like him."

c. Take-nòn:we'-s (2 → 1)
2sS.1sO-like-HAB
"You like me."

d. Etshe-nòn:we'-s (2 → 3)
2sS.MsO-like-HAB
"You like him."

Kanyen'keha's sole case of ambiguity for person is demonstrated below in (13), where a 1 → 2 context and a 3 → 3 context share the same form. These contexts share no features at all except for dual number of an argument, so it would be unexpected for them to share the same verbal agreement form unless agreement is solely determined by number feature, which it cannot be, since person has already been demonstrated to influence the verbal agreement form. They share no person features in either subject or object, which, as discussed above and partially demonstrated in (12), results in different

verbal agreement forms for all other contexts. The total homophony of verbal agreement form between these two contexts is surprising, since it fails to uphold distinctions between person that are otherwise always maintained. A theoretical model of Kanyen'keha verbal agreement must reproduce this homophony without additionally compromising sensitivity in other contexts. My analysis will treat this syncretism as a coincidental convergence of forms that arises from the level of complexity in the verbal agreement spell-out process.

(13) Kanyen'keha (from Owennatekha 2019)

a. Keni-nòn:we'-s (1 → 2)
1dS.2sO-like-HAB
"We two like you."

b. Keni-nòn:we'-s (3 → 3)
FdS.IsO-like-HAB
"Those two women like it."

2.3. Distinctions of case

Kanyen'keha verbal agreement is sensitive to the case features of arguments it agrees with, which is to say that the verbal agreement communicates the subjecthood or objecthood of its arguments. In most cases, though not all of them, to be discussed momentarily, the verbal agreement is unambiguous with respect to case. The examples in (14) below non-exhaustively demonstrate this, showing pairs of contexts with their subjects and objects inverted. These contexts are minimally different in all aspects but subjecthood and objecthood of their arguments, but produce different verbal agreement forms, demonstrating sensitivity of the verbal agreement to case features.

(14) Kanyen'keha (from Owennatekha 2019)

a. Kon-nòn:we'-s (1 → 2)
1sS.2sO-like-HAB
"I like you."

b. Take-nòn:we'-s (2 → 1)
2sS.1sO-like-HAB
"You like me."

c. Shako-nòn:we'-s (3m → 3f)
MsS.FsO-like-HAB
"He likes her"

d. Ronwa-nòn:we'-s (3f → 3m)
FsS.MsO-like-HAB
"She likes him."

e. Ra-nòn:we'-s (3m → 3i)
MsS.IsO-like-HAB
"He likes it."

f. Ro-nòn:we'-s (3i → 3m)
IsS.MsO-like-HAB
"It likes him."

Syncretism occurs between some 2 → 3 and 3 → 2 contexts, resulting in ambiguity regarding which argument is subject or object, unlike in most contexts. Case ambiguity between 2 → 3 and 3 → 2 contexts is demonstrated non-exhaustively below in (15). (15a) has two possible interpretations, each of which contain a 2nd person plural argument and a 3rd person masculine singular argument. In (15a,i), the 2nd person plural argument is taken to be the subject, while in (15a,ii), the 2nd person plural

argument is taken to be the object. This results in specification of person, number and gender for both arguments, but ambiguity between which argument is the subject and which is the object. In (15b), the same ambiguity is presented with a 3rd person feminine argument replacing the 3rd person masculine argument. This ambiguity presents in all contexts that pair a non-singular 2nd person argument with a 3rd person argument of any kind, but it does not present in otherwise similar cases with singular 2nd person arguments, or with any 1st person arguments.

(15) Kanyen'keha (from Owennatekha 2019)

a. Etshisewa-nòn:we'-s

2p.Ms-like-HAB

i. "You all like him."

ii. "He likes you all."

b. Yetshi-nòn:we'-s

2p.Fs-like-HAB

i. "She likes you all."

ii. "You all like her."

Intransitive contexts, though only having one argument and thus not containing both a subject and object, appear to retain sensitivity to case features. Intransitive verbs in Kanyen'keha demonstrate the same prefixes as transitive verbs with the same argument and an inanimate argument, despite there being no such argument. This means that there are two possible forms that could match the sole argument in an intransitive context; it may be marked as either a subject or an object. Examples (16a-b) below demonstrate transitive contexts with inanimate arguments, while (16c-d) demonstrate intransitive contexts with the same animate argument as (16a-b), sharing verbal agreement forms. (16c-d) demonstrate different verbal agreement forms for the same sole argument, suggesting a

difference of case feature.

(16) Kanyen'keha (from Owennatekha 2019)

a. Ra-nòn:we’-s

MsS.IsO-like-HAB

“He likes it.”

b. Ro-nòn:we’-s

IsS.MsO-like-HAB

“It likes him.”

c. R-ató:rat-s

MsS-hunt-HAB

“He hunts.”

d. Ro-nà:khwen-s

MsO-get angry-HAB

“He gets angry.”

Mithun (1991) and Baker (1996) both discuss the distribution of agreement realizations for intransitive verbs, attempting to locate systematic principles for determining whether a verb would take subjective *ra-* as in (16c) or objective *ro-* as in (16d). Mithun (1991) connects the distribution essentially to semantic agenthood or patienthood, and the unaccusative hypothesis, saying that semantic agents are generated in a subject position, and receive subjective marking, and that semantic patients are generated in an object position, and receive objective marking. In (16c) the first person argument is a semantic agent, so Mithun correctly predicts the verb to take a subjective form, while in (16d) the first person argument is a semantic patient, so Mithun correctly predicts the verb to take an objective form.

Mithun (1991) and Baker (1996) both identify intransitive verbs that do not match their

agreement realization to the semantic role of their argument. Baker (1996) rejects a connection between objective and subjective marking and underlying subject or objecthood, and instead builds an analysis of agreement that allows for lexical and configurational specification of when objective or subjective marking should appear, allowing for either marking to appear regardless of underlying structure. This will be discussed in more detail in section 3. Mithun (1991) proposes that diachronic lexicalization and derivational processes can account for observed deviance from her generalization. Examples below in (17) demonstrate intransitive verbs that do and do not match their agreement realization to the semantic role of their argument: (17a) and (17d) display the expected forms for the semantic role, while (17b) and (17c) display unexpected forms.

(17) Kanyen'keha (from Baker 1996)

a. Ro-ta'karite' (Ro-, with semantic patient)
MsO-be healthy
"He is healthy. "

b. Ra-kowanʌ (Ra-, with semantic patient)
MsS-be big
"He is big."

c. Wa-ho-yeshu (Ro-, with semantic agent)
FAC-MsO-laugh
"He laughed."

d. Ra-yʌtho-s (Ro-, with semantic agent)
MsS-plant-HAB
"He plants."

I will not fully expound Mithun's theory or comment on it in greater detail, since much of the possible

theoretical implications of these shared forms lie outside the scope of this thesis.

Whether an intransitive verb takes a subjective or objective agreement form is also affected by the aspect of the verb. The stative aspect induces its verb to take an objective agreement form regardless of what form it takes normally. This behaviour is discussed by Ormston (1993), who proposes that the stative aspect is not truly an aspect, but itself a verb, allowing it to have its own argument structure and influence the agreement form. This solution seems to adequately prevent this problem from implicating on the primary mechanism of verbal agreement. Examples below demonstrate the change of form induced by the stative aspect: (18a) and (18b) use the same agreement form, the subjective intransitive form, while (18c), in the stative, instead uses the objective intransitive form.

(18) Kanyen'keha (from Ormston 1993)

a. R-atorat-s

MsS-hunt-HAB

“He hunts.”

b. ʌ-h-atorat-e'

FUT-MsS-hunt-PUNC

“He will hunt.”

c. Ro-torat-u

MsO-hunt-STAT

“He has hunted.”

2.4. Distinction of number

Kanyen'keha verbal agreement distinguishes number features for its arguments. It maximally makes

distinctions between singular, dual, and plural numbers, but for many arguments and contexts, sensitivity is reduced, such that fewer distinctions are made. This usually takes the form of ambiguity between dual and plural arguments, i.e. the reduction of a singular-dual-plural distinction to a singular-plural distinction. In some cases the distinction is reduced further, such that no distinction is made between any number for a given argument. Number distinction is in many cases reduced for both arguments in a single context. Cases of ambiguity can be separated into several predictable distributions, all of which will be discussed in this section.

Kanyen'keha verbal agreement additionally distinguishes clusivity of first person plurals. There exist different forms corresponding to whether a first person plural specifically includes or excludes the hearer of the utterance, i.e. the second person. This distinction between first person inclusive and first person exclusive is only made for subjects, as context differences in clusivity of first person objects do not result in any different forms. For first person subjects, clusivity distinction is retained with all different possible objects. The examples below in (19) demonstrate this clusivity contrast, and its loss for first person plural objects.

(19) Kanyen'keha (from Owennatekha 2019)

a. Etshiteni-nòn:we'-s (1 incl.→ 3)
1IdS.MsO-like-HAB
"We two (incl. you) like him."

b. Shakeni-nòn:we'-s (1 excl. → 3)
1EdS.MsO-like-HAB
"We two (excl. you) like him."

c. Shonkeni-nòn:we'-s (3 → 1)
MsS.1dO-like-HAB

"He likes us two/you & I."

Losses of number distinction are experienced in the same contexts equally by 1st person and 2nd person arguments, allowing them to be discussed simultaneously as local arguments. 3rd person arguments experience their own separate set of losses of number distinction. I will first discuss the number distribution of local arguments, and then those of 3rd person arguments.

Local arguments are distinguished between plural and dual in most cases, but they lose this distinction when paired with 3rd person feminine singular arguments or with 3rd person plural arguments. These two kinds of arguments are themselves not distinguished when paired with local arguments, as discussed in more detail further ahead, resulting in a convergence of forms between a large variety of contexts. Examples below in (20) demonstrate the loss of distinction between dual and plural number for local arguments. (20a-b) demonstrate that dual and plural 1st person arguments are distinguished, producing different forms, when paired with a 3rd person masculine singular argument. (20c,i-ii) demonstrate that dual and plural 1st person are not distinguished when paired with a 3rd person feminine singular argument. (20c,iii) demonstrates co-occurrence with loss of 3rd person argument number and gender distinction, as will be discussed shortly.

(20) Kanyen'keha (from Owennatekha 2019)

a. Etshiteni-nòn:we'-s

1IdS.MsS-like-HAB

"We two (incl. you) like him."

b. Etshitewa-nòn:we'-s

1pS.MsS-like-HAB

"We all like him."

c. Yakhi-nòn:we'-s

1pS.3S-like-HAB

i. “We two (excl. you) like her.”

ii. “We all like her.”

iii. “We like them.”

Kanyen'keha exhibits a complex ambiguity in terms of which argument is pluralized in 1 → 2 and 2 → 1 contexts, such that in many cases it is ambiguous whether it is the subject, object, or both that is plural. The examples below in (21) demonstrate this ambiguity in 1->2 contexts. Example (21a,i-iii) show that contexts with either argument individually plural, and both arguments plural, all result in the same form, making it indistinct which argument is plural, but clear that at least one is. Example (21b) demonstrates ambiguity of number for duals rather than plurals, showing that either argument may individually be interpreted as dual. (21a,iv) demonstrates an additional complication: Both arguments being dual results in convergence of form with plural contexts.

(21) Kanyen'keha (from Owennatekha 2019)

a. Kwa-nòn:we’-s

1S.2O.PLURAL-like-HAB

i. “We like you.”

ii. “I like you all.”

iii. “We like you all.”

iv. “We two like you two.”

b. Keni-nòn:we’-s

1S.2O.DUAL-like-HAB

i. “You two like me.”

ii. “I like you two.”

For 3rd person arguments, the distinction between dual and plural number is lost in all contexts with a local argument or with a 3rd person masculine singular argument. 3rd person feminine singular arguments in these contexts produce the same form as dual and plural 3rd person arguments, resulting in additional loss of distinction between singular and plural numbers. This results in a total loss of number distinction for feminine arguments in these contexts. Example (22) below demonstrates this, showing convergence of forms for 3rd person feminine singular objects and 3rd person dual and plural objects. These examples coincide with a loss of gender distinction for plural 3rd person arguments, which will be discussed in more detail in the next sub-section.

(22) Kanyen'keha (from Owennatekha 2019)

a. Khe-nòn:we’-s

1sS.3O-like-HAB

i. “I like her.”

ii. “I like those two.”

iii. “I like them.”

The distinction between dual and plural 3rd person arguments is demonstrated in two distinct sets of contexts. One set of contexts is that which pairs dual and plural 3rd person subjects with inanimate objects; Examples below in (23a-b) demonstrate dual and plural 3rd person masculine subjects producing different forms with an inanimate object, and examples (23c) demonstrates convergence of forms for the same arguments with a 3rd person feminine singular object.

(23) Kanyen'keha (from Owennatekha 2019)

a. Ni-nòn:we’-s

MdS.IsO-like-HAB

“Those two like it.”

b. Rati-nòn:we’-s

MpS.IsO-like-HAB

“They all like it.”

c. Shakoti-nòn:we’-s

MpS.FsO-like-HAB

i. “Those two like her.”

ii. “They all like her.”

The other set of contexts where 3rd person arguments are distinguished between dual and plural number are those that pair 3rd person dual subjects with 3rd person plural objects. Owennatekha (2019) gives verbal agreements forms for dual 3rd person subjects paired with plural 3rd person objects, but does not give forms for any other combination of dual and plural 3rd arguments; there are no forms for dual 3rd person objects, and there are no forms for pairs of 3rd person plural arguments. In this way, 3rd person dual and plural subjects are distinguished, though in this case there is not a convergence of forms but a gap of forms, and a reduction of expressible distinction to singular-dual rather than singular-plural. Verbal agreement forms for contexts pairing 3rd person dual subjects with 3rd person plural objects are demonstrated below in (24). Gender of the subject in these forms is indistinct, though the gender of the object is distinct.

(24) Kanyen'keha (from Owennatekha 2019)

a. Ronwati-nòn:we’-s

3dS.MpO-like-HAB

“Those two like those men.”

b. Konwati-nòn:we’-s

3dS.FpO-like-HAB

"Those two like those women."

It is not entirely unexpected that there would not be forms for pairs of 3rd person plural arguments, since there are not forms for pairs of arguments with necessary overlap between referents, such as pairs of 1st persons or 1st person inclusive plurals and 2nd persons of any number, as will be discussed in greater detail in sub-section 2.6. However, a pair of plural 3rd person objects only has potential overlap between referents, rather than necessary overlap, and there are many other pairs of arguments with potential but not necessary overlap between referents that do have verbal agreement forms, such as pairs of 3rd person masculine singular arguments.

2.5. Distinctions of gender

Kanyen'keha verbal agreement distinguishes masculine, feminine, and inanimate genders for 3rd persons only. This distinction is lost in many contexts, primarily those where the 3rd person argument is plural. The exact categories of contexts which cause loss of gender distinction will be described in detail in this sub-section.

For singular 3rd person arguments in most contexts, gender is fully distinguished between masculine, feminine, and inanimate. There is only one case of syncretism for gender of singular 3rd person arguments: A 3rd person masculine singular object triggers syncretism between masculine and inanimate 3rd person singular subjects. This is demonstrated below in (25a), where two different subjects both produce the same form with a masculine singular object, resulting in an ambiguous subject. With any other gender of object, these two subjects result in different forms, as shown in (25b-c).

(25) Kanyen'keha (from Owennatekha 2019)

a. Ro-nòn:we'-s

I/MsS.MsO-like-HAB

“He likes him.”

“It likes him.”

b. Rake-nòn:we’-s

MsS.1sO-like-HAB

“He likes me.”

c. Wake-nòn:we’-s

IsS.1sO-like-HAB

“It likes me.”

If a 3rd person argument is plural, gender distinction is only retained in contexts with 3rd person feminine singular arguments or with 3rd person dual subjects. The examples below in (26) demonstrate this limited domain of plural gender distinction. In (26a-b), which have 3rd person feminine singular subjects, 3rd person plural objects of different genders result in different verbal agreement forms. (26c) demonstrates convergence of form for 3rd person plural objects of different genders with a 3rd person masculine singular subject. 3rd person dual subjects do not themselves retain gender distinction when paired a 3rd person plural object. This was shown before in (24), where (24a) and (24b) distinguish gender only for the object.

(26) Kanyen'keha (from Owennatekha 2019)

a. Ronwati-nòn:we’-s

FsS.MpO-like-HAB

“She likes those men.”

b. Konwati-nòn:we’-s

FsS.FpO-like-HAB

"She likes those women."

c. Shako-nòn:we'-s

MsS.3pO-like-HAB

i. "He likes those men."

ii. "He likes those women."

2.6 Additional facts

This section will discuss a few other aspects of Kanyen'keha's verbal agreement. This will include discussion of a series of gaps in the system of verbal agreement, and discussion of several factors beyond argument features that influence the realization of the verbal agreement. These factors include reflexivity, noun incorporation, and verbal agreement with arguments other than subjects and direct objects. These things are all of interest for analysis of Kanyen'keha's verbal agreement, as they must be considered to fully predict the verbal agreement realization, and to the extent that it is possible, this thesis' analysis will address them. These facts are also interesting to consider cross-linguistically; Some interactions discussed in this section also appear in other languages of interest, and the extent to which these properties are or are not shared may allow for identification of underlying structural principles or governing parameters. Sharedness of these properties will be discussed in more detail in section 4 of this thesis.

In sub-section 2.4, I discussed a gap of forms for pairs of 3rd person plural arguments, which comprises one of series of gaps. All other gaps of forms in the system appear to fall into a single other distinct series of gaps. These gaps are found in all contexts with overlap of local arguments, i.e. all contexts pairing two 1st person arguments, two 2nd person arguments, or pairing 1st person inclusive subjects with 2nd person objects. In these contexts, the subject and object both necessarily refer to the

same referent, or the referent of the subject includes the referent of the object; The gap of forms for these contexts might be explained as an expected result of Binding Principle violations.

Many of these contexts with missing forms can be expressed using reflexive or reciprocal forms. Contexts pairing arguments of same person but distinct number or pairing 1st person inclusive arguments with 2nd person arguments cannot be expressed these forms. If an alternate strategy for expressing these contexts exists, it is not presented by Owennatekha (2019) or familiar to me.

Reflexive and reciprocal forms are presented in Table 2. In most of these forms, the verbal agreement prefix is identical to the intransitive subjective forms, which are also presented in Table 2 for comparison. Reflexive forms are expressed through a reflexive morpheme *-atate-*. Reciprocal forms are expressed by adding a reciprocal morpheme *te-* before the verbal agreement of a reflexive form, and exist for all non-singular cases which have reflexive forms. Examples below demonstrate reflexive and reciprocal forms in (27a-b), as well shared shared agreement form of reflexives with intransitive subjective forms, as between (27a) and (27c).

(27) Kanyen'keha (from Owennatekha 2019)

a. R-atate-nòn:we'-s (Ra-, Reflexive)
MsS-REFL-like-HAB
"He likes himself."

b. Te-hy-atate-nòn:we'-s (Reciprocal)
RECP-MdS-REFL-like-HAB
"Those two men like eachother."

c. Ra-nòn:we'-s (Ra-, Inanimate object)
MsS.IsO-like-HAB
"He likes it."

Table 2			
Kanyen'keha reflexive and reciprocal forms			
Subject	Reflexive form	Reciprocal form	Intransitive subjective form
1st person sg.	k-atate-		ke-
1st person incl. dual	ty-atate-	te-ty-atate-	teni-
1st person excl. dual	yaky-atate-	te-yaky-atate-	yakeni-
1st person incl. pl.	tew-atate-	te-tew-atate-	tewa-
1st person excl. pl.	yakw-atate-	te-yakw-atate-	yakwa-
2nd person sg.	s-atate-		se-
2nd person dual	tsy-atate-	te-tsy-atate-	seni-
2nd person plural	sew-atate-	te-sew-atate-	sewa-
3rd person masc. sg.	r-atate-		ra-
3rd person fem. sg.	yon-tate-		ye-
3rd person masc. dual	y-atate-	te-hy-atate-	ni-
3rd person fem. dual	ky-atate-	te-ky-atate-	keni-
3rd person masc. pl.	ron-tate-	te-hon-tate-	rati-
3rd person fem. pl.	kon-tate-	te-kon-tate-	konti-

The -*atate*- reflexive morpheme inserted between the verb and the verbal agreement causes all reflexive and reciprocal forms to exhibit the phonological variations normally associated with a-initial verbs, but otherwise demonstrates no additional variation of verbal agreement form. Examples below demonstrate this phonological variation using an a-initial verb in (28a), a non-reflexive consonant initial verb in (28b), and a reflexive of that same consonant-initial verb in (28c). (28a) and (28c) share the same

phonological form for verbal agreement, unlike (28b), though its verbal agreement form expresses the same information.

(28) Kanyen'keha (from Owennatekha 2019)

a. Ky-ato:rat-s

FdS-hunt-HAB

“Those two women hunt.”

b. Keni-non:we'-s

FdS-like-HAB

“Those two women like it.”

c. Ky-atate-non:we'-s

FdS-REFL-like-HAB

“Those two women like themselves.”

Uniquely, the 3rd person feminine singular reflexive form coincides with the form of the verbal agreement used for pairs of 3rd person feminine singular arguments. Principled generative explanation of this convergence of form in the 3rd person feminine singular case will not be attempted by this thesis. I will assume this convergence of form is a result of diachronic effects with no syntactic meaning, but more information on this may be found by more detailed future analysis of the reciprocal and reflexive forms in Kanyen'keha. Examples below in (29) demonstrate identity of these two forms.

(29) Kanyen'keha (from Owennatekha 2019)

a. Yontate-nòn:we’-s

FsS.FsO-like-HAB

“She likes her.”

b. Yon-tate-nòn:we’-s

FsS-REFL-like-HAB

"She likes herself."

Reflexive and reciprocal forms offer additional complications to an analysis of Kanyen'keha's verbal agreement, because they demonstrate unique variations of verbal agreement. This means that a full accounting of Kanyen'keha's verbal agreement must by some means be sensitive to reflexivity, in addition to all the argument features already discussed. As well, reflexivity seems to interact specially with person and number features, based on the specific and consistent change of dual number marking and 3rd person plural number marking.

Noun incorporation, which was briefly discussed as appearing in Kanyen'keha in section 1, can also affect the realization of Kanyen'keha's verbal agreement. Baker (1996) demonstrates noun incorporation of animate objects and an accompanying change of verbal agreement realization. His examples are shown below in (30). The examples demonstrate different verbal agreement forms appearing dependent on whether or not the animate object is incorporated. In (30a), the object is not incorporated, and the expected form for a 3rd person plural object appears, while in (30b), the object is incorporated and the verbal agreement instead reflects an inanimate object or intransitive form, as if there is no object agreement. (30c) and (30d) demonstrates that one and only one of NI or object agreement can occur.

(30) Kanyen'keha (from Baker 1996)

a. Shako-nuhwe'-s (ne owira'a). (No NI, object agreement)

MsS.3pO-like-HAB NE baby

"He likes them (babies)."

b. Ra-wir-a-nuhwe'-s (NI, no object agreement)

MsS-baby-∅-like-HAB

"He likes babies."

c. * Ra-nuhwe'-s ne owira'a. (No NI, no object agreement)

MsS-like-HAB NE baby

"He likes babies."

d. *? Shako-wir-nuhwe'-s (NI, object agreement)

MsS.3pO-baby-∅-like-HAB

"He likes babies."

Baker (1996) proposes that this change is the result of noun incorporation rendering realization of the incorporated object by the verbal agreement redundant; i.e. that noun incorporation fulfills the same functional obligation of θ-role assignment that verbal agreement does. I do not have any compelling reason to reject the spirit of this proposal.

There exist some types of constructions where verbal agreement appears to realize arguments that are not the subject or direct object of the verb. Such cases include agreement realization of indirect objects, and of apparent possessors of inanimate objects.

Kanyen'keha displays verbal agreement with indirect objects in ditransitive verbs, i.e. those having a subject, direct object, and indirect object. Baker (1996) shows that Kanyen'keha ditransitive verbs require their direct object to be inanimate, and display verbal agreement based on the subject and indirect object, displaying identical forms to transitive verbs, i.e. as with agreement based on a subject and direct object. Examples below in (31) demonstrate ditransitive verbs, with their verbal agreement form realizing their subject and indirect object. (31d) demonstrates the ungrammaticality of animate direct objects with ditransitive verbs.

(31) Kanyen'keha (from Baker 1996)

a. Wa-hiy-u-'

FAC-1sS.MsO-give-PUNC

"I gave it to him."

b. Wa-hak-u'

FAC-MsS.1sO-give-PUNC

"He gave it to me."

c. Ka'sere' ʌ-hi-tshʌry-a-'s-e'

car FUT-1sS.MsO-find-BEN-PUNC

"I will find him a car"

d. * Kaskare' ʌ-hi-tshʌry-a-'s-e'

girlfriend FUT-1sS.MsO-find-BEN-PUNCH

"I will find him a girlfriend"

I will not go into detail about how Baker (1996) predicts these forms and their restrictions in his theory, though his proposal does cover this matter.

In limited and disputed contexts, Kanyen'keha displays apparent possessor-raising effects, whereby the verbal agreement realizes as if a possessor of an incorporated argument were one of its arguments. Per Baker (1996), Kanyen'keha in general does not allow possessor-raising. He demonstrates general ungrammaticality of possessor-raising forms, and offers non-possessor-raising analyses for all contexts that appear to display possessor-raising. Examples of ungrammatical possessor-raising forms are demonstrated below in (32).

(32) Kanyen'keha (from Baker 1996) pp 340

a. * Wa-hi-'sere-ht-ohare-'

FAC-1sS.MsO-car-NOM-wash-PUNC

"I washed his car."

b.* Wa-shako-tya'tawi-tsher-a-ratsu-'

FAC-MsS.FsO-dress-NOM-∅-tear-PUNC

"He tore her dress."

Baker (1996) identifies two types of contexts where apparent possessor-raising occurs, demonstrated below. Apparent possessor-raising occurs with possessors of inanimate subjects of stative verbs, a subclass of intransitive verbs which are similar in meaning to adjectives, true examples of which Kanyen'keha has been otherwise said to lack (Baker 2003). Apparent possessor-raising also occurs with possessors of inalienably possessed[2] body parts, a limited subclass of nouns. Examples below demonstrate both these contexts. (32a) shows a stative verb with agreement marking its subject's possessor, yielding an objective intransitive form. (32b) shows a transitive verb with verbal agreement marking its incorporated inanimate object's possessor.

(32) Kanyen'keha (from Baker 1996) pp 340

a. Ro-ther-owanʌ kikʌ

MsO-basket-be big this

"This guy's basket is large."

b. Wa-hi-kuhs-ohare-'

FAC-1sS.MsO-face-wash-PUNC

"I washed his face."

Baker (1996) does not provide data demonstrating whether inalienable possession is solely sufficient to allow for this possessor-raising in transitive contexts like (32b), or if this possessor-raising is possible without incorporation of the inalienably possessed noun. I will not describe his analyses for these constructions in detail, because these constructions largely lie beyond the scope of this thesis.

2 Kanyen'keha contains nouns which must be expressed with a possessor, commonly referring to body parts or kinship relations; Such nouns are called inalienably possessed nouns.

2.7. Summary & Conclusions

This section has covered several basic aspects of the behaviour of Kanyen'keha's verbal agreement system. This includes demonstration of the different forms of the verbal agreement that appear in transitive and intransitive contexts. It also includes discussion of the verbal agreement's dependence on subject and object arguments in these contexts. This section has also described the features of dependent arguments that the verbal agreement is sensitive to and outlined the cases where this sensitivity is degraded by syncretism. Finally, this section has discussed additional contexts that complicate the behaviour of the verbal agreement, including ditransitive contexts, reflexive contexts, and supposed possessor-raising in intransitive and transitive contexts. I will summarize these matters, as well as outline some additional matters of interest identifiable from the overall behaviour of Kanyen'keha verbal agreement.

Kanyen'keha verbal agreement is in general dependent on both its subject and object arguments, where both such arguments exist. In intransitive contexts, it is dependent on only one argument, though it retains an apparent sensitivity to the semantic or syntactic role of its argument, based on properties of the verb. Kanyen'keha's verbal agreement paradigm thus consists of two sets of intransitive forms, the subjective and objective intransitive verbal agreement forms, and an array of transitive forms based on combinations of subjects and objects. The intransitive forms are identical to transitive forms with inanimate subjects or objects. The total paradigm displays more contexts than it displays unique forms, as many contexts result in identical forms due to pervasive syncretism.

Kanyen'keha verbal agreement is sensitive to 4 categories of features: person, case, number, and gender. Variation of features from these 4 categories for either argument results in variation of verbal agreement form in at least some cases. Kanyen'keha verbal agreement distinguishes person features

between 1st, 2nd and 3rd persons, and distinguishes inclusive and exclusive 1st person plurals. Kanyen'keha verbal agreement distinguishes case features, identifying the subject and object of both arguments in the majority of verbal agreement forms. Kanyen'keha verbal agreement distinguishes number features between singular, dual, and plural numbers. Kanyen'keha verbal agreement distinguishes gender, for 3rd persons only, between masculine, feminine, and inanimate. The verbal agreement's sensitivity to these features is lost in some sets of cases due to pervasive syncretism, especially features of number and gender, though loss of sensitivity to case does also appear in a more limited set of contexts. Person features are entirely unambiguous in all but two cases.

In a few contexts, Kanyen'keha's verbal agreement exhibits more complicated behaviour than that of standard intransitive and transitive contexts, where the verbal agreement agrees with subject and object as applicable and realizes a form based on the argument's features. Ditransitive contexts require the direct object to be inanimate, and display agreement with the indirect object in place of the direct object. Reflexive and reciprocal contexts display a distinct set of forms, which resemble the intransitive agreement forms with additional morphology. In some contexts, apparent possessor-raising occurs, where the verbal agreement displays agreement with the possessor of an inanimate object as though that possessor were the object of the verb. There may be additional contexts in Kanyen'keha where the verbal agreement displays more complicated behaviour that has not been identified by this thesis. Such behaviour is most likely to be displayed in argument-raising constructions, controlling constructions, or other similar complex predicates, if such constructions exist in Kanyen'keha.

The overall pattern of syncretism in Kanyen'keha demonstrates points of interest in the behaviour of the verbal agreement, which will be used by this thesis in comparing Kanyen'keha's verbal agreement to other similarly complex verbal agreement systems, and in formulating an analysis of the structures and operations underlying Kanyen'keha.

The first such point of interest is the apparent privileging of some types of arguments over others in terms of ability to trigger syncretism. Many syncretisms are displayed only in the presence of local arguments, 1st person or 2nd person arguments, while other syncretisms are displayed only in the presence of local arguments or 3rd person masculine singular arguments. In this sense, local arguments and 3rd person masculine singular arguments appear to be privileged over other arguments.

3rd person feminine singular arguments undergo additional syncretism in some contexts, losing gender and number distinction and displaying the same forms as 3rd person plural arguments, where masculine or inanimate arguments do not. Feature distinctions in some arguments are only displayed alongside 3rd person inanimate arguments. In this sense, 3rd person feminine singular and 3rd person inanimate singular arguments appear to be disprivileged relative to other arguments.

This section has attempted to describe the behaviour of Kanyen'keha's verbal agreement in largely empirical and theory-neutral terms, allowing it to serve as a basis for novel future analyses of Kanyen'keha or for revisions of this thesis' analysis, as well as as a record of data taken into account by this thesis' analysis.

3. Previous analyses of Kanyen'keha verbal agreement

3.1 Introduction

This section will outline two previous analysis of Kanyen'keha's verbal agreement system. This includes the analyses of Kanyen'keha's verbal agreement made by Baker (1996) and by Bejar & Rezac (2009). I will discuss the similarities and differences in the assumptions and mechanisms of these two analyses. This section will also demonstrate the necessity of a new analysis by discussing contradictions and gaps in previous analyses of Kanyen'keha's verbal agreement that are revealed by the inspection of the complete Kanyen'keha transitive paradigm, especially by the inclusion of plural contexts.

I will first discuss the analysis of Baker (1996), and then discuss the analysis of Bejar & Rezac (2009). I will outline the syntactic structures assumed in these analyses, and outline the mechanics used to establish an agreement relationship between the verbal agreement and the arguments of the verb. I will also discuss the morphological component of these analyses, insofar as such components exist.

Finally, I will demonstrate why a new analysis of Kanyen'keha's verbal agreement is necessary. I will first discuss the ability of Baker (1996) and Bejar & Rezac (2009) to accurately produce the correct verbal agreement forms in various contexts, and show where they do not adequately predict the data. Both analyses are formulated over restricted domains of the verbal agreement paradigm, primarily restricted to singular contexts, and neither of them can be expanded over the domain of plural contexts without running into problems. I will also discuss some ways that the empirical data of Kanyen'keha verbal agreement contradicts the presuppositions or syntactic mechanics of both analyses.

3.2 The analysis of Baker (1996)

In this sub-section, I will outline the analysis of Kanyen'keha's verbal agreement made in Baker (1996).

Baker (1996) covers many aspects of Kanyen'keha's syntax beyond verbal agreement, including overall sentence structure, the internal structure of noun phrases, and the structures of adpositions and embedded clauses in Kanyen'keha, but this thesis is primarily concerned with Baker's work on Kanyen'keha verbal agreement.

I will first discuss the theoretical backgrounds and assumptions of Baker (1996), and outline several of the principles and proposals he gives as operating in Kanyen'keha. After that I will discuss the syntactic structures and mechanics of agreement he assumes, demonstrating the structures his theory assumes for intransitive, transitive, and ditransitive verbs in Kanyen'keha. Finally, I will discuss Baker's engagement with morphology.

Baker (1996) is based in Principles & Parameters theory, which theorizes “principles,” which are properties common to all human languages, and “parameters,” which describe the variation between languages in terms of parameters that are set different in different languages. Baker cites Chomsky (1981), and Rizzi (1982) as foundational work in this school, and he cites Borer (1984), Fukui (1986), and Chomsky (1992) as additional work identifying and restricting the domain over which parameters operate to primarily functional categories or the inflectional system of a language.

The primary theoretical goal of Baker (1996) is to propose a macroparameter which provides a unified explanation for many shared properties of polysynthetic languages, including Kanyen'keha, which serves as the primary empirical basis of the work. Properties that Baker relates to this macroparameter and identifies as clustering together in polysynthesis include noun incorporation, full and obligatory agreement with both subjects and objects, argument-dropping and relative freedom of word order. These properties, alongside some basic intuitions about their mutual dependence, were all discussed as occurring in Kanyen'keha in section 1. The parameter that Baker proposes is called the Morphological Visibility Condition (MVC), given below in (34), alongside a formulation of the Theta

Criterion in (33), upon which the MVC is crucially dependent.

(33) The Theta Criterion (Chomsky 1981)

For every theta-role there must be one and only one argument; for every argument there must be one and only one theta-role.

(34) The Morphological Visibility Condition (Baker 1996)

A phrase X is visible for theta-role assignment from a head Y only if it is coindexed with a morpheme in the word containing Y via:

(i) an agreement relationship, or

(ii) a movement relationship

The MVC and Theta Criterion, both of which are assumed by Baker to apply to Kanyen'keha, together explicate why there is a syntactic need for agreement, and why it is that agreement is capable of fulfilling that need. The Theta Criterion creates a requirement that arguments be assigned a theta-role, while the MVC allows for agreement to make theta-role assignment possible. The MVC also explains interactions of noun incorporation with verbal agreement, as noun incorporation, being a type of movement relationship, is stated by the MVC to also make theta-role assignment possible.

Baker also makes several proposals regarding the position of NPs, and the relationship between case-assigning heads and agreement morphemes, all of which affect his model of verbal agreement in Kanyen'keha. He presents extensive data and argumentation to justify these assumptions, much of which appeared previous to Baker (1996) in Baker (1991). This argumentation will not be retread in this thesis. These proposals are given below in (36), alongside a formulation of the Case Filter in (35), which is assumed by these proposals.

(35) The Case Filter (Rouveret & Vergnaud 1980, Chomsky 1980)
*NP without Case if NP has phonetic features and is in an argument position.

(36) Baker's proposals on NP position and Case in Kanyen'keha (adapted from Baker 1996)

i. Argument positions are occupied by covert pro arguments

ii. Overt NPs always appear in non-argument positions.

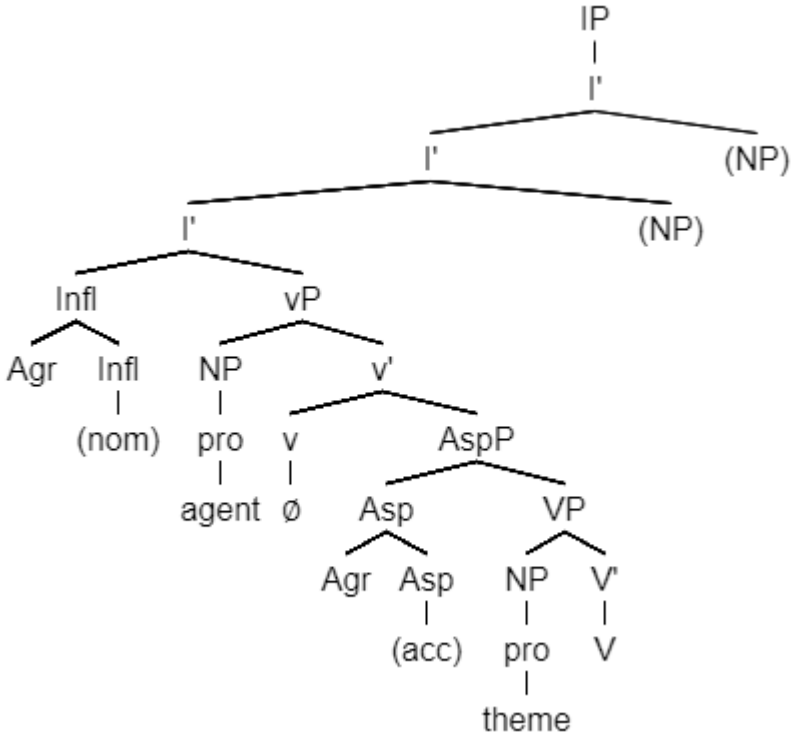
iii. An agreement morpheme adjoined to head X receives that head's Case at S-structure

iv. All and only Case-assigning heads in Mohawk have adjoined agreement morphemes.

The Case Filter requires that overt NPs in argument positions receive Case, but Case in Kanyen'keha is always assigned to agreement morphemes that appear alongside Case-assigning heads, so argument positions are restricted exclusively to covert *pro* arguments, which do not require Case. Overt NPs referring to arguments instead appear in adjunct positions and co-refer with *pro* arguments. Because agreement morphology strictly co-occurs with Case-assigning heads, the distribution of agreement morphology in Kanyen'keha parallels the distribution of structural Case assignment in English. This allows for transferral of English-based Case theories onto Kanyen'keha and the maintenance of a relatively universal distribution of Case assigners, while explaining both the extensive verbal agreement and relative freedom of word order in Kanyen'keha.

Following these assumptions, Baker's analysis of verbal agreement primarily concerns three sets of objects: First, agreement morphemes, which receive Case and render arguments visible for theta-role assignment, second, covert NP arguments, which are made visible for theta-role assignment by agreement morphemes, and third, overt NP adjuncts, which co-refer with covert arguments and explicate semantic content associated with arguments. These objects and their position in the syntactic structure are all demonstrated in the structure below in (37), which Baker proposes for an ordinary transitive verb in Kanyen'keha.

(37) Baker's Kanyen'keha transitive verb structure (adapted from Baker 1996)



Agreement morphemes are attached to and receive Case from Infl and Asp, as they are both Case assigners, Infl of nominative Case, and Asp of accusative Case[3]. Covert *pro* NPs are introduced in specifier of vP and specifier of VP, as those are argument positions. Overt NPs which co-refer with the *pro* arguments are optionally introduced as adjuncts of IP, allowing them to appear to the left or right of the verb.

The agreement morpheme on Infl agrees with the NP in the specifier of vP and the agreement morpheme on Asp agrees with the NP in the specifier of VP. This does not immediately render these arguments visible for theta-role assignment, since the MVC requires that morphemes rendering

3 In the development of his proposal, Baker first suggests that V, the proper main verb of a transitive clause, should assign accusative Case. In an structure given in the middle of his proposal, Baker shows vP as the assigner of accusative Case. The final structure he shows introduces Asp between the agent-introducing vP and the main VP, to which he moves the Case-assignment properties of V, according to the following principle from Noonan (1992): The head of AspP is a Case assigner if and only if AspP is the sister of a V.

arguments visible be in the same word as the head assigning theta-roles, which they are not, being in Infl and Asp while theta-roles are assigned from V. To solve this, V undergoes successive head movement upward through the structure, resulting in one morphological complex containing V and all agreement morphemes, rendering the arguments visible for theta-role assignment via the MVC. Theta-role assignment is determined by the UTAH, given below in (38)

(38) The Uniformity of Theta Assignment Hypothesis (UTAH) (from Baker 1992)

Thematic roles are always assigned in the following configurations:

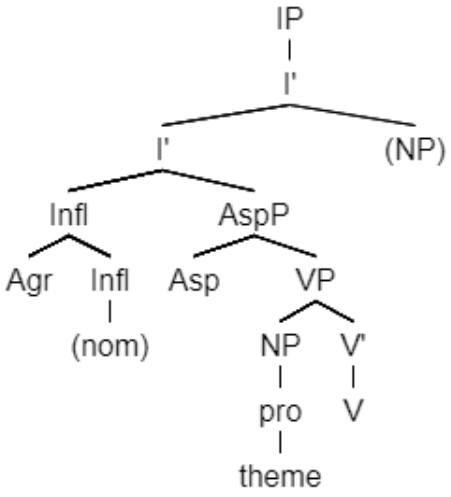
(i) Theme to the specifier of the minimal VP.

(ii) Goal to the complement of minimal VP

(iii) Agent outside the minimal VP (typically, to the specifier of a vP shell)

If a verb does not assign an agent theta-role, as in the case of unaccusative intransitives, then it does not generate a vP or assign Case from Asp. Thus, only Infl has an agreement morpheme, which agrees with the theme or goal of the verb. The structure of an intransitive verb with a theme is given below in (39).

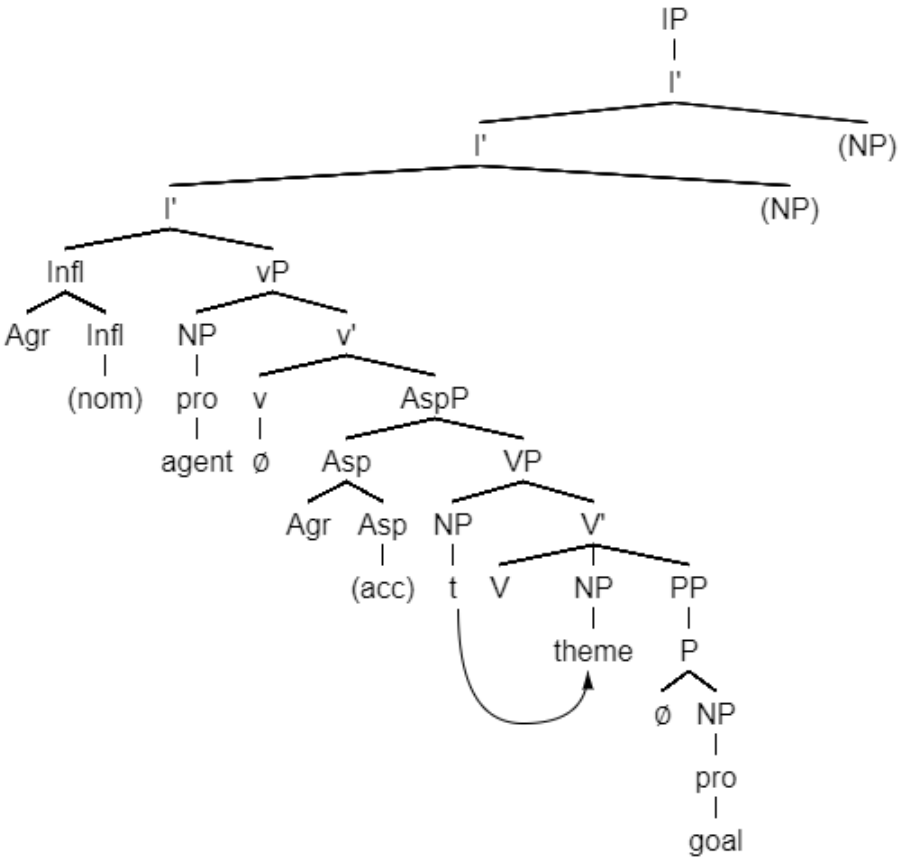
(39) Baker's Kanyen'keha unaccusative verb structure (adapted from Baker 1996)



Goal arguments appear in the complement of VP, and receive agreement from Asp if there is no theme,

which renders them visible for theta-role assignment in the same way that themes in ordinary transitive verbs are so rendered. If there is a theme, as in the case of ditransitive verbs, then it is not possible for agreement to render both the goal and the theme visible for theta-role assignment, as there are only two Case assigners and so only two agreement morphemes. Instead, the theme incorporates, moving into V, which renders it visible for theta-role assignment via movement, per the MVC. The goal receives agreement and is made visible for theta-role assignment as normal. The structure of such a ditransitive verb is shown below in (40), with movement for NI shown.

(40) Baker's Kanyen'keha ditransitive verb structure (adapted from Baker 1996)



Baker's full discussion of NI in Kanyen'keha will not be elaborated in this thesis, but I will state some of his proposals on NI that directly relate to the structure above. First, Baker proposes that NI allows overt NPs to be generated in argument positions, as NI moves the overt noun out of the argument

position and replaces it with a null co-referring trace, rescuing it from being ruled out by the Case Filter. Because of this, NI can occur for overt arguments without irreparably violating the assumptions in (36). Second, Baker proposes that goal arguments in Kanyen'keha are embedded in covert PPs, which restricts them from undergoing NI, as the incorporated root cannot govern its trace due to the intervening null preposition. This prevents there being any choice of whether it is the goal or theme that incorporates in ditransitive sentences. This covert PP is shown in the structure above.

These syntactic structures resemble structures used in P&P theories contemporary with Baker (1996) for English and other languages, in that it uses the same Case assigners, argument positions, and sentential structure of IP, VP, and NP arguments. Despite this structural similarity to languages with surface-level dissimilarities from Kanyen'keha, the structure is able to model Kanyen'keha's verbal agreement by the inclusion of agreement morphemes for each Case assigner, and is able to model Kanyen'keha's word order by the restriction of explicit NPs to adjuncts of IP.

Baker does not discuss the spell-out of agreement in detail, and neither does he discuss the spell-out of other aspects of Kanyen'keha he discusses in Baker (1996). He offers that morphological spell-out is fully accounted for by the syntactic structures and operations he describes. He claims that the ordering of morphemes in a word is predicted by the syntactic structure, head movement, and the stipulation that adjunction is always to the left.

In this section, I have outlined the analysis of Kanyen'keha's verbal agreement system done by Baker (1996). This has included description of the fundamental framework he assumes, the relevant linguistic principles he proposes to underlie the system, the syntactic structures and objects that structure the system, the agreement, theta-role assignment, and movement relations that occur in those structures, and the morphological spell-out of Kanyen'keha, insofar as Baker discusses it. This section is not a substitute for the actual text of Baker (1996), which contains much more detailed elaborations

of all aspects of Baker's analysis, alongside treatment of other parts of Kanyen'keha syntax.

3.2 The analysis of Bejar & Rezac (2009)

In this sub-section, I will outline the analysis of Kanyen'keha's verbal agreement made in Bejar & Rezac (2009). Bejar & Rezac (2009) discusses verbal agreement in many different languages, but I will primarily discuss their analysis of Kanyen'keha. Their primary goal is to account for the phenomenon of agreement displacement in the class of direct-inverse agreement patterns without violating the basic constraints of the Agree operation, which are otherwise challenged by direct-inverse agreement patterns. In this process, Bejar & Rezac identify Kanyen'keha as displaying direct-inverse agreement and apply their proposal to its agreement pattern.

I will first discuss the fundamental assumptions of Bejar & Rezac (2009). This will include brief description first of agreement displacement and direct-inverse agreement. After this I will outline the Agree operation and the structure of person features which Bejar & Rezac assume. I will next discuss the syntactic structures and operations that Bejar & Rezac propose for Kanyen'keha. Bejar & Rezac propose a generic structure for direct-inverse agreement, but describe some additional mechanisms present in different languages with direct-inverse agreement to account for the particular features of different languages. I will discuss the generic structure direct-inverse structure which Bejar & Rezac apply to Kanyen'keha, as well as the additions they make to that structure to account for Kanyen'keha specifically.

Bejar & Rezac characterize direct-inverse agreement in terms of agreement displacement, a phenomenon whereby a part of an agreement system does not display a consistent grammatical function. They demonstrate agreement displacement as *ergative displacement* in Basque, using the examples below in (41), taken from Laka (1993). In these examples, the agreement prefix of the verb,

underlined in each example in (41), can not be characterized by whether it agrees with the subject (henceforth, external argument, EA, per Bejar & Rezac) or with the object (equally, internal argument, IA, per Bejar & Rezac), like the agreement morphemes of Baker (1996) do. In (41a), the agreement prefix targets the IA of the verb, while in (41b-d), the agreement prefix targets the EA. Per Bejar & Rezac, The notation x → y = z indicates x as the EA, y as the IA, and z as the target of the underlined agreement slot.

(41) Ergative displacement in Basque (from Laka 1993)

a. Ikusi z-in-t-u-da-n 1 → 2 = 2
seen 2-X-PL-have-1-PAST
"I saw you."

b. Ikusi n-ind-u-en 3 → 1 = 1
seen 1-X-have-PAST
"He saw me."

c. Ikusi n-ind-u-zu-n 2 → 1 = 1
seen 1-X-have-2-PAST
"You saw me."

d. Ikusi n-u-en 1 → 3 = 1
seen 1-have-PAST
"I saw him."

Similar but more complicated displacement patterns can also be seen in Nishnaabemwin. The examples below in (42) show the direct-inverse agreement pattern of Nishnaabemwin, with the agreement prefix underlined and its target notated as in (41). In direct-inverse agreement patterns like this, the target of the agreement prefix can be characterized entirely using a hierarchy of persons; The underlined

agreement prefix targets whichever of the EA or IA has a person feature ranking higher in the hierarchy. In Nishnaabemwin, the person hierarchy used is 2nd person > 1st person > 3rd person, as can be seen by the targeting of arguments in (42), where 2nd persons are always targeted if present, and 3rd persons are never targeted with 1st or 2nd persons, regardless of EA or IA status of these persons. A person hierarchy of 1st > 2nd >3rd can be seen in other languages, such as Paraguayan Guarani per Zubizarreta & Pancheva (2017).

(42) Direct-inverse displacement in Nishnaabemwin (adapted from Bejar & Rezac 2009)

a. G-waabm-in 1 → 2 = 2
2-see-1.INV
"I see you."

b. N-waabm-aa 1 → 3 = 1
1-see-DFLT
"I see him."

c. G-waabm-i 2 → 1 = 2
2-see-DFLT.1
"You see me."

d. G-waabm-aa 2 → 3 = 2
2-see-DFLT
"You see him."

e. N-waabm-ig 3 → 1 = 1
1-see-3.INV
"He sees me."

f. G-waabm-ig 3 → 2 = 2

2-see-3.INV

"He sees you."

While a person hierarchy accurately predicts direct-inverse agreement target in Nishnaabemwin and other languages, Bejar & Rezac note that a person hierarchy does not fully predict the agreement displacement of Basque, though it is dependent on comparison of persons. The agreement prefix of Basque instead follows a person hierarchy of $1^{st} = 2^{nd} > 3^{rd}$, supplemented by a preference for IAs over EAs when the person hierarchy does not decide the agreement target. From this, Bejar & Rezac characterize the agreement prefixes of Basque and Nishnaabemwin as canonically targetting the object, with displacement of the object from the agreement by the subject occurring when the subject outranks the object in the person-hierarchy of the language.

Bejar & Rezac (2009) analyzes these two agreement displacement phenomena as arising from the same pattern of agreement derivation, which they call Cyclic Agree. Their proposed system of Agree allows for agreement displacement and language-specific parametrization of person-hierarchies to emerge as a natural consequence of differences between Agreement probes in different languages and their resulting behaviour. This allows for parsimonious accounting of convergent patterns across languages.

Bejar & Rezac's proposal consists of three primary aspects, each of which will be described in more detail shortly. The first aspect is the basic nature and behaviour of the Agree used by Bejar & Rezac. The second aspect is the structure of person features used by Bejar & Rezac, which allows for the modelling of different person hierarchies in different languages. The third aspect is the cyclic nature of Agree that Bejar & Rezac assume, which, in conjunction with the particular feature structures used, allows for argument displacement.

Bejar & Rezac follow Chomsky (2000) in their basic assumptions on Agree, thus assuming the

following conditions in (44):

(44) Conditions on Agree (from Chomsky 2000)

Matching is a relation that holds of a probe P and a goal G. Not every matching pair induces Agree. To do so, G must (at least) be in the domain D(P) of P and satisfy locality conditions. The simplest assumptions for the probe-goal system are shown below:

a. Matching is feature identity.

b. D(P) is the sister of P.

c. Locality reduces to "closest c-command"

These assumptions mean that an agreement probe contains features of its own, and it seeks an argument that matches those features within its search domain. The features of a probe are not themselves interpretable, requiring phonological spell-out. Once an agreement probe matches its features with a goal, it copies the feature structure of that goal to the probe, then requiring spell-out. The feature structure contains the matching features of the goal as well as all features that entail those features. This allows for different types of agreement probes to be postulated, which will allow for the language-specific parametrization of agreement displacement, while maintaining the function of agreement probes as representing and spelling out the features of a goal, like the agreement morphemes of Baker (1996), which contain no features of their own and copy the features of their targets for eventual spell-out.

The different types of agreement probes that Bejar & Rezac will postulate are reliant on an entailment-based structure of person features which Bejar & Rezac assume, following Harley & Ritter (2002) and Bejar (2000a,b, 2003). Bejar & Rezac assume a [π] common to all persons, then a [participant] feature common to 1st and 2nd persons, the local persons, and then a [speaker] or [addressee], for 1st or 2nd persons respectively, depending on whether a language exhibits 1 > 2 >3 or 2

> 1 > 3 person hierarchy. A [speaker] or [addressee] feature entails a [participant] feature, which entails a [π] feature. This results in feature sets for person given below in (45). Bejar & Rezac assume that in a given language only one of either [addressee] or [speaker] will be active.

(45) Person specifications of Bejar & Rezac

3rd person: [π]

2nd person: [π, participant, (addresse)]

1st person: [π, participant, (speaker)]

Constructing the feature sets of persons in this way allows an agreement probe with the sole feature [*u*π], an uninterpretable [π] feature, to match with a goal of any person, and copy all of its person features, since all additional features entail [π]. This models the behaviour of typical person agreement, like that of English, which matches and spells out the features of the closest argument without displaying agreement displacement phenomenon. This structure of person features also allows for the postulation of agreement probes with more detailed sets of uninterpretable features, such as [*u*π, *u*participant], which Bejar & Rezac assume for Basque, or [*u*π, *u*participant, *u*speaker], which Bejar & Rezac assume for Kanyen'keha.

More articulated probes may agree with a goal but not be fully satisfied by it: A probe with features [*u*π, *u*participant] will match a 3rd person goal with the feature [π], but will not be fully satisfied, leaving an active residue with a [*u*participant] feature, which will search for an additional goal to Agree with. If the residue does agree with another goal, agreement displacement will occur: The agreement probe will spell out the second argument agreed with, as the first argument's feature content will be a subset of the second argument's feature content. This two-stage agreement with multiple arguments is the Cyclic Agree which Bejar & Rezac hinge their analysis on.

The agreement probes Bejar & Rezac consider are located on v, the head which introduces the

subject in its specifier. The 1st goal of such a probe will be the IA, by closest c-command, and so the agreement probe on v will agree with the IA. If the agreement probe is not fully satisfied by the object, then the active residue of the agreement probe will project higher into the structure of vP, which places the EA into its search domain. This process of derivation is schematized by Bejar & Rezac as below in (46).

(46) Derivation of a transitive vP

1. VP constructed as {V, {V, IA}}
2. Merge (v, VP) → {vI, {v, {V, {V, IA}}}}
3. Agree (v_I, IA)
4. Merge (vP, EA) → {v_{II}, {EA, {v_I, {v, {V, {V, {IA}}}}}}}
5. Agree (v_{II}, EA), if there is still a probe on v_{II}

Because the probe on v always agrees with the IA first, this derivation process allows for simple verbal agreement with IA, with no possibility of agreement displacement, as in the case of a [uπ] agreement probe, which will never agree without being fully satisfied. The derivation process also allows for agreement displacement of the IA by the EA in the cases of more articulated [*u*π, *u*participant] probes and maximally articulated [*u*π, *u*participant, *u*speaker] probes, as it allows for an unsatisfied probe to project higher and agree with the EA. Locating the probe on v also derives the preference for IAs over EAs in the case of [*u*π, *u*participant] probes where a person hierarchy cannot always determine the agreement target; Because the agreement probe always agrees with the IA first, and it will be fully satisfied by either a 1st or 2nd person argument, it will prefer the IA when both arguments are 1st or 2nd person.

I will note one final aspect of Bejar & Rezac's analysis before describing their proposal for Kanyen'keha specifically. Bejar & Rezac propose that the articulated probe on v is the sole verbal

agreement probe in the languages they apply their theory of Cyclic Agree and agreement displacement to, rejecting a two probe agreement configuration with a second agreement probe located on Infl, as Baker (1996) assumes for Kanyen'keha. This single agreement probe configuration means that the EA receives no agreement in cases where the probe on v is fully satisfied by the IA, as the sole agreement probe will not project higher and agree with the EA. Bejar & Rezac assume the Person-Licensing Condition (PLC), given below in (47), which creates a requirement that the EA and IA both receive agreement for their person features. The PLC will be violated in those cases where the EA receives no agreement. Bejar & Rezac propose language specific repair strategies that are implemented solely in cases where the EA does not receive agreement from the agreement probe on v to account for these PLC violations. This causes special additional syntactic processes to pattern with only the inverse cases (i.e. those where the IA outranks the EA in the person-hierarchy) in direct-inverse agreement systems.

(47) Person-Licensing Condition (PLC)

A π-feature [F] must be licensed by Agree of some segment in a feature structure of which [F] is a subset.

I will now discuss how Bejar & Rezac apply their theory of Cyclic Agree to Kanyen'keha. This will include demonstration of how their syntactic structures apply in Kanyen'keha, including the repair mechanism they propose for inverse context PLC violations mentioned above. This will also include discussion of how their structures predict the surface morphology of Kanyen'keha verbal agreement.

Bejar & Rezac base their analysis of Kanyen'keha off a limited subset of the verbal agreement paradigm, shown in Table 3, including exclusively singular arguments, and one 3 → 3 context. The unshaded portions of the table above indicate direct contexts, where the EA outranks the IA on the person hierarchy, and the shaded portions indicate inverse contexts, where the IA outranks the EA on the person hierarchy.

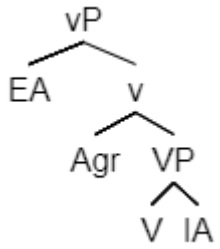
Table 3			
Transitive singular agreement paradigm for Kanyen'keha (core agreement in small capitals; added probe underlined) (from Bejar & Rezac 2009)			
EA → IA	1	2	3
1	-	KU-*see*	K-*see*
		1/2-*see*	1-*see*
		"I see you."	"I see him."
2	(h)s-K-*see*	-	HS-*see*
	2-1-*see*		2-*see*
	"You see me."		"You see him."
3	wa-K-*see*	(H)s-(w)a-*see*	Hra-wa-*see* > hra-o-*see*
	3.INV-1-*see*	2-3.INV	3.M-DFLT-*see*
	"He sees me."	"He sees you."	"It sees him."

Bejar & Rezac propose that Kanyen'keha is a direct-inverse language following a 1 > 2 > 3 person hierarchy. Thus, they assume a core agreement probe located on v that has the features[*u*π, *u*participant, *u*speaker], the spell-out of which is indicated in small capitals in the table above. They also propose that Kanyen'keha exhibits an added agreement probe on v that appears in inverse contexts to agree with the EA and repair PLC violations, the spell-out of which is underlined in the table above. I will show Bejar & Rezac's proposed structure for both direct and inverse contexts, and outline how the agreement plays out in both types of contexts.

The syntactic structure of the vP, the total domain of Bejar & Rezac's analysis for Kanyen'keha, is presented below in (47) for direct contexts. In direct contexts, there is a single agreement probe on v, with no need for any other agreement probes. This probe will first agree with the IA, which is in its immediate search space as the complement of V. After agreeing with the IA, the agreement probe will project an active residue of unsatisfied features higher into the structure. This search space of the active residue will include the EA, which merges into the structure as the specifier of v, so the active residue will be able to agree with the EA. This will result in the single core agreement probe agreeing with both

the EA and IA.

(47) Structure of the vP in direct contexts



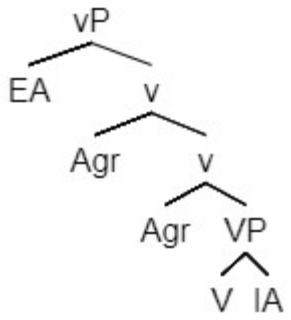
In direct contexts, the EA outranks the IA on the person hierarchy. For the EA to outrank the IA, the IA must always be either a 2nd or 3rd person argument, and may never be a 1st person argument. Because the core agreement probe of Kanyen'keha will only be fully satisfied by a 1st person argument, in all direct contexts it will project an active residue of unsatisfied features after agreeing with the IA. Because the EA outranks the IA, the EA will always have a person feature that matches the active residue.

For Kanyen'keha, in the 1 → 3 and 2 → 3 contexts, this agreement configuration results in agreement displacement, where v spells out only the features of the EA, in the form of *k-* for first persons or *hs-* for second persons, with no morphological realization of the 3rd person IA. In 1 → 2 contexts, this results in a portmanteau realization of v, *ku-,* which realizes both the 1st person argument and the 2nd person argument. Bejar & Rezac consider *ku-* to be a contextual allomorph of *k-* which appears only when there is a second person IA.

For inverse contexts, Bejar & Rezac must use a slightly different structure, demonstrated below in (48). This structure contains an added probe inserted above the core agreement probe of v. The core agreement probe on the lowest v projection agrees with the IA, but will not be able to agree with EA. The second probe will be added, occupying the same position that the active residue of the core

agreement probe occupies after projecting higher into the structure in direct contexts. The added probe will agree with the EA, as its closest matching argument. Thus the EA and IA each receive agreement from their own probe.

(48) Structure of the vP in inverse contexts



In inverse contexts, the IA outranks the EA on the person-hierarchy. The IA may be a 1st person argument, in which case the core agreement probe will be fully satisfied and cannot project an active residue. The IA may be 2nd or 3rd person, in which case the EA must be 3rd person, so the core agreement probe may only project an active residue that does not contain features that match the EA. The EA must receive agreement according to the PLC, so a second probe is added above the core agreement probe, with a full new set of [*u*π, *u*participant, *u*speaker] features. This added probe agrees with the EA.

This agreement configuration results in no agreement displacement, since there is no agreement by one probe with multiple arguments. Each argument is spelled out by a unique probe, resulting in two agreement morphemes appearing in all inverse contexts. Because Bejar & Rezac's analysis restricts added probes to inverse contexts, it predicts that Kanyen'keha verbal agreement will only be spelled out with multiple morphemes in inverse contexts.

In some direct contexts and in all inverse contexts, not all uninterpretable probe features will be

matched to argument features. Uninterpretable features must be deleted in a successful derivation. Features are ordinarily licensed for deletion by the formation of an Agree relation with corresponding interpretable features, as found on arguments. Bejar & Rezac propose that all uninterpretable probe features not directly agreeing with interpretable argument features are licensed for deletion by the Match Requirement, given below in (49). The Match Requirement states that a probe segment's uninterpretable features are licensed for deletion if features that they entail are involved in an Agree relation with interpretable features. Because the core agreement probe and the added probe both always agree with an argument for some person features, they will always be able to delete unmatched higher ranking person features.

(49) Match Requirement

For a probe segment [*u*F], a subset [*u*F'] of [*u*F] must match.

In this sub-section I have outlined the system of Cyclic Agree described by Bejar & Rezac (2009). This has included description of proposed syntactic structures, feature structures, Agreement probe behavior, and several system constraints. I have also described the analysis of Kanyen'keha verbal agreement given by Bejar & Rezac (2009). This analysis follows Bejar & Rezac's system of Cyclic Agree and their strategy of organizing person features. My description has included demonstration of the syntactic structures assumed for Kanyen'keha in both direct and inverse contexts, including the mechanics and behaviour of the core agreement in those contexts, and the added probe which Bejar & Rezac propose to appear only in a the inverse contexts of Kanyen'keha verbal agreement. I also briefly discussed the spell-out process described by Bejar & Rezac for the realization of these probes.

3.4 Establishing the need for a new analysis

In this section I will discuss the adequacy of the analyses of Kanyen'keha verbal agreement performed by Baker (1996) and Bejar & Rezac (2009). This will include discussion of the coverage of both those analyses, and discussion of how well the analyses predict expanded data sets. I will discuss how well the analyses handle some morphological aspects of Kanyen'keha verbal agreement. Ultimately this section will establish the need for my new analysis of Kanyen'keha verbal agreement, which will be presented in section 4 of this thesis.

First I will discuss the data coverage of each analysis in terms of what types of verbs and contexts they account for. Baker (1996) discusses transitive verbs, intransitive verbs,and ditransitive verbs, while Bejar & Rezac (2009) refers primarily to transitive configurations and briefly discusses intransitive configurations. Both analyses focus primarily on transitive verbs, and provide syntactic structures and agreement mechanics that account for Kanyen'keha's verbal agreement with both subjects and objects.

The analysis of Baker (1996) also includes discussion of subjective and objective types of intransitive agreement. Baker (1996) produce both types of agreement from unaccusative or unergative structures on lexically determined grounds. Bejar & Rezac (2009) notes that intransitive verbs share forms with transitive forms with inanimate arguments, and proposes a default 3rd person argument to appear in intransitive contexts that yield objective forms, allowing the correct forms to be predicted in intransitive contexts.

Baker (1996) includes discussion of ditransitive verbs, and notes that ditransitive verbs restrict the theme argument to inanimate arguments only. Baker (1996) attributes this to this to the inability of the agreement system to provide agreement and licensing to three arguments, as the agent and goal

arguments receive agreement before the theme. Inanimate arguments are the only arguments to appear as the theme argument of ditransitives because they receive licensing through noun incorporation, which Baker (1996) discusses the syntactic mechanics of separately from verbal agreement. Bejar & Rezac (2009) does not discuss ditransitive verbs or noun incorporation.

Both analyses include only fully singular contexts, setting aside plural forms entirely. Baker (1996) includes different genders of 3rd person arguments in its analysis, and accounts for special agreement behaviour of inanimate arguments. Bejar & Rezac (2009) demonstrates largely only 3rd person masculine arguments, but briefly discusses different genders of 3rd person arguments, referring to the existence of both direct and inverse 3 → 3 contexts, depending on the genders of the arguments involved.

Baker (1996) does not discuss the spell-out of Kanyen'keha verbal agreement in detail. His analysis describes movement of V to Infl, which places the two agreement morphemes into the same word as the verb, but he does not include any morphological decomposition of the verbal agreement, or any discussion of when agreement is realized through multiple morphemes or as a portmanteau.

Bejar & Rezac (2009) includes description of the spell-out, and predictions of the behaviour of the spell-out. Their analysis predicts that all direct contexts spell out verbal agreement using one morpheme, which may be portmanteau or may only represent the features of one argument, and that all inverse contexts spell out verbal agreement as two separate morphemes, one for each argument. Spell-out morphemes are chosen based on the person features of the arguments each agreement probe targets, with contextual allomorphy conditioning the appearing of a portmanteau morpheme in 1 → 2 contexts only.

Neither Baker (1996) nor Bejar & Rezac (2009) describe the entire range of Kanyen'keha verbal agreement forms, but they both provide an analysis that explicitly accounts for parts of the total

paradigm. Having discussed the coverage of both analyses, I will now discuss some of the problems that each analysis meets when compared against wider ranges of verbal agreement forms including forms for plural contexts and forms for contexts with non-masculine 3rd person arguments.

Verbal agreement forms that appear in plural contexts and with other types of 3rd person arguments pose several problems for the analysis of Bejar & Rezac (2009). The expanded range of agreement forms creates several contradictions of Bejar & Rezac's predictions regarding spell-out of Kanyen'keha verbal agreement. Because Baker (1996) does not discuss the spell-out of verbal agreement in detail, it is not directly challenged by these additional forms. I will first discuss the problems directly posed to Bejar & Rezac's analysis by the full range of verbal agreement forms.

As previously mentioned, Bejar & Rezac (2009) predicts that verbal agreement will be realized through a single morpheme in direct contexts, and through two morphemes in inverse contexts. Many non-singular forms, in both direct and inverse contexts are realized through two person morphemes and a number morpheme. Plural forms realized through three morphemes are shown below in (50). Bejar & Rezac (2009) would predict that (50a) and (50b) realize agreement with one morpheme, while (50c) and (50d) realize agreement with two morphemes. (50b) and (50d) are identical in form, as was discussed in section 2.

(50) Kanyen'keha (from Owennatekha 2019)

a. Sha-ke-ni-nòn:we’-s — 1 → 3 = direct

3.MASC.SING.OBJ-1-DUAL-like-HAB

“We two (excl. you) like him.

b. Etshi-se-wa-nòn:we’-s — 2 → 3 = direct

3.MASC.SING-2-PLURAL-like-HAB

“You all like him.”

c. Shon-ke-ni-nòn:we'-s 3 → 1 = inverse

3.MASC.SING.SUBJ-1-DUAL-like-HAB

"He likes us two."

d. Etshi-se-wa-nòn:we'-s 3 → 2 = inverse

3.MASC.SING-2-PLURAL-like-HAB

"He likes you all."

As Bejar & Rezac (2009) does not treat number, I will largely set aside the presence of number morphemes. Bejar & Rezac's analysis might easily accommodate number by positing a additional agreement probe that matches with and realizes number features. Bejar & Rezac's predictions on verbal agreement morpheme count may then be amended as follows: One person morpheme should appear in direct contexts, and two person morphemes should appear in inverse contexts. (50a) and (50b) both show direct contexts which yield two person morphemes, contradicting one half of Bejar & Rezac's predictions.

Contexts with a wider range of 3rd person arguments than Bejar & Rezac discuss demonstrate problem with their analysis of features realized by the morphology. (51) demonstrates contexts with 3rd persons that Bejar & Rezac treat in their analysis, using Bejar & Rezac's morphological analysis and conventions, where the realization of the core agreement probe is shown in capitals, and the added probe is shown underlined. In (51a) and (51b), Bejar & Rezac identify the verbal agreement as realizing only the person features of the 1st or 2nd person subject, suggesting that no features of the 3rd person masculine object are involved in the morphological realization. In (51c) and (51d), Bejar & Rezac identify person features of both arguments as being realized, but do not include any reference to gender features in their morphological analysis.

(51) Kanyen'keha (from Bejar & Rezac 2009)

a. K-*see* 1 → 3 = direct

1-see

"I see him."

b. HS-*see* 2 → 3 = direct

2-see

"You see him."

c. wa-K-*see* 3 → 1 = inverse

3.INV-1-see

"He sees me."

d. (H)S-(w)a-*see* 3 → 2 = inverse

2-3.INV-see

"He sees you."

This morphological analysis implies that the gender of 3rd person arguments is lost in thesecases with. While gender of 3rd person arguments is certainly lost in some cases, comparison with a more full set of contexts pairing 3rd person arguments and local arguments shows that gender is not lost in the cases shown in (51), and challenges their morphological decomposition. A greater set of contexts also poses further challenges to Bejar & Rezac's prediction about morpheme count, and suggests that the order of verbal agreement morphemes requires accounting for by an analysis of Kanyen'keha verbal agreement.

The degree to which the forms I am about to discuss are true counterexamples to Bejar & Rezac's analysis may be dependent on the degree of dialectal variation between my data and their data[4]. The forms for masculine 3rd person arguments in my data differ from the forms Bejar & Rezac show in

4 They refer to, among other sources, Beatty (1974), for which data was collected at Caughnawaga Mohawk Reserve, while the data set that informs my thesis comes from Ohsweken, in the Six Nations of the Grand River

their data. The forms Bejar & Rezac show correspond instead to contexts with inanimate 3rd persons in the data set that informs this thesis (Owennatekha 2019). The variety of Kanyen'keha which informs Bejar & Rezac may exhibit a collapse of forms that does not exist in the variety of Kanyen'keha that informs this thesis. The examples below show 3rd person arguments of different genders paired with 1st person arguments in (52). The matching of forms for inanimate 3rd person arguments to Bejar & Rezac's forms for masculine 3rd person arguments can be seen by comparing (51a) to (52c) and (51c) to (52f).

(52) Kanyen'keha (from Owennatekha 2019)

a. Ri-nòn:we'-s (1 → masculine 3)
1sS.3MsO-like-HAB
"I like him."

b. Khe-nòn:we'-s (1 → feminine 3)
1sS.3FsO -like-HAB
"I like her."

c. Ke-nòn:we'-s (1 → inanimate 3)
1-like-hab
"I like it."

d. Ra-ke-nòn:we'-s (masculine 3 → 1)
3.MASC.SING.SUBJ-1-like-HAB
"He likes me."

e. Yon-ke-nòn:we'-s (feminine 3 → 1)
3.SING.SUBJ-1-like-HAB
"She likes me."

f. Wa-ke-nòn:we'-s (inanimate 3 → 1)
3.INAN.SUBJ-1-like-HAB
"It likes me."

Two observation can be made from the data in (52). First, (52a-b) demonstrate single morphemes that vary with respect to the gender features of the 3rd person IA, rather than a single morpheme *k(e)*- representing solely the 1st person EA. Thus, morphological analysis of the verbal agreement should consider the gender features of the 3rd person arguments to be spelled out in these cases. To account for these forms, Bejar & Rezac's analysis of *ku*- for 1→ 2 as a contextual allomorph of *k*- conditioned by the person features of the IA could plausibly be extended, treating *ri*- and *khe*- as allomorphs of *k*-

conditioned by the gender features of the IA. I have no principled objection to this solution in this case save for that it seems to unify forms that do not share evident phonological resemblance.

Second, comparison of (52d) to (50b) demonstrates a problem for morphological analysis: *ra-* and *shon-* both appear to realize a 3rd person masculine singular subject in the context of a 1st person object, differing only according to the number of the 1st person object. Bejar & Rezac's strategy of contextual allomorphy might allow for resolution of this problem, considering *shon-* as an allomorph of *ra-* conditioned by the number of a 1st person IA, though in their analysis *ra-* and *shon-* are spelled out from an added probe that does not access the features of the IA, which may be a plausible barrier to the implementation of this solution.

The direct contexts, in (52a-c), all have one person morpheme, while the inverse contexts, in (52d-f), all have two person morphemes. This is entirely concordant with Bejar & Rezac's prediction on number of morphemes. The data below in (53) show 3rd person arguments of different genders paired with 2nd person arguments.

(53) Kanyen'keha (from Owennatekha 2019)

a. Etshe-nòn:we'-s (2 → masculine 3)
   2sS.3MsO-like-HAB
   "You like him."

b. She-nòn:we'-s (2 → feminine 3)
   2sS.3FsO-like-HAB
   "You like her."

c. Se-nòn:we'-s (2 → inanimate 3)
   2-like-HAB
   "You like it."

d. Ya-nòn:we'-s (masculine 3 → 2)
3MsS.2sO-like-HAB
"He likes you."

e. Yesa-nòn:we'-s (feminine 3 → 2)
3FsS.2sO-like-HAB
"She likes you."

f. Sa-nòn:we'-s (inanimate 3 → 2)
3IsS.2sO-like-HAB
"It likes you."

Many more observations can be made from the data in (53). The data in (53) more directly challenges Bejar & Rezac's predictions on number of morphemes. The direct contexts, in (53a-c) all have single morphemes for verbal agreement; This is unproblematic. The inverse contexts, in (53d-f) pose direct problems in that they all realize verbal agreement with single person morphemes, rather than the two predicted by Bejar & Rezac.

In my morphological analysis, I reject Bejar & Rezac's morphological analysis of (51d), matching (53f), as two separate morphemes, *(h)s-(w)a*, in order to propose a portmanteau *sa-* morpheme. (50d) shows, by apparent morphological coincidence between plural *wa-* and 3rd person *wa-*, the same phonological sequence of 2nd person *(h)s/se-wa-*. However, in that case, there is no phonological elimination of /w/ and reduction to *sa-,* despite otherwise identical underlying phonological conditions. From this, I would claim instead that the *sa-* in (53f) is a single irreducible portmanteau morpheme.

(53e) may plausibly be analyzed as containing two verbal agreement morphemes, *ye-sa-,* as *sa-* is now a clear distinct morpheme in (53f), and *ye-* is a distinct morpheme which can be correlated with

a 3rd person feminine subject, shown below in (54). However, *sa-* represents specifically an inanimate subject and a 2nd person object, and there is no inanimate subject in (53e); I might expect *ye-(h)s,* rather than *ye-sa-*. I rule this decomposition out, and instead claim that the *yesa-* in (53e) is a single irreducible portmanteau morpheme.

(54) Kanyen'keha (from Owennatekha 2019)

a. Ye-nòn:we'-s

3FsS.3IsO-like-HAB

She likes it.

With this morphological analysis in place, I have now shown verbal agreement to realize with one person morpheme or two persons morphemes in both direct and inverse contexts. This is significant deviation from Bejar & Rezac's prediction that Kanyen'keha verbal agreement is realized through one morpheme in all direct contexts and through two morphemes in all inverse contexts.

Baker (1996) does not make direct predictions about the number of discrete verbal agreement morphemes that realize the arguments in any given context, or give morphological decompositions of the verbal agreement cluster. Its analysis does discuss arguments as receiving agreement from two separate probes, themselves called agreement morphemes in Baker's language, but does not discuss whether these two probes must realize their agreement through separate morphological components or not.

Both of the previous analyses of Kanyen'keha verbal agreement leave room for improvement in terms of predicting the number of morphemes that spell-out verbal agreement. My new analysis, to be presented in section 4 of this thesis, will include a morphological spell-out process that predicts morpheme count more accurately than Baker (1996) and Bejar & Rezac (2006).

Bejar & Rezac's *(h)s-(w)a* analysis demonstrates an additional complication in their overall

analysis; Bejar & Rezac's added probe is not realized in a consistent position in relation to the core agreement probe, despite always appearing in the same syntactic position. In the inverse context forms given in Table 3, demonstrated again below in (55), the added probe, underlined in the examples below, is realized both to the left and right of the core agreement probe. The contexts shown in (55a-b) realize the added probe as a prefix to the core agreement probe, while the contexts shown in (55c-d) realize it as a suffix to the core agreement probe. In (55b-c) the added probe realizes the same morpheme, but appears in different positions. Bejar & Rezac do not comment on or give an account of this side-switching behaviour.

(55) Kanyen'keha (adapted from Bejar & Rezac 2009)

a. (h)s-K-*see* 2 → 1 = inverse
   2-1-see
   "You see me."

b. wa-K-*see* 3 → 1 = inverse
   3.INV-1-see
   "He sees me."

c. (H)S-(w)a-*see* 3 → 2 = inverse
   2-3.INV-see
   "He sees you."

d. HRA-o-*see* 3i → 3m = inverse
   3.M-DFLT-see
   "It sees him."

The analysis of Baker (1996) does not directly replicate this problem of morpheme spell-out order, as Baker does not discuss spell-out in detail. Baker's analysis may be said to include an implicit ordering

of agreement morphemes, as its structure includes two separate agreement probes in separate syntactic positions. The probe that agrees with the subject is located on Infl, and the probe that agrees with the object is located on V, v, or Asp. Baker refers to, though does not describe in detail, a process of adjunction that places both probes and the verb itself into the same word. In the resulting structure, Infl and its subject agreement should remain farther left than whichever head bears object agreement. This structure would implicitly predict subject morphemes to be consistently ordered to the left of object morphemes.

Per my morphological analysis, which can be seen in (50), and Bejar & Rezac's analysis, in (55), the morphemes realizing objects are ordered to the right of the morphemes realizing subjects in many cases, but not all of them. Although the ordering of morphemes does not pattern with argument positions or syntactic relations, there are clear patterns. My analysis of Kanyen'keha's verbal agreement will include a description of the patterns in how Kanyen'keha's verbal agreement morphemes are ordered, and the morphological spell-out I describe in my analysis will generate the correct morpheme orders in each context through principles of spell-out and ordering of rules.

The final morphological matter I will comment on here concerns the degree of syncretism, and attendant loss of argument features, that occurs between verbal agreement forms in different contexts in Kanyen'keha. As already mentioned, the analysis of Bejar & Rezac (2009) implicitly predicts syncretism between local direct contexts differing by gender of a 3rd person argument, which I propose is an incorrect prediction. Regardless, Bejar & Rezac do not comment on any syncretism in Kanyen'keha verbal agreement. This is not entirely unexpected, because much of the syncretism present in Kanyen'keha's verbal agreement forms only exists in plural or dual contexts, or is only made evident by comparison with plural or dual contexts, and Bejar & Rezac only discuss Kanyen'keha's singular contexts. The analysis of Baker (1996) also does not comment on syncretism in Kanyen'keha

verbal agreement, as it does not comment on morphological properties of Kanyen'keha verbal agreement in general.

Bejar & Rezac's analysis does not and cannot predict much of the syncretism that exists in the data. Consider (50c-d), which demonstrate the exact same verbal agreement form in two different argument contexts, one of which is direct and one of which is inverse. Because Bejar & Rezac (2009) predicts that an added probe only appears in inverse contexts, while direct contexts always have only a single probe with which to realize verbal agreement, it is not possible for it to generate identical forms for these two different contexts.

Syncretism in Kanyen'keha verbal agreement generates numerous problems in attempts to create a morphological spell-out module that accounts for the total range of data, which I will describe in more detail in section 4 of this thesis as I outline my analysis' novel spell-out module. My analysis of Kanyen'keha's verbal agreement will be able to generate the correct patterns of syncretism through underspecification of the sets of features realized by morphemes implicated in syncretic patterns. This will allow for prediction and constraint of possible patterns of syncretism, so that it is possible to explain why Kanyen'keha displays the specific patterns of syncretism it does.

Throughout this section I have described three major problems in describing the morphology and spell-out of Kanyen'keha verbal agreement that previous analyses to various degrees either do not comment on, or make incorrect predictions regarding. These problems include the prediction of the number of verbal agreement morphemes that appear in each context, the prediction of the relative order of verbal agreement morphemes, and the prediction of the syncretism of form between distinct contexts. In identifying each of these problems, I motivate either the creation of a new analysis or expansion of previous analyses in order to better account for those problems. As mentioned previously, I have chosen to create a new analysis of Kanyen'keha verbal agreement, which will not be challenged

by the three morphological problems I've discussed.

In this sub-section, I have described the empirical coverage of the Baker's (1996) and Bejar & Rezac's (2009) analyses of Kanyen'keha verbal agreement, identifying the range of forms which each analysis accounts for. I have also described several aspects of the verbal agreement morphology that challenge both of those analyses: These aspects include the problems of verbal agreement morpheme count and order, and the problem of predicting the complex syncretism present in the complete verbal agreement paradigm. In all these matters, I find reason to seek a new analysis Kanyen'keha verbal agreement which covers a greater portion of the paradigm and makes more accurate predictions regarding the morphology of verbal agreement.

3.5 Conclusions

In this section I have described two previous analyses done on Kanyen'keha verbal agreement, those of Baker (1996) and of Bejar & Rezac (2009). I have discussed the syntactic and morphological accounts given by both of those works. Both analyses give a thorough syntactic account which describes the positions of arguments, the positions of agreement, and the mechanics of agreement. Baker (1996) does not describe morphological processes, while Bejar & Rezac (2009) describes a spell-out process and demonstrates it over a limited data set.

I also discussed the situating framework of both analyses: Baker (1996) describes Kanyen'keha as a polysynthetic language and centres its analysis around creating, through a “macroparameter,” a unified explanationfor properties that regularly appear in polysynthetic languages, including noun incorporation, full and obligatory agreement with both subjects and objects, argument-dropping and relative freedom of word order Bejar & Rezac (2009) describes Kanyen'keha as a direct-inverse language and centres its analysis around deriving direct-inverse agreement from general syntactic

processes. Bejar & Rezac characterize direct-inverse agreement as agreement displacement conditioned by the ranking of the persons of the subject and object arguments.

After outlining both analyses, I discussed various problems with these analyses. Both analyses have limited ability to predict the full range of verbal agreement forms that appear in Kanyen'keha. I frame this limitation in terms of three morphological phenomena that challenge the analyses. First is the problem of morpheme count: Different verbal agreement forms are realized through different numbers of distinct morphemes. Second is the problem of morpheme order: The morphemes that realize the subject and object, where there are such distinct morphemes, appear in different orders in different contexts. Third is the problem of syncretism: Verbal agreement contexts can be separated into many clusters which result in the same realizing forms.

To account for the problems with the analyses of Baker (1996) and Bejar & Rezac (2009), I have created a new analysis of Kanyen'keha verbal agreement which is not challenged by those problems. My new analysis is able to account for the various morphological phenomena presented by Kanyen'keha verbal agreement. It also covers a greater range of the total verbal agreement paradigm than previous analyses do, as it accounts for a wider range of number and gender features than Bejar & Rezac (2009). I will give this analysis in the following section.

4. Kanyen'keha verbal agreement through one agreement probe

4.1 Introduction

In this section, I will present my analysis of Kanyen'keha verbal agreement. My presentation of the analysis will consist of several stages. I will first outline my segmentation of the verbal agreement prefix cluster, which will include discussing the function and distribution of each of the four verbal agreement morphemes categories I identify. This will include discussion of the person-hierarchy effects that appear in Kanyen'keha verbal agreement. I will then outline some of the problems which an analysis of Kanyen'keha verbal agreement must address.

After outlining the surface morphology of the agreement and the problems it poses, I will begin to describe the syntactic components of my proposal. I will first discuss my proposed syntactic structure and the attendant agreement mechanics. I will propose Kanyen'keha verbal agreement to realize through one agreement probe on Infl with Multiple Agree. I will also discuss the analysis of Oxford (2019), an analysis of a similar verbal agreement system which use two agreement probes, in order to better demonstrate why I propose one agreement probe in my analysis.

I will next discuss the morphological component of my proposal. I will first outline the feature geometries necessary to realize all the contrasts of Kanyen'keha verbal agreement. I will then show how each of the four categories of morphemes are spelled out by Infl. This will include showing Fission rules that will allow multiple morphemes to be realized by one agreement probe, as well as showing lists of the Vocabulary Items that insert into each morpheme.

After my entire proposal has been described, I will show some sample derivations of Kanyen'keha verbal agreement, demonstrating my complete proposed process.

4. 2. Segmentation of Kanyen'keha verbal agreement

Kanyen'keha verbal agreement is morphologically realized through different numbers of prefixes in different contexts. The verbal agreement may consist of one, two, or maximally three prefixes. The morphemes themselves may be separated into 4 separate categories: Portmanteau morphemes, primary person morphemes, secondary person morphemes, and number morphemes. Portmanteau morphemes realize features from both arguments. I will discuss the function and distribution of each of these morphemes individually. The examples below in (56) demonstrate all licit combinations and orderings of those four categories of morphemes.

(56) Kanyen'keha (from Owennatekha 2019)

a. Kon-nòn:we’-s — Portmanteau
   1sS.2sO-like-HAB
   “I like you.”

c. Ke-nòn:we’-s — Primary
   1-like-HAB
   “I like it.”

d. Ra-ti-nòn:we’-s — Primary + number
   3.MASC.SUBJ-3.PL-like-HAB
   “Those men like it.”

e. Ta-ke-nòn:we’-s — Secondary + primary
   2.OBJ-1-like-HAB
   “You like me.”

f. Ta-ke-ni-nòn:we’-s — Secondary + primary + number

2.OBJ-1-DUAL-like-HAB

"You two like me."

g. Ron-wa-nòn:we'-s Primary + secondary

3.MASC.OBJ-3.SUBJ-like-HAB

"She likes him."

h. Sha-ko-ti-nòn:we'-s Primary + secondary + number

3.MASC.SUBJ-3.OBJ-PLURAL-like-HAB

"Those men like her."

The configurations shown in (56a-f) account for the forms that realize in the majority of contexts. The configurations shown in (56g-h), where the position of the secondary and primary person morphemes is reversed from what appears in (56e-f), only appear in contexts pairing two 3rd person arguments. I do not have a principled explanation of why this occurs, but my analysis is able to generate specific morpheme orderings and so match this reversal.

In Table 4 below, a modification of Table 1, shown earlier in this work, I repeat the full paradigm of Kanyen'keha transitive verbal agreement forms, now with all forms segmented according to my analysis. In this version of the table, all portmanteau morphemes and primary person morphemes are bolded, all secondary person morphemes are underlined, and all number morphemes are in plain text. This chart also shows a covert secondary person morpheme which I propose to exist, which I have excluded from Table 1, as that table was intended to serve as a pre-analytic example of the data. I will show truncated versions of this table through this section as I discuss each individual morpheme category. I will show tables listing all morphemes in each category and the features they realize later in my analysis, when I discuss spell-out.

Table 4

Segmented Kanyen'keha verbal agreement

Obj. / Subj.	1st sing.	1st dual	1st pl.	2nd sing.	2nd dual	2nd pl.	3rd masc. sing.	3rd fem. sing.	3rd inan. sing.	3rd masc pl.	3rd fem pl.
1st sing.				**kon**	∅-**ke**-ni	∅-**k**-wa	**ri**	**khe**	**ke**	**khe**	**khe**
1st dual excl.				∅-**ke**-ni	∅-**k**-wa	∅-**k**-wa	sha-**ke**-ni	ya-**k**-hi	ya-**ke**-ni	ya-**k**-hi	ya-k-hi
1st pl. excl.				∅-**k**-wa	∅-**k**-wa	∅-**k**-wa	sha-**k**-wa	ya-**k**-hi	ya-**k**-wa	ya-**k**-hi	ya-**k**-hi
1st dual incl.							etshi-**te**-ni	ye-**t**-hi	**te**-ni	ye-**t**-hi	ye-**t**-hi
1st pl. incl.							etshi-**te**-wa	ye-**t**-hi	**te**-wa	ye-**t**-hi	ye-**t**-hi
2nd sing.	ta-**ke**	ta-**ke**-ni	ta-**k**-wa				**etshe**	**she**	**se**	**she**	**she**
2nd dual	ta-**ke**-ni	ta-**k**-wa	ta-**k**-wa				etshi-**se**-ni	ye-**ts**-hi	**se**-ni	ye-**ts**-hi	ye-**ts**-hi
2nd pl.	ta-**k**-wa	ta-**k**-wa	ta-**k**-wa				etshi-**se**-wa	ye-**ts**-hi	**se**-wa	ye-**ts**-hi	ye-**ts**-hi
3rd masc. sing.	ra-**ke**	shon-**ke**-ni	shon-**k**-wa	**ya**	etshi-**se**-ni	etshi-**se**-wa	**ro**	**sha**-ko	**ra**	**sha**-ko	**sha**-ko
3rd fem. sing.	yon-**ke**	yon-**k**-hi	yon-**k**-hi	**yesa**	ye-**ts**-hi	ye-**ts**-hi	**ron**-wa	**yonta te**	**ye**	**ron**-wa-ti	**kon**-wa-ti
3rd inan. sing.	wa-**ke**	yon-**ke**-ni	yon-**k**-wa	**sa**	**se**-ni	**se**-wa	**ro**	**ya**-ko	**ka**	**ro**-ti	**yo**-ti
3rd masc. dual	yon-**ke**	yon-**k**-hi	yon-**k**-hi	**yesa**	ye-**ts**-hi	ye-**ts**-hi	**ron**-wa	**sha**-ko-ti	**ni**	**ron**-wa-ti	**kon**-wa-ti
3rd fem. dual	yon-**ke**	yon-**k**-hi	yon-**k**-hi	**yesa**	ye-**ts**-hi	ye-**ts**-hi	**ron**-wa	**ya**-ko-ti	**keni**	**ron**-wa-ti	**kon**-wa-ti
3rd masc. pl.	yon-**ke**	yon-**k**-hi	yon-**k**-hi	**yesa**	ye-**ts**-hi	ye-**ts**-hi	**ron**-wa	**sha**-ko-ti	**ra**-ti		
3rd fem. pl.	yon-**ke**	yon-**k**-hi	yon-**k**-hi	**yesa**	ye-**ts**-hi	ye-**ts**-hi	**ron**-wa	**ya**-ko-ti	**kon**-ti		

I will first discuss the category of portmanteau morphemes. Portmanteau morphemes in the verbal agreement simultaneously realize the features of both subject and object. In all cases where they appear, they are the sole person morpheme to appear, and so must realize the person features of both arguments. Some contexts which yield portmanteau morphemes are demonstrated below in (57a,c), alongside minimally different contexts which do not yield portmanteau morphemes in (57b,d).

(57) Kanyen'keha (from Owennatekha 2019)

a. **Khe**-nòn:we'-s
   1sS.3O-like-HAB
   "I like him."

b. Yon-ke- nòn:we'-s
   3.SUBJ-1-like-HAB
   "He likes me."

c. **Yontate**-nòn:we'-s
   FsS.FsO-like-HAB
   "She likes her."

d. Sha-ko-nòn:we'-s
   3.MASC.SUBJ-3.OBJ-like-HAB
   "He likes her."

I claim that portmanteau morphemes in Kanyen'keha do not fall into any generalizable distribution, as they appear with all combinations of persons and in both direct and inverse contexts. In the majority of cases, portmanteau morphemes appear in singular contexts, but there are some plural contexts which yield portmanteau morphemes. The non-distribution of portmanteau morphemes in Kanyen'keha verbal agreement will be crucial to the justification for my syntactic analysis, as spell-out of a portmanteau

Table 5

Sample distribution of Kanyen'keha portmanteau morphemes

Obj. / Subj.	1st sing.	1st pl.	2nd sing.	2nd pl.	3rd masc. sing.	3rd fem. sing.	3rd inan. sing.	3rd fem pl.
1st sing.			**kon**	∅-k-wa	**ri**	**khe**	ke	**khe**
1st pl. excl.			∅-k-wa	∅-k-wa	sha-k-wa	ya-k-hi	ya-k-wa	ya-k-hi
2nd sing.	ta-ke	ta-k-wa			**etshe**	**she**	se	**she**
2nd pl.	ta-k-wa	ta-k-wa			etshi-se-wa	ye-ts-hi	**se**-wa	ye-ts-hi
3rd masc. sing.	ra-ke	shon-k-wa	**ya**	etshi-se-wa	**ro**	sha-ko	**ra**	sha-ko
3rd fem. sing.	yon-ke	yon-k-hi	**yesa**	ye-ts-hi	ron-wa	**yontate**	**ye**	kon-wa-ti
3rd inan. sing.	wa-ke	yon-k-wa	**sa**	se-wa	**ro**	ya-ko	**ka**	**yo**-ti
3rd fem. pl.	yon-ke	yon-k-hi	**yesa**	ye-ts-hi	ron-wa	ya-ko-ti	kon-ti	

morpheme requires access to the features of both arguments. I will discuss this in more detail later.

In table 5, I show a subset of the verbal agreement paradigm, with all portmanteau morphemes bold, and all cells in which portmanteau morphemes appear highlighted. This allows for easy identification of the overall distribution of portmanteau morphemes in the paradigm.

I will next discuss primary person morphemes. Primary person morphemes in the verbal agreement realize the argument which is higher on Kanyen'keha's person hierarchy (Kanyen'keha's person hierarchy: 1 > 2 > 3). In transitive contexts, this may be either the subject or the object. The examples below in (58), with primary person morphemes bolded, show how the person hierarchy governs which argument the primary person morpheme realizes. In (58a), the subject is the higher-ranking argument and is realized by the primary person morpheme. In (58b), the object is the higher-ranking argument and is realized by the primary person morpheme. Identical primary person morphemes surface in both these cases: Primary person morphemes only distinguish case for 3rd persons.

(58) Kanyen'keha (from Owennatekha 2019)

a. Sha-**ke**-ni-nòn:we'-s 1 → 3

3.MASC.OBJ-1-DUAL-like-HAB

"I like him."

b. Shon-**ke**-ni-nòn:we'-s 3 → 1

3.MASC.SUBJ-1-DUAL-like-HAB

"He likes me."

In 3 → 3 contexts, the person hierarchy alone cannot predict which argument will be realized by the primary person morpheme. In such contexts, the gender, number, and case features of both arguments determine which argument is realized by the primary person morpheme.

In the majority of appearances, primary person morphemes are accompanied by a secondary person morpheme. There are some contexts with inanimate arguments where an isolated primary person morpheme appears. Because these morphemes are identical in form to the primary person morphemes which appear with secondary person morphemes, and because they only appear with inanimate arguments, which do not participate in agreement, I do not consider them to be portmanteau morphemes. The examples in (59) below show some of these isolated primary morphemes.

(59) Kanyen'keha (from Owennatekha 2019)

a. **Ke**-nòn:we'-s

1-like-HAB

"I like it."

b. **Se**-nòn:we'-s

1-like-HAB

"You like it."

Table 6

Sample distribution of Kanyen'keha primary person morphemes

Obj. / Subj.	1st sing.	1st pl.	2nd sing.	2nd pl.	3rd masc. sing.	3rd fem. sing.	3rd inan. sing.	3rd fem pl.
1st sing.			kon	∅-**k**-wa	ri	khe	**ke**	khe
1st pl. excl.			∅-**k**-wa	∅-**k**-wa	sha-**k**-wa	ya-**k**-hi	ya-**k**-wa	ya-**k**-hi
2nd sing.	ta-**ke**	ta-**k**-wa			etshe	she	**se**	she
2nd pl.	ta-**k**-wa	ta-**k**-wa			etshi-**se**-wa	ye-**ts**-hi	**se**-wa	ye-**ts**-hi
3rd masc. sing.	ra-**ke**	shon-**k**-wa	ya	etshi-**se**-wa	ro	**sha**-ko	ra	**sha**-ko
3rd fem. sing.	yon-**ke**	yon-**k**-hi	yesa	ye-**ts**-hi	**ron**-wa	yontate	ye	**kon**-wa-ti
3rd inan. sing.	wa-**ke**	yon-**k**-wa	sa	**se**-wa	ro	**ya**-ko	ka	yo-ti
3rd fem. pl.	yon-**ke**	yon-**k**-hi	yesa	ye-**ts**-hi	**ron**-wa	**ya**-ko-ti	**kon**-ti	

In table 6, I show a subset of the verbal agreement paradigm, now with all primary person morphemes bold, and most cells in which primary person morphemes appear highlighted. A grey highlight marks cells where primary person morphemes appear without a paired secondary person morpheme. Primary person morphemes appear in complementary distribution with portmanteau morphemes. That primary person morphemes realize the higher ranking argument regardless of whether that argument is the subject or object will be important for my syntactic analysis, as I will discuss in more detail later.

I will next discuss secondary person morphemes. Secondary person morphemes in the verbal agreement realize the argument which is lower on Kanyen'keha's person hierarchy. In transitive contexts, this may be either the subject or the object. The examples below in (60), repeated from (58) now with secondary person morphemes bolded, demonstrate lower ranking subjects and objects realized by secondary person morphemes. Unlike the primary person morphemes they are paired with, both of these secondary person morphemes realize case.

(60) Kanyen'keha (from Owennatekha 2019)

a. **Sha**-ke-ni-nòn:we'-s 1 → 3

3.MASC.OBJ-1-DUAL-like-HAB

"I like him."

b. **Shon**-ke-ni-nòn:we'-s 3 → 1

3.MASC.SUBJ-1-DUAL-like-HAB

"He likes me."

The secondary person morpheme which inserts to realize an argument is conditioned by the primary person morpheme which inserted before it. The examples below in (61) demonstrate a single argument yielding different secondary person morphemes when paired with different primary person morphemes. The examples also demonstrate that secondary person morphemes do not universally realize case, as the lower ranking argument may be interpreted as subject or object in (61b).

(61) Kanyen'keha (from Owennatekha 2019)

a. **Sha**-k-wa-nòn:we'-s (Masc. sing. obj., *ke-)*

3.MASC.OBJ-1-PLURAL-like-HAB

"We (excl.) like him."

b. **Etshi**-se-wa-nòn:we'-s

3.MASC-2-PLURAl-like-HAB

i. "You all like him." (Masc. sing. obj., *se-)*

ii. "He likes you all." (Masc. sing. subj., *se-)*

In general, secondary person morphemes appear in all contexts where primary person morphemes appear, except for contexts with inanimate arguments, where isolated primary person morphemes may appear, as mentioned before. However, secondary person morphemes still appear when inanimate

arguments are paired with a 1st person singular object, or with a 1st person (exclusive) dual or plural argument, whether subject or object. The examples below in (62) demonstrate these unexpected secondary person morphemes. I will discuss how these morphemes appear during my discussion of spell-out.

(62) Kanyen'keha (from Owennatekha 2019)

a. **Wa**-ke-nòn:we'-s (1st person singular object)
1-PLURAL-like-HAB
"We like you."

b. **Ya**-k-wa-nòn:we'-s (1st person excl. pl. subject)
3.OBJ-1-PLURAL
"We (excl.) like it."

c. **Yon**-k-wa-nòn:we'-s (1st person pl. object)
3.SUBJ-1-PLURAL-like-HAB
"It likes us."

Table 7 shows a subset of the verbal agreement paradigm with all secondary person morphemes bolded and most cells where they appear highlighted in yellow. A red highlight marks cells where secondary person morphemes realize inanimate arguments. A grey highlight marks cells where primary person morphemes appear without a paired secondary person morpheme.

I will now discuss the final category of verbal agreement morphemes, number morphemes. Number morphemes realize dual or plural number features of arguments, though their distribution does not pattern directly to the presence of dual or plural arguments. Number morphemes appear under different conditions in two different categories: local contexts, and mixed or 3 → 3 contexts. I will discuss each category separately.

Table 7								
Sample distribution of Kanyen'keha secondary person morphemes								
Obj. / Subj.	1st sing.	1st pl.	2nd sing.	2nd pl.	3rd masc. sing.	3rd fem. sing.	3rd inan. sing.	3rd fem pl.
1st sing.			kon	∅-k-wa	ri	khe	ke	khe
1st pl. excl.			∅-k-wa	∅-k-wa	**sha**-k-wa	**ya**-k-hi	**ya**-k-wa	**ya**-k-hi
2nd sing.	**ta**-ke	**ta**-k-wa			etshe	she	se	she
2nd pl.	**ta**-k-wa	**ta**-k-wa			**etshi**-se-wa	**ye**-ts-hi	se-wa	**ye**-ts-hi
3rd masc. sing.	**ra**-ke	**shon**-k-wa	ya	**etshi**-se-wa	ro	sha-**ko**	ra	sha-**ko**
3rd fem. sing.	**yon**-ke	**yon**-k-hi	yesa	**ye**-ts-hi	ron-**wa**	yontate	ye	kon-**wa**-ti
3rd inan. sing.	**wa**-ke	**yon**-k-wa	sa	se-wa	ro	ya-**ko**	ka	yo-ti
3rd fem. pl.	**yon**-ke	**yon**-k-hi	yesa	**ye**-ts-hi	ron-**wa**	ya-**ko**-ti	kon-ti	

In local contexts, either argument may yield a number morpheme if they are non-singular. Only one number morpheme realizes, even if both arguments are non-singular, and the morpheme that appears does not vary based on which argument triggered the appearance of the number morpheme. In local contexts, there exist distinct dual and plural number morphemes. The examples below in (63) show number morphemes in local contexts, with the number morphemes in bold. (63a) demonstrates the plural morpheme *wa-,* and may be interpreted with a plural subject, a plural object, with both arguments plural, or, curiously, with both arguments dual. (63b) demonstrates the dual morpheme *ni-,* which may be interpreted with either argument dual.

(63) Kanyen'keha (from Owennatekha 2019)

a. K-**wa**-nòn:we'-s

1-PLURAL-like-HAB

i. "We like you."

ii. “I like you all.”

ii. “We like you all.”

b. Ta-ke-**ni**-nòn:we’-s

2.OBJ-1-DUAL-like-HAB

i. “I like you two.”

ii. “We two like you.”

In mixed and 3 → 3 contexts, arguments only yield a number morpheme if they are realized by a primary person morpheme. The examples below in (64) show that only arguments which are realized by the primary person morpheme may yield number morphemes. In (64a), the primary person morpheme realizes a plural subject, which yields a number morpheme, *hi-*, while the argument realized by the secondary person morpheme may be singular or plural. In (64b), the primary person morpheme realizes a singular subject, and yields no number morpheme, while the argument realized by the secondary person morpheme may be singular or plural, also yielding no number morpheme.

(64) Kanyen'keha (from Owennatekha 2019)

a. Ya-k-hi-nòn:we’-s

3.OBJ-1-PLURAL-like-HAB

i. “We (excl.) like her.”

ii. “We (excl.) like them.”

b. Yon-ke-nòn:we’-s

3.SUBJ-1-like-HAB

i. “I like her.”

ii. “I like them.”

Table 8								
Sample distribution of Kanyen'keha number morphemes								
Obj. / Subj.	1st sing.	1st pl.	2nd sing.	2nd pl.	3rd masc. sing.	3rd fem. sing.	3rd inan. sing.	3rd fem pl.
1st sing.			kon	∅-k-**wa**	ri	khe	ke	khe
1st pl. excl.			∅-k-**wa**	∅-k-**wa**	sha-k-**wa**	ya-k-**hi**	ya-k-**wa**	ya-k-**hi**
2nd sing.	ta-ke	ta-k-**wa**			etshe	she	se	she
2nd pl.	ta-k-**wa**	ta-k-**wa**			etshi-se-**wa**	ye-ts-**hi**	se-**wa**	ye-ts-**hi**
3rd masc. sing.	ra-ke	shon-k-**wa**	ya	etshi-se-**wa**	ro	sha-ko	ra	sha-ko
3rd fem. sing.	yon-ke	yon-k-**hi**	yesa	ye-ts-**hi**	ron-wa	yontate	ye	kon-wa-**ti**
3rd inan. sing.	wa-ke	yon-k-**wa**	sa	se-**wa**	ro	ya-ko	ka	yo-ti
3rd fem. pl.	yon-ke	yon-k-**hi**	yesa	ye-ts-**hi**	ron-wa	ya-ko-**ti**	kon-**ti**	

The number morpheme which appears is roughly dependent on the locality class of the argument, as distinct plural morphemes appear in local (*wa-, ni-*), mixed (*hi-*), and 3 → 3 (*ti-*) contexts. Contexts pairing a local argument with a masculine singular argument or an inanimate argument behave as local contexts, yielding *wa-* or *ni-*.

Table 7 shows a subset of the verbal agreement paradigm with all number morphemes bolded and most cells where they appear highlighted in yellow. Cells highlighted in red denote unexpected local plural morphemes in mixed contexts.

4. 3. Requirements for an analysis of Kanyen'keha verbal agreement

An analysis of Kanyen'keha verbal agreement must account for many different concerns. The basic morphological concerns are that an analysis must be able to correctly predict the number of morphemes that appear in each context, and must be able to predict the order in which the morphemes appear. Solving the morphology of Kanyen'keha verbal agreement is additionally complicated by the degree of syncretism present in the agreement paradigm. There are many sets of contexts that minimally differ by some features and yield the same verbal agreement form. The functional result of this is the flattening of some person, number, and gender distinctions in specific sets of contexts. An analysis of Kanyen'keha verbal agreement must be able to replicate the patterns of syncretism seen in the agreement paradigm. Some examples of this homophony are given below in (65).

(65) Kanyen'keha (from Owennatekha 2019)

a. She-nòn:we’-s

2sS.3O-like-HAB

i. “You like her.”

ii. “You like those men.”

iii. “You like those women.”

b. Ta-k-wa- nòn:we’-s

2.SUBJ-1-PLURAL-like-HAB

i. “You like us all.”

ii. “You all like me.”

iii. “You all like us all.”

c. Ye-ts-hi-nòn:we’-s

3.OBJ-2-PLURAL-like-HAB

i. “She likes you.”

ii. “Those men like you.”

iii. “Those women like you.”

The basic syntactic concerns are that an analysis must identify the syntactic location of each agreement morpheme, and must ensure that the agreement processes allow the necessary featural information to be accessed in that location in order to spell out the correct morphemes. Kanyen'keha verbal agreement poses a few specific challenges to syntactic analysis.

First, there exist portmanteau morphemes in the verbal agreement which simultaneously realize the features of both subject and object. The syntactic component of the analysis must ensure that a syntactic terminal has access to the features of both arguments in all contexts where it spells-out a portmanteau morpheme. Portmanteau morphology need not appear in all contexts where it is licensed, as by one terminal accessing the features of both arguments, but it must be licensed in all contexts where it does appear.

Second, primary and secondary person morphemes do not uniformly realize either the subject or object argument, but instead co-vary according to which argument is higher on the person hierarchy. The syntactic analysis must be able to account for that both morphemes are capable of realizing the subject or the object; It must ensure that the features of either argument may be accessed by either morpheme. The examples shown below in (66) show the effects of the person hierarchy in Kanyen'keha. Primary person morphemes are bolded, and secondary person morphemes are underlined. In (66a), the primary person morpheme realizes the subject, and in (66b), it realizes the object. Conversely, the secondary person morpheme realizes the object in (66a) and the subject in (66b).

(66) Kanyen'keha (from Owennatekha 2019)

a. Sha-**ke**-ni-nòn:we'-s 1 → 3

3.MASC.OBJ-1-DUAL-like-HAB

"I like him."

b. Shon-**ke**-ni-nòn:we'-s 3 → 1

3.MASC.SUBJ-1-DUAL-like-HAB

"He likes me."

There also exists homophony between local contexts that differ only in the number features of their arguments. Such homophony indicates that the number morpheme must, like both person morphemes, be able to access the features of both arguments, at least in local contexts. The examples in (67) demonstrate some of these local contexts. (67a, iv), which shows a pair of dual local arguments yielding the form otherwise associated with plural arguments, demonstrates additionally that the form of the number morpheme can be conditioned by both arguments simultaneously, as this form only appears from dual arguments if both arguments are dual.

(67) Kanyen'keha (from Owennatekha 2019)

a. K-wa-nòn:we'-s

1-PLURAL-like-HAB

i. "We like you."

ii. "I like you all."

iii. "We all like you all."

iv. "We two like you two."

b. Ta-ke-ni-nòn:we'-s

2.SUBJ-1-DUAL-like-HAB

i. “We two like you.”

ii. “I like you two.”

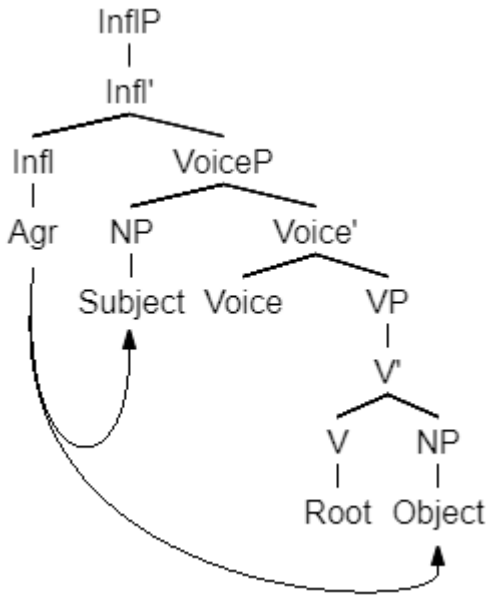
4. 3. Syntactic component of my analysis, and Multiple Agree

I propose that Kanyen'keha realizes all verbal agreement from the Infl head, which possesses a single agreement probe that enters into Multiple Agree with all animate subjects and objects. Multiple Agree will ensure that Infl always has access to the features of both arguments. Spelling out all verbal morphology from Infl ensures that the morphological module always has the information to spell-out all morphemes correctly, solving the problems discussed in the previous sub-section.

Portmanteau morphology is always licensed, ensuring that it may always be spelled out, despite the ungeneralizability of its distribution. Primary and secondary person morphemes spell out from the same terminal, so they will both be able to access the features of the subject or object as necessary. Spelling out number morphemes from Infl ensures that either argument may yield a number morpheme, as occurs in local contexts.

I show the syntactic structure which I posit for Kanyen'keha verbal agreement in (68) below. (68) shows the elements of the syntactic structure which are directly relevant to my analysis: Infl, which contains the sole agreement probe, Voice, which introduces the subject to the structure in its specifier, and V, the verb itself, which introduces the object to the structure in its complement. In most examples given in this thesis, the only overtly realized elements out of those shown in my structure are Infl, being the agreement complex, and V, being the verb, while Voice, the subject, and the object, are all covertly realized.

(68) Kanyen'keha transitive structure with Multiple Agree



I will follow Multiple Agree as proposed by Hiraiwa (2001). In various proposals (Anagnastopoulou 2005, Nevins, 2007, Oxford 2019, among presumable others), Multiple Agree has been subjected to conditions, beyond those already assumed for Agree, that must be met for Multiple Agree to be licit. I will not evaluate whether these licensing conditions on Multiple Agree are the most appropriate to limit its occurrence in languages in general, but I will discuss for some proposals why these conditions are not compatible with the distribution of Multiple Agree that I propose in Kanyen'keha

Hiraiwa (2001), using data from Japanese, proposes a Multiple Agree whose occurrence is determined by a probe feature [+multiple], but is otherwise subject to the same conditions on Agree outlined in Chomsky (2001). Hiraiwa's Multiple Agree is thus a posited property of an agreement probe which is otherwise unrestricted. This Multiple Agree or an indistinguishably similar one have been used in other works, including Gallego (2011), which proposes Multiple Agree with a PRO and its controller in English, using English, Spanish, and Catalan data, and Despić, Hamilton, & Murray (2017), which proposes Multiple Agree and Cyclic Agree in ditransitives of Cheyenne, an Algonquian

language.

Hiraiwa's Multiple Agree is able to apply to the structure given in (69) without any complication. The Infl probe is specified as [+multiple], and targets both subject and object for agreement, gathering all the features necessary to feed the morphology and produce the correct verbal agreement.

Anagnastopoulou (2005), analyzing PCC effects in various languages, including Passamaquody, a direct-inverse language, proposes a Multiple Agree similar to that of Hiraiwa (2001). Anagnastopoulou's Multiple Agree is more restricted than Hiraiwa's, possessing the following condition:

(69) A Condition on Multiple Agree (from Anagnastopoulou 2005)
Multiple Agree can take place only under non-conflicting feature specifications of the agreeing elements.

The function of this condition in Anagnastopoulou's proposal is to prevent Multiple Agree from occurring with 3rd person indirect objects and local direct objects, in order to correctly yield the distribution of PCC effects. Anagnastopoulu's proposal follows different theory of person features than mine, assuming that 3rd person indirect objects have a [-person] feature, which will conflict with a [+person] feature of a local direct object. In ditransitive contexts, Kanyen'keha exhibits Multiple Agree with 3rd person indirect objects and local subjects, as can be seen below in (70), thus Kanyen'keha's Multiple Agree is not compatible with Anagnastopoulou's condition.

(70) Kanyen'keha (from Baker 1996)
Wa-hiy-u-'
FAC-1sS.MsO-give-PUNC
“I gave it to him.”

Nevins (2007) assumes a condition similar to that proposed by Anagnastopoulou (2005), given below.

The purpose of this condition is to restrict Multiple Agree from occurring with certain combinations of persons and correctly producing PCC effects.

(71) Matched Values Condition (adapted from Nevins 2007)

For a relativization R of a feature F, ∃α, α ε {+, -}. ∀x, x ε Domain(R(F)), val(x,F)=α

"All elements within the domain of relativization must contain the same value for the feature F being agreed with."

In combination with the theory of person features assumed by Nevins (2007), this condition prevents Multiple Agree from occurring with pairs of local arguments. My proposed Multiple Agree in Kanyen'keha does occur with pairs of local arguments, as can be seen below in (72), so it is not compatible with Nevins' condition.

(72) Kanyen'keha (from Owennatekha 2019)

a. Kon-non:we'-s

1sS.2sO-like-HAB

"I like you."

b. Ta-ke-non:we'-s

2.SUBJ-1-like-HAB

"You like me."

Oxford (2019) proposes Multiple Agree to occur in Anishinaabemowin. Oxford's Multiple Agree is not bound to a [+multiple] feature possessed by certain probes, and instead can be attained by any agreement probe, provided it meets configurational restrictions. He restricts the occurrence of Multiple Agree using two principles: the Equidistance Principle and the Best Match Principle. The Equidistance Principle requires that arguments be equally close to a probe in order for Multiple Agree with those arguments to be possible. An equidistance restriction on Multiple Agree is specifically rejected in at

least Hiraiwa (2001). The Best Match Principle requires that arguments be equally good matches for the features of a probe in order for Multiple Agreement with those arguments to be possible.

Oxford (2019) attains equidistance of the subject and object via raising of the object into SpecVoice, the same syntactic position that the subject is introduced to the structure in. The raising of the object is triggered by object agreement of Voice, which occurs in all transitive contexts in Anishinaabemowin. The result of this is that the subject and object are always equidistant from Infl when it probes for agreement, and that the Equidistance Principle does not rule out Multiple Agree for any Anishinaabemowin transitives. Oxford's restrictions on Multiple Agree instead emerge entirely from the Best Match Principle. Oxford (2017), an earlier version of this proposal, suggests the possibility of equidistance emerging from the projection of the object's features via the agreement with Voice, rather than through direct raising of the object; This may reduce the necessary explanatory burden to demonstrate compatibility of Kanyen'keha's Multiple Agree with Oxford's conditions.

Because Kanyen'keha has no overt Voice in transitive contexts[5], it is difficult to determine the applicability of Oxford's Equidistance Principle. It is possible to propose that Kanyen'keha has covert object agreement in Voice that triggers object-raising or feature projection, and thus has Multiple Agreement that is compatible with Oxford's Equidistance Principle. It is equally possible to propose that Voice has no agreement and no effect on the position on the object, and that Kanyen'keha does not attain equidistance and is incompatible with Oxford's Equidistance Principle.

Oxford's Best Match Principle poses no complication to the Multiple Agreement of Kanyen'keha. A specification for Infl's probe of [*u*Pers] would allow all animate arguments to match the features of the probe equally well, correctly producing the lack of interaction between person and

5 In reflexive and reciprocal contexts, a reflexive morpheme -*atate* inserts between the verb root and the agreement prefix cluster. This may be an overt realization of Voice; Further investigation into the properties of Kanyen'keha reflexives may allow for the properties of covert transitive Voice to be implicitly determined.

Multiple Agree that appears in Kanyen'keha.

Kanyen'keha is straightforwardly incompatible with the conditions on Multiple Agree proposed by Nevins (2007) and Anagnastopoulou (2005). My data does not allow me to concretely determine if Kanyen'keha possesses object-raising, so I cannot fully determine the compatibility of Kayen'keha with the conditions of Multiple Agree proposed by Oxford (2019). I assume the conditionless Multiple Agree of Hiraiwa (2001) for my analysis, because it is compatible with the data without any complication. I thus assume that the agreement probe on Infl is [+multiple], and featurally specified [*u*Pers]. The probe on Infl is thus capable of Multiple Agree, and will equally target all arguments that have the [Pers] feature, which includes all arguments of any person, except for 3rd person inanimate arguments, which I will assume lack any [Pers] feature. I will discuss my assumptions about features in more detail shortly.

With these assumptions in place, the agreement between Infl and the subject and object plays out identically in all transitive contexts except those with inanimate arguments, which I will discuss separately. The agreement plays out as follows: In transitive contexts with animate arguments, both subject and object will possess a [Pers] feature and lie in the search domain of Infl's agreement probe. Infl will target both arguments for agreement and enter into Multiple Agree with them. This will cause Infl to duplicate all features of both arguments, including number and gender features. Infl then has access to all features of both arguments, and spells out the verbal agreement using the morphological module which I will describe shortly.

4. 4. Morphological component

4. 4. 1. Introduction

I will now describe the morphological module with which Infl spells out Kanyen'keha's complex array of verbal agreement forms. First, I will discuss the feature geometries I assume for person, number, and gender features.

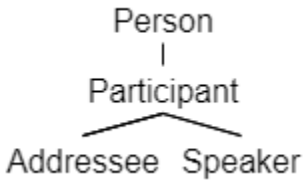
Second, I will discuss how I derive person hierarchy effects morphologically, and discuss why this is preferable to syntactic derivation of person hierarchy effects for Kanyen'keha.

Third, I will describe the two fission rules which are necessary to realize up to three morphemes from one agreement probe. I will also list the Vocabulary Items which insert into Infl and its fissioned morphemes and the sets of features they realize, resulting in a complete system that is able to derive the verbal agreement forms of Kanyen'keha.

4. 4. 2. Feature geometries

I will assume a feature geometry for person features that roughly follows those assumed in Bejar & Rezac (2009) and Oxford (2019), developed by Harley & Ritter (2002), which is given below in (73). This feature geometry represents 1st, 2nd, and 3rd persons using four one-valued features, arranged hierarchically. Features in this geometry entail features which they depend on. The [Part(icipant)] feature entails [Pers(on)], while [Addr(essee)] and [Speaker] both entail [Part] and thus [Pers] as well. Animate 3rd persons are specified [Pers], while both local arguments are specified [Part], with 1st & 2nd persons distinguished through specification as either [Speaker] for 1st persons or [Addr] for 2nd persons. Thus, local persons have more complicated feature sets than 3rd persons, while 1st & 2nd persons can be distinguished by an additional layer of complexity.

(73) Person feature geometry



In the analyses of Bejar & Rezac (2009), Pancheva & Zubizarreta (2017), and Oxford (2019), among others, feature geometries like this allow for the derivation and parametrization of the person hierarchy and other person ordering effects through agreement probes targeting the more complicated feature sets possessed by local persons. For example, Bejar & Rezac (2009) propose for Anishinaabemowin an agreement probe equivalent[6] to one specified [*u*Pers, *u*Part, *u*Addr], which encodes the person-hierarchy 2 > 1 > 3. The complexity of this specification ensures that Agree with objects lower on the person hierarchy feed Cyclic Agree with subjects higher on the person hierarchy, while objects higher on the person hierarchy bleed Cyclic Agree with subjects lower on the person hierarchy.

The analyses I've cited using person feature geometries of this type typically only refer within a single language to either the [Speaker] or [Addr] feature, according to whether the person hierarchy is 2 > 1 > 3 or 1 > 2 > 3. Harley & Ritter (2002) propose that inclusive 1st persons are specified [Speaker, Addr]; I follow this in Kanyen'keha, necessitating reference to both features, though Kanyen'keha unambiguously follows a 1 > 2 > 3 person hierarchy.

I assume additionally that inanimate 3rd person arguments in Kanyen'keha have no person features of any kind, lacking even [Pers]. I assume this because inanimate arguments in Kanyen'keha do not appear to participate in agreement, as transitive contexts with inanimate arguments produce agreement identical to the intransitive agreement associated with the animate argument. There are some complicating cases, which I will discuss after the full exposition of my analysis. Inanimate arguments

6 Bejar & Rezac (2009) refer to the features in their geometry by different names than those I use, but their features are constructed using the same principle of entailment and hierarchical dependence that I use.

in Passamaquoddy that similarly display non-agreement and are similarly assumed to lack person features are discussed by Anagnastopoulu (2005) and Alexiadou & Anagnostopoulou (2006).

I will next discuss the number features I use in my analysis. Kanyen'keha maximally distinguishes between singular, plural, and dual number, though sensitivity to dual number is lost in many cases. Number features for plurals and duals are typically realized by a distinct number morpheme inserted to the right of the primary person morpheme. Some morphemes are restricted to occur only with singular arguments, typically portmanteau morphemes and morphemes representing masculine 3rd persons. A number feature geometry for Kanyen'keha must allow for the distinct marking of plural, dual and singular numbers in order to enable the spell-out of dual and plural morphemes as well as the restriction of some morphemes to singular arguments only.

The examples in (74) demonstrate the necessity of marked singular number in Kanyen'keha. (74a) shows a portmanteau morpheme *ri-* which requires that both arguments it realizes be singular, while (74b) shows a secondary person morpheme *sha-* which requires that the 3rd person masculine argument it realizes be singular. (74c) shows the morpheme *ya-* that appears if that argument is instead plural. (74c,i) attains *ya-* with a 3rd person feminine singular argument, it must be the case that *ya-* does not realize a plural feature, and *sha-* explicitly realizes a singular feature.

(76) Kanyen'keha (from Owennatekha 2019)

a. Ri-non:we’-s

1sS.3MsO-like-HAB

“I like him.”

b. Sha-k-wa-non:we’-s

3.SING.MASC.OBJ-1-PLURAL-like-HAB

“We like him.”

c. Ya-k-hi-non:we'-s

3.OBJ-1-PLURAL-like-HAB

i. "We like her."

ii. "We like those men."

iii. "we like those women."

Harley & Ritter (2002), whose person feature geometry I roughly follow, propose a feature geometry for number which uses two independent monovalent features to derive a singular-plural-dual number system. These features are [Minimal], and [Group]. A singular argument is specified [Minimal], while a plural argument is specified [Group], and a dual argument is specified [Minimal, Group]. This geometry allows for the marking of plural and dual, but predicts that morphemes realizing singular arguments should also appear with dual arguments, due to their shared [Minimal] feature. This homophony does not arise in Kanyen'keha: When dual arguments do not yield distinct forms, they pattern with plural arguments rather than singular arguments. This can be seen in examples (74a) and (74c,ii): *Sha-* would be expected to appear with a 3rd person masculine dual argument in an analysis using Harley & Ritter's (2002) number features, but does not.

Because of this false prediction, I cannot assume Harley & Ritter's (2002) number feature geometry for my analysis of Kanyen'keha. I will instead assume a more complicated feature geometry which provides a stronger contrast between singular and dual numbers, proposed by Harbour (2007). Harbour's (2007) number feature geometry for singular-dual-plural languages also uses two independent features, but they are bivalent rather than monovalent like the ones used by Harley & Ritter (2002). He calls these features [±atomic] and [±minimal]. Table 9 below demonstrates the four possible valuations for these features, and the numbers they correspond to.

Table 9

Number feature and number correspondences		
[±atomic]	[±minimal]	Number
+	-	N/A
+	+	Singular
-	-	Plural
-	+	Dual

This feature geometry provides a stronger contrast between the features of singular and dual numbers, as they have different values for [±atomic], even as they share a value for [±minimal]. This allows for a morpheme to match a feature value of [+atomic] and thus occur only with singular arguments. This allows Harbour's (2007) number feature geometry to predict the distribution of *sha-* better than Harley & Ritter's (2002) number feature geometry.

I will next discuss the gender features I use in my analysis. Kanyen'keha distinguishes between masculine, feminine, and inanimate 3rd persons. As discussed previously, inanimate persons do not participate in agreement, and have been assumed to have no person features; They will also lack gender features. The examples in (77), partially repeated from (76), demonstrate masculine gender to be the only marked gender in Kanyen'keha: The singular masculine argument in (77a) attains a unique secondary person morpheme, *sha-*, while the singular feminine argument in (77b,i) shares form with masculine and feminine plural arguments, all yielding *ya-*. Because *ya-* appears with both masculine and feminine arguments, it cannot realize a feminine gender feature. This indicates that the form of *sha-* must be restricted from appearing with feminine arguments by an explicit masculine gender feature. Thus, I will assume that only masculine gender is marked with an explicit feature [Masculine], and that feminine gender is featurally unmarked.

(77) Kanyen'keha (from Owennatekha 2019)

a. Sha-k-wa-non:we'-s

3.SING.MASC.OBJ-1-PLURAL-like-HAB

"We like him."

b. Ya-k-hi-non:we'-s

3.OBJ-1-PLURAL-like-HAB

i. "We like her."

ii. "We like those men."

iii. "We like those women."

Although [Masculine] alone allows for three-way gender distinction, I will also propose all 3rd person animate arguments in Kanyen'keha to possess a base [Gender] feature. This feature will allow morphemes to be restricted from occurring with local arguments, which have no [Gender] feature. Without this feature, the [Pers] feature shared between 3rd persons and local arguments would cause the morphological unit to falsely insert portmanteau forms associated with 3rd persons in some local contexts. I will show precisely how this occurs and how a [Gender] feature prevents this error during my sample derivations.

I will mention also here the necessity of an [Inanimate] feature to account for problems caused by inanimate arguments and the forms associated with them. This feature is not possessed by inanimate arguments, but will be introduced by the morphological module to enable the restriction of some morphemes to contexts with inanimate arguments only. I will discuss the necessity of this restriction in more detail shortly.

Finally, I will discuss case features. Example (78) below shows two secondary person morphemes, both of which realize a 3rd person argument, as an object in (77a) and as a subject in (77b). Because different morphemes appear for subjects and objects, I must include case features in my

analysis. Thus I assume that there exists both a [NOM] feature and an [ACC] feature to allow for the morphological realization of subject and objecthood.

(78) Kanyen'keha (from Owennatekha 2019)

a. Ya-k-hi-nòn:we’-s

3.OBJ-1-3.PLURAL-like-HAB

“We like her.”

b. Yon-k-hi-nòn:we’-s

3.SUBJ-1-3.PLURAL-like-HAB

“She likes us.”

4. 4. 3. Person hierarchy effects and Oxford (2019)

I will now discuss person hierarchy effects in Kanyen'keha, and how I derive them in my analysis. As previously mentioned, the form that person hierarchy effects take in Kanyen'keha is that primary person morphemes always realize the argument which is higher on a person hierarchy of 1 > 2 >3, and secondary person morphemes always realize the argument which is lower on that person hierarchy. In (77) above, the primary person morpheme realizes the 1st person argument in both contexts, leaving both 3rd person arguments to be realized by the secondary person morpheme. No person hierarchy effects can be observed in contexts that yield portmanteau morphemes.

Several previous analysis of direct-inverse languages have derived person hierarchy effects with some similarity to those that appear in Kanyen'keha, including Bejar & Rezac (2009), as previously discussed, Pancheva & Zubizarreta (2017), and Oxford (2019), among others. These analyses differ in their precise implementation, but they are all similar in that they derive person hierarchy effects using two separate agreement probes, one of which is enabled to target the subject or object, dependent on the person features of each argument. In these analyses, person hierarchy effects are derived primarily by

syntactic mechanics, while in my analysis, person hierarchy effects are derived by morphological mechanics. Before I describe my method of derivation, I will briefly discuss person hierarchy effects in Anishinaabemowin and the analysis of Oxford (2019) in order to clarify the distinction between syntactic and morphological derivation of person hierarchy effects, as well as show why syntatic derivation is not suitable for Kanyen'keha.

The examples below in (79) demonstrate verbal agreement forms for direct and inverse contexts from Anishnaabemowin's Independent Order[7], which has been analyzed as displaying syntactic person hierarchy effects by Oxford (2019). I will refer to several aspects of his analysis, but I will not here iterate his argumentation and proposals completely.

(79) Anishinaabemowin (from Oxford 2019)

a. **Gi**-wa:bam-i — 2 → 1 = direct
2-see-1.OBJ
"You see me."

b. **Gi**-wa:bam-in — 1 → 2 = inverse
2-see-2.OBJ
"I see you."

c. **Ni**-wa:bam-a: — 1 → 3 = direct
1-see-3.OBJ
"I see him."

d. **Ni**-wa:bam-igw — 3 → 1 = inverse
1-see-INV
"He sees me."

Oxford (2019) identifies Anishinaabemowin verbal agreement as realized partially from Infl and partially from Voice. In (79), the morphemes spelled out from Infl are bolded, and the morphemes spelled out from Voice are underlined. The agreement from Infl realizes the argument which is higher

7 Bloomfield (1946) identifies most Algonquian languages as possessing two distinct sets of verbal agreement, termed the Independent and Conjunct Orders. The two orders are sensitive to the same feature contrasts, but yield different morphology; the Independent Order realizes the agreement of Infl as a prefix and possible suffix, while Infl agreement in the Conjunct Order yields exclusively suffixes. Oxford (2019) does not describe the distinctions between the orders in great detail, though he does propose that agreement plays out slightly differently in each order. He refers to Brittain (2001), Campana (1996), Cook (2014), Richards (2004), and Lochbihler and Mathieu (2016) as discussing the distribution and theoretical implications of the orders in greater detail.

on the person hierarchy (Anishinaabemowin's person hierarchy: 2 > 1 > 3), similarly to the primary agreement morpheme in Kanyen'keha. The agreement from Voice realizes the object in all cases, except for when it instead realizes as *-igw*, the inverse marker. Oxford (2019) identifies *-igw* as the elsewhere realization of Voice, which is spelled out when the features in Voice are deleted by an impoverishment rule, preventing it from spelling out any distinct features. Impoverishment is triggered when the feature sets in Infl and Voice are exact duplicates, which occurs when Infl and Voice both target only the object for agreement, as occurs in (79d). Note also that in (79b), an inverse context where *-igw* does not appear, Voice and Infl realize the same argument, unlike in direct contexts, where they realize distinct arguments; This occurs because Infl has agreed with both subject and object, allowing it to realize the object without triggering impoverishment in Voice.

Anishinaabemowin, as shown in (79), displays person hierarchy effects that are unlike those of Kanyen'keha. Kanyen'keha does not show a verbal agreement morpheme that consistently realizes either subject or object, like Anishinaabemowin's Voice agreement does for objects, and neither does Anishinabemowin display a morpheme that consistently realizes the lower ranking argument, like Kanyen'keha's secondary person morpheme. Kanyen'keha also never displays multiple realization of a single argument's person features, like Anishinaabemowin does in (79d).

The differences between Kanyen'keha and Anishinaabemowin discussed above suggest both that the two languages require different syntactic analyses, and that Kanyen'keha does not possess an agreement probe that uniformly targets the object. If Kanyen'keha were to possess two syntactically distinct agreement probes like Anishinaabemowin does, such that one agreement probe realizes the primary person morpheme, and another agreement probe realizes the secondary person morpheme, then correct derivation of the person hierarchy effects that appear in Kanyen'keha would not be possible.

In order to correctly derive Kanyen'keha's person hierarchy effects, each agreement probe

would need to be capable of targeting the subject or the object, as the primary and secondary person morphemes mutually co-vary in realization of subjects and objects. However, if the two probes were syntactically distinct, then it would be impossible for both arguments to simultaneously be in the search domains of both agreement probes. The search domain of an agreement probe contains all syntactic items it c-commands within its phase, which is bounded by the next agreement probe. This means that each agreement probe must c-command both arguments, with neither intervening between the other agreement probe and either argument. This is not satisfied in any configuration where the agreement probes occupy different syntactic positions.

The syntactic mechanics which derive person hierarchy effects in Oxford (2019) also create restrictions on the distribution of portmanteau morphology. Portmanteau forms in Anishinaabemowin are restricted to contexts where Infl attains agreement with both the subject and the object, as those are the only contexts where Infl has access to the features necessary to spell out portmanteau agreement. Oxford (2019) identifies this multiple agreement as occurring in local and mixed configurations, in the Conjunct Order. The examples below in (80a-b) demonstrate portmanteau morphology, underlined, in Anishinaabemowin, while (80c-d) demonstrate contexts where portmanteau agreement is licensed but does not appear, as there is no appropriate portmanteau morphology to insert.

(80) Anishinaabemowin (from Oxford 2019)

a. wa:bam-Ø-angij — 1 → 3 = mixed
see-3.OBJ-1.PL→3
"We (excl.) see her."

b. wa:bam-i-yaminj — 3 → 1 = mixed
see-1.OBJ-3→1.PL
"She sees us (excl.)"

c. wa:bam-Ø-e:gw 2 → 3 = mixed

see-3.OBJ-2.PL

“You (pl.) see her”

d. wa:bam-i-j 1 → 3 = mixed

see-1.OBJ-3

“She sees me.”

Person hierarchy based restrictions on the distribution of portmanteau morphology do not occur in Kanyen'keha at all, as portmanteau morphology appears in local contexts, in mixed contexts, and in purely 3rd person contexts. This demonstrates further that a two probe analysis with syntactic derivation of person hierarchy is not appropriate for Kanyen'keha. My analysis instead derives person hierarchy effects morphologically.

I have proposed for Kanyen'keha an agreement probe in Infl which is specified [*u*Pers]. This prevents the agreement probe from directly deriving any person hierarchy effects, as it does not exhibit different behaviour in agreement with any person due to the complexity of their person feature sets, or through the degree to which they satisfy the agreement probe. I will use the Subset Principle described by Halle (1997), shown below in (81) to derive person hierarchy effects.

(81) Subset Principle (from Halle 1997)

The phonological exponent of a Vocabulary Item is inserted into a morpheme in the terminal string if the item matches all or a subset of the grammatical features specified in the terminal morpheme. Insertion does not take place if the Vocabulary Item contains features not present in the morpheme. Where several Vocabulary Items meet the conditions for insertion, the item matching the greatest number of features specified in the terminal morpheme must be chosen.

The Subset Principle allows for morphological derivation of person hierarchy effects, provided that the features of arguments implicated in person hierarchy effects are gathered into a single morpheme.The gathering of features into a single terminal allows for competition between the arguments over which argument's person features will realize first, if there is no morpheme available that will represent both arguments at once. Once arguments are in morphological competition, the person feature geometry that derives argument preferences in agreement similarly derives argument preferences in morphology due to the Subset Principle.

Because the agreement probe in Infl is [+multiple], it will agree with both subjects and objects, gathering both of their features. Thus, both arguments will compete over insertion into the morpheme of Infl as described above. VIs realizing 1st persons will match the features [Pers, Part, Speaker], VIs realizing 2nd persons will match the features [Pers, Part], and VIs matching 3rd person will match the feature [Pers]. This will derive the 1 > 2 > 3 person hierarchy of Kanyen'keha.

My analysis requires an additional stipulation on the Subset Principle, as primary person VIs for 3rd persons do not match only person features, but primary person VIs for 1st and 2nd persons do not match any features other than person features, causing the sets to match equal numbers of features in some cases. (82) below contains the stipulation I propose to resolve this problem.

(82) Subset Principle Person Stipulation

Counting of number, gender, and case features for resolution of Subset Principle competition only occurs after the counting of person features alone fails to resolve competition.

This condition ensures that the primary person VI *ron-,* which I propose realizes [Pers, Masc, ACC], will not be inserted over the primary person VI *se-* , which I propose realizes [Pers, Part], if both are eligible for insertion. *Ron-* matches a greater number of features than *se-*, but because *se-* matches a

greater number of person features than *ron-,* it is preferred. Thus the stipulation in (82) will ensure that the person hierarchy still derives properly, while allowing primary person morphemes for 3rd person arguments to match more complicated feature sets.

4. 4. 4. Realization of three morphemes from Infl by Fission

As previously described, and shown again below in (83), Kanyen'keha's verbal agreement realizes at the surface with one, two, or three separate morphemes. I have proposed that all the agreement realizes from Infl, which is, per Distributed Morphology, only a single morpheme. For Infl to appear at the surface as three morphemes, it must undergo fission, splitting into multiple morphemes. Thus, I propose two Fission rules, each with separate conditions, which split Infl into up to three morphemes. All the additional morphemes created by Fission of Infl will access the set of features gathered into Infl by Multiple Agree. This allows for the predictable derivation of different numbers of morphemes in different contexts without necessitating a more complicated syntactic component.

(83) Kanyen'keha (from Owennatekha 2019)

a. Kon-nòn:we'-s Portmanteau
   1sS.2sO-like-HAB
   "I like you."

b. Ke-nòn:we'-s Primary
   1-like-HAB
   "I like it."

c. Ra-ti-nòn:we'-s Primary + number
   3.MASC.SUBJ-3.PL-like-HAB
   "Those men like it."

d. Ta-ke-nòn:we'-s Primary + secondary

2.OBJ-1-like-HAB

“You like me.”

e. Ta-ke-ni-nòn:we’-s Primary + secondary + number

2.OBJ-1-DUAL-like-HAB

“You two like me.”

f. Ron-wa-nòn:we’-s Primary + secondary

3.MASC.OBJ-3.SUBJ-like-HAB

“She likes him.”

g. Sha-ko-ti-nòn:we’-s Primary + secondary + number

3.MASC.SUBJ-3.OBJ-PLURAL-like-HAB

“Those men like her.”

I will here fully cease use of the descriptive categories of morphemes I have used up to this point, instead using the technical terms of Distributed Morphology. As previously mentioned, what I have previously termed portmanteau morphemes and primary person morphemes are both VIs which insert into Infl, the base morpheme which hosts the agreement probe. Secondary person morphemes are VIs which insert into Sec, the first fissioned morpheme I will propose. Number morphemes are VIs which insert into Num, the second fissioned morphemes I will propose.

In this section I will show the list of VIs for Infl, Sec and Num, and propose the conditions for Fission of Infl to create Sec and Num. I will begin with Infl, then describe Sec and Num in turn. The lists display the feature sets realized by each VI. Some morphemes realize features which originate from a single argument's feature set. The feature sets those VIs realize are shown in single pairs of square brackets. Some VIs realize features from multiple argument's feature sets. Feature sets for such VIsare shown nested inside curly brackets. In each list, I order the morphemes according to which

morpheme will insert first when there is morphological competition; Morphemes with the highest priority are at the top of each list.

Table 10 below shows the VI list for Infl. The list is separated into two columns, one containing portmanteau VIs and one containing primary person VIs. Portmanteau VIs will always insert before primary person VIs when both are available. If no portmanteau VI is available to insert, then a primary person VI inserts, matching the higher ranked argument.

Many VIs in this list, all highlighted in yellow, realize the feature [Inanimate].This feature is not gathered from an inanimate argument, but generated by Infl following an enrichment rule, shown in (84). This rule triggers whenever Infl agrees with less than two arguments, as occurs in intransitive contexts or in contexts with an inanimate argument. I will discuss why I implement this exceptional mechanism, as well as others, when I discuss outstanding problems after I have finished describing my analysis.

(84) Inanimate enrichment rule for Infl

If, after agreement, Infl has only entered into agreement with less than two arguments, introduce a feature [Inanimate] into the feature bundle in Infl.

Table 10			
VI list for Infl			
VI	Features	VI	Features
Kon-	{[Pers, Part, Speaker, +atomic, NOM], [Pers, Part, +atomic, ACC]}	Te-	[Pers, Part, Speaker, Addr]
Ri-	{[Pers, Part, Speaker, +atomic, NOM], [Pers, +atomic, Gender, Masc, ACC]}	Ke-	[Pers, Part, Speaker]
Khe-	{[Pers, Part, Speaker, +atomic, NOM], [Pers, Gender, ACC]}	Se-	[Pers, Part]
Etshe-	{[Pers, Part, +atomic, NOM], [Pers, +atomic, Gender, Masc, ACC]}	Sha-	[Pers, Gender, Masc, NOM]
Ya-	{[Pers, Part, +atomic, ACC], [Pers, +atomic, Gender, Masc, NOM]}	Ron-	[Pers, Gender, Masc, ACC]
She-	{[Pers, Part, +atomic, NOM], [Person, Gender, ACC]}	Ya-	[Pers, Gender, NOM]
Yesa-	{[Pers, Part, +atomic, ACC], [Pers, Gender, NOM]}	Kon-	[Pers,Gender, ACC]
Sa-	{[Pers, Part, +atomic, ACC][Inanimate]}		
Yontate-	{[Pers, +atomic, Gender, NOM], [Pers, +atomic, Gender, ACC]}		
Ni-	{[Pers, -atomic, +minimal, Gender, Masc, NOM] [Inanimate]}		
Keni-	{[Pers, -atomic, +minimal, Gender, NOM][Inanimate]}		
Ro-	{[Pers, -atomic, Gender, Masc, ACC][Inanimate]}		
Konti-	{[Pers, -atomic, Gender, NOM][Inanimate]}		
Yoti-	{[Pers, -atomic, Gender, ACC][Inanimate]}		
Ra-	{[Pers, Masc, Gender, NOM][Inanimate]}		
Ro-	{[Pers, Masc, Gender, ACC][Inanimate]}		
Ye-	{[Pers, Gender, NOM][Inanimate]}		
Ka-	[Inanimate]		

I will next discuss Sec, the morpheme into which insert secondary person VIs, always realizing the lower ranking argument. I will first discuss the rule for the Fission of Sec, then I will give the VI list associated with Sec.

Sec is a morpheme which is generated by Fission from Infl. Fission of Sec from Infl must occur in all and only the contexts where a Sec appears in the surface morphology. As discussed previously, this includes all contexts where a primary personVI appears, except for contexts with inanimate arguments, with exceptions in contexts pairing 1st person arguments and inanimate arguments.

I will propose that Sec Fission is triggered by the presence of an unrealized [Pers] feature on Infl after it inserts a VI. This ensures that the fission will occur whenever a primary person VI inserts, unless there is an inanimate argument, and prevent the fission from ever occurring when a portmanteau VI inserts. A second enrichment rule in (85) enables Fission of Sec in contexts pairing 1st person arguments and inanimate arguments, except for with a 1st person singular subject.

(85) Second inanimate enrichment rule for Infl

If Infl inserts *ke-* and has a feature [Inanimate], and lacks [+atomic, NOM], introduce a feature [Pers] to the feature set on Infl

In order to produce the previously described conditioning relationship between Infl and Sec, which was shown in (61), I will propose that the Sec Fission rule has multiple ordered variants tied to the person features realized by Infl. Each variant generates a distinct morpheme which accesses a different list of VIs, allowing lower ranked arguments to yield different forms. Variants of the fission rule also allow for the encoding of the reversal of Infl and Sec position that occurs in 3 → 3 contexts, which can be seen in examples (83g-h): The variant rule associated with 3rd person primary person VIs places Sec on the opposite side of Infl. Thus, I formalize the Sec Fission rule as shown in (86).

(86) Sec Fission rule

Infl → Sec_x + Infl
{[Pers], [~~Pers~~]}

1. If and only if Infl realizes [Pers, Part, Speaker], generate Sec_1

2. If Infl realizes [Pers, Part] or [Pers, Part, Speaker, Addr], generate Sec_2

3. If Infl realizes [Pers], instead perform the following fission:

Infl → $Infl_1$ + Sec_3
{[Pers], [~~Pers~~]}

This fission rule generates Sec_1 when Infl inserts *ke-*, for a 1st person, Sec_2 when Infl inserts *se-* or *te-*, for a 2nd person or 1st person inclusive, and Sec_3 when Infl inserts *ya-*, *sha-*, *ron-* or *kon-*, for various 3rd person arguments. I show the list of VIs each variant of Sec accesses in table 11 below.

Table 11

VI list for Sec

Sec_1		Sec_2		Sec_3	
VI	Features	VI	Features	VI	Features
∅-	[Pers, Part, ACC]	Etshi-	[Pers, Gender, Masc, +atomic]	Wa-	[Pers, Gender, ACC]
Ta-	[Pers, Part, NOM]	Ye-	[Pers, Gender]	Ko-	[Pers, Gender, NOM]
Sha-	[Pers, Gender, Masc, +atomic, ACC]				
Shon-	[Pers, Gender, Masc, +atomic, NOM]				
Ya-	[Pers, ACC]				
Yon-	[Pers, NOM]				

I must also propose two allomorphic forms for VIs which insert into Sec, necessitated by the forms shown below in (87a-b). *Ra-* is an allomorph of *shon-* which appears only in the presence of 1st person singular subjects. *Wa-* is an allomorph of *yon-* which appears only in the presence of 1st person singular subjects in inanimate or intransitive contexts. (87c-d) show that both of these forms vary with respect to the number of the 1st person argument, and not any feature of the argument which Sec realizes, so they cannot be treated as distinct VIs without introducing errors or non-decidability into the morphological module.

(87) Kanyen'keha (from Owennatekha 2019)

a. Ra-ke-nòn:we'-s
   3.MASC.SING.SUBJ-1-like-HAB
   "He likes me."

b. Wa-ke-nòn:we'-s
   3.INAN.SUBJ-1-like-HAB
   "It likes me."

c. Shon-k-wa-nòn:we'-s
   3.MASC.SING.SUBJ-1-PLURAL-like-HAB
   "He likes us."

d. Yon-k-wa-nòn:we'-s
   3.SUBJ-1-PLURAL-like-HAB
   "It likes us."

I formalize the allomorphy rules for these VIs as below. (88a) indicates that *shon-* surfaces as *ra-* only in the presence of a singular 1st person, and (88b) indicates that *yon-* surfaces as *wa-* only in the presence of a singular 1st person and an [Inanimate] feature.

(88) Allomorphy rules for *shon-* and *yon-*

a. [Pers, Gender, Masc, NOM] → *ra-* / [~~Speaker~~, +atomic]

[Pers, Gender, Masc, NOM] → *shon-*

b. [Pers, NOM] → *wa-* / [~~Speaker~~, +atomic], [Inanimate]

[Pers, NOM] → *yon-*

I will now discuss the final morpheme, Num. Num is the morpheme into which insert number VIs, which is, like Sec, generated by Fission from Infl. As previously discussed, Num appears in local contexts when either argument is non-singular, and in mixed or local contexts if the higher-ranking argument is non-singular, so the Fission must occur in these contexts only.

The number morpheme which appears is dependent on the person features of both of the verb's arguments in addition to their number value, as distinct plural morphemes appear in local, mixed, and 3 → 3 contexts. In intransitive contexts or transitive contexts with inanimate arguments, only the local and 3 → 3 plural morphemes appear. As such, I will propose the Fission to be triggered by an unrealized [-atomic] feature in the same feature set whose [Pers] feature is realized by the VI in Infl. To account for Num's wider distribution in local contexts only, I will also propose that Sec may trigger the Fission, under more restricted conditions. This variation is blocked by successful number fission of Infl proper, ensuring that only a single number morpheme may appear.

I encode the dependency of Num on context locality into the morphological module through variants of the Num fission rule, similarly to how I encode the dependency of Sec on the VI inserted into Infl. This allows for the morphological module to realize each of *wa-*, *hi-*, or *ti-* in its appropriate context. Thus, I formalize the Fission rule for Num as below in (89).

(89) Number morpheme fission rule

Infl → Infl + Num
[~~Pers~~, -atomic]

1. If all feature sets in Infl contains [Pers, Part], or [Pers, Masc, +atomic] insert Num_1

2. If some but not all, feature sets in Infl contain [Part], insert Num_2

3. Else, insert Num_3

4. If Infl does not trigger this fission, Sec may trigger this fission as below:

Sec + Infl → Sec + Infl + Num_1
[~~Pers~~, ~~Part~~,

-atomic]

This fission rule generates Num_1 in local contexts, or contexts with a local argument and a masculine singular argument, Num_2 in most mixed contexts, and $Number_3$ in 3 → 3 contexts, capturing dependency between the context locality and the form of the plural morpheme. The VI list for Num is shown below in Table 12.

Table 12

VI list for Num

Num_1		Num_2		Num_3	
Morphemes	Features	Morphemes	Features	Morphemes	Features
Ni-	{[-atomic, +minimal], [+atomic]}	Hi-	[-atomic]	Ti-	[-atomic]
Wa-	[-atomic]				

With the fission rules for Sec and Num, my analysis is able to realize the correct number of verbal agreement morphemes in all transitive contexts. The fission rules also encode contextual dependency of

Sec and Num, which ensures that the system is able to insert different morphemes that realize identical arguments or identical feature sets in different contexts. The fission rules also encode the order of morphemes, including the otherwise unexpected reversed ordering of Infl and Sec which only appears in 3 → 3 contexts. My analysis does not attribute any particular significance to the order of morphemes, as the order of morphemes results from arbitrary specifications in the fission rules on where additional terminals appear relative to Infl.

4. 5. Sample derivations

Having completely elaborated my analysis, I will now run through the derivation process step by step in several example contexts. I will demonstrate a derivation that results in a portmanteau morpheme, and two derivations that result in pairs of person morphemes, one which bears a number morpheme, and one which does not. I demonstrate the forms and contexts which I will derive below in (90)

(90) Kanyen'keha (from Owennatekha 2019)

a. Kon-nòn:we'-s — 1st person singular → 2nd person singular
   1sS.2sO-like-HAB
   "I like you."

b. Ta-ke-nòn:we'-s — 2nd person singular → 1st person singular
   2.OBJ-1-like-HAB
   "You like me."

c. Sha-k-wa-nòn:we'-s — 1st person plural → 3rd person masculine singular
   3.MASC.SING.OBJ-1-PLURAL-like-HAB
   "We like him."

I will first derive (90a). The syntactic structure shown before in (68) is generated step by step, starting

from the verb in V, which generates the 2nd person singular object as its complement. Voice is generated with V as its complement, and the 1st person singular subject as its specifier. Infl is generated with Voice as its complement, and an agreement probe specified [*u*Pers] and [+multiple] in its head. The subject and object are both in that probe's search domain, and so will be targeted for agreement if they are suitable matches to the probe's [*u*Pers] feature. The feature sets of those two arguments are shown below in (91).

(91) (90a) argument feature sets

a. 1st person singular subject: [Pers, Part, Speaker, +atomic, +minimal, NOM]

b. 2nd person singular object: [Pers, Part, Addr, +atomic, +minimal, ACC]

As shown in (91), both of the arguments possess [Pers], and so are suitable matches for the agreement probe in Infl. Infl will thus agree with both arguments, and gather all of their features, generating a feature set containing both (91a) and (91b). At this point, syntactic derivation is complete.

Morphological derivation in Infl proceeds: Infl will attempt to realize the greatest number of features possible according to the Subset Principle. To do this, it will select the VI from its list which best matches its feature set. The VI which best matches that feature set is *kon-,* the most featurally specified morpheme in Table 2. Infl will insert *kon-*, partially realizing the feature set of Infl. I show in (92) the feature sets of Infl before and after VI insertion, and the feature set matched by *kon-*.

(92) (90a) feature sets in Infl while Infl inserts

a. Before Infl VI: {[Pers, Part, Speaker, +atomic, +minimal, NOM],
[Pers, Part, Addr, +atomic, +minimal, ACC]}

b. *Kon-*: {[Pers, Part, Speaker, +atomic, NOM],
[Pers, Part, +atomic, ACC]}

c. After Infl VI: {[~~Pers~~, ~~Part~~, ~~Speaker~~, +~~atomic~~, +minimal, ~~NOM~~],
[~~Pers~~, ~~Part~~, Addr, +~~atomic~~, +minimal, ~~ACC~~]}

This configuration does not trigger any Fission, as there is no unrealized [Pers] feature or [-atomic] feature, so the morphological derivation process ends. Some features in Infl remain unrealized, but this does not pose any problem to the derivation. This results in the agreement form shown in (90a).

I will next derive (90b). The syntactic derivation proceeds identically to how it does for (90a), with the appropriate substitution of a 2nd person singular subject and 1st person singular object as the arguments. The feature sets of those arguments are shown below in (93).

(93) (90b) argument feature sets

a. 2nd person singular subject: [Pers, Part, Addr, +atomic, +minimal, NOM]

b. 1st person singular object: [Pers, Part, Speaker, +atomic, +minimal, ACC]

Like before, Infl will attempt to realize the maximal number of its features by inserting the most specified eligible VI from its list. Because there is no appropriate portmanteau VI available, the most specified available VI is *ke-*. While discussing feature geometries, I proposed a [Gender] feature for the purpose of more strongly distinguishing 3rd persons from local arguments. Without this [Gender] feature, the VI *she-* would falsely insert in this derivation. In (94), I show the feature sets of Infl, *ke-*, *she-*, and Infl after the insertion of *ke-*.

(94) (90b) feature sets in Infl while Infl inserts

a. Before Infl VI: {[Pers, Part, Addr, +atomic, +minimal, NOM],
[Pers, Part, Speaker, +atomic, +minimal, ACC]}

b. *Ke-*: [Pers, Part, Speaker]

c. *She-*: {[Pers, Part, +atomic, NOM], [Person, Gender, ACC]}

d. After Infl VI: {[Pers, Part, Addr, +atomic, +minimal, NOM],
[~~Pers~~, ~~Part~~, ~~Speaker~~, +atomic, +minimal, ACC]}

After *ke-* inserts into Infl, there remains an unrealized [Pers] feature, so Fission of Sec is triggered. Because *ke-* has realized the feature set [Pers, Part, Speaker], Sec_1 is generated. Sec_1 inserts the VI matching the maximal set of the remaining features in Infl, shown in (94d), which is *ta-*. The feature sets of Infl, *ta-* and Infl after the insertion of *ta-* are shown in (95).

(95) (90b) feature sets in Infl while Sec inserts

a. Before Sec VI: {[Pers, Part, Addr, +atomic, +minimal, NOM],
[~~Pers~~, ~~Part~~, ~~Speaker~~, +atomic, +minimal, ACC]}

b. *ta-:* [Pers, Part, NOM]

c. After Sec VI: {[~~Pers~~, ~~Part~~, Addr, +atomic, +minimal, ~~NOM~~],
[~~Pers~~, ~~Part~~, ~~Speaker~~, +atomic, +minimal, ACC]}

The triggering conditions for Fission of Num are not met, so derivation finishes, yielding the correct form of (90b).

I will now show my final sample derivation, that of (90c). Derivation proceeds identically to (90b), with appropriate substitutions of arguments, matching VIs, up to the point where Sec_1 has inserted a VI. I show the argument feature sets in (96), and various feature sets which appear in Infl through the derivation process in (97)

(96) (90c) argument feature sets

a. 1st person plural subject: [Pers, Part, Speaker, -atomic, -minimal, NOM]

b. 3rd person masculine singular object: [Pers, +atomic, +minimal, Gender, Masc, ACC]

(97) (90c) feature sets in Infl during derivation prior to Num

a. Before Infl VI: {[Pers, Part, Speaker, -atomic, -minimal, NOM],
[Pers, +atomic, +minimal, Gender, Masc, ACC]}

b. *Ke-*: [Pers, Part, Speaker]

c. Before Sec VI: {[~~Pers~~, ~~Part~~, ~~Speaker~~, -atomic, -minimal, NOM],
[Pers, +atomic, +minimal, Gender, Masc, ACC]}

d. *Sha-*: [Pers, +atomic, Gender, Masc, ACC]

e. After Sec VI: {[~~Pers~~, ~~Part~~, ~~Speaker~~, -atomic, -minimal, NOM],
[~~Pers~~, +~~atomic~~, +minimal ~~Gender~~, ~~Masc~~, ~~ACC~~]}

The derivation of (90c) inserts *ke-*, then generates Sec, and inserts *sha-*. At this point, it matches the triggering condition of Fission for Num, due to the [-atomic] feature of the 1st person subject. Because the feature sets contain [Pers, Part] and [Pers, Masc, +atomic], Num_1 is generated. Num_1 inserts *wa-*, as the best matching VI. The feature sets of Infl during this step are shown in (98).

(98) (90c) feature sets in Infl while Num inserts

a. Before Num VI: {[~~Pers~~, ~~Part~~, ~~Speaker~~, -atomic, -minimal, NOM],
[~~Pers~~, +~~atomic~~, +minimal ~~Gender~~, ~~Masc~~, ~~ACC~~]}

b. *wa-*: [-atomic]

c. After Num VI: {[~~Pers~~, ~~Part~~, ~~Speaker~~, ~~-atomic~~, -minimal, NOM],
[~~Pers~~, +~~atomic~~, +minimal ~~Gender~~, ~~Masc~~, ~~ACC~~]}

At this point, the derivation has produced *sha-k-wa-*, and no further Fission is possible, so derivation completes, having generated the correct form for (90c). Now having successfully derived all the forms in (90), I conclude my sample derivations.

4. 6. Analysis summary

In this section I have presented my novel analysis of Kanyen'keha verbal agreement. I first described my segmentation of the complex verbal agreement morphology into four categories of morphemes: Portmanteau morphemes, primary person morphemes, second person morphemes, and number morphemes.

Using this segmentation, I then outlined the problems which an analysis must account for. This includes the complexity of the morphology, which realizes agreement through one, two, or three morphemes, the ungeneralizable distribution of portmanteau morphemes, and the co-varying targeting of both subject and object by both primary and secondary person morphemes, conditioned by a person hierarchy.

I then showed the syntactic component of my proposal, which obviates many of the problems posed by the morphology by realizing all the verbal agreement from one agreement probe with Multiple Agree, which agrees in all contexts with both animate subjects and animate objects. I also discussed the feasibility of two probe analyses like that of Oxford (2019), finding that two probe analyses are not capable of accounting for Kanyen'keha verbal agreement, due to the particular person hierarchy effects present in Kanyen'keha.

I then discussed the final component of my proposal, the morphological component. This included a description of the feature geometries I assume, discussion of how I derive person hierarchy effects morphologically in Kanyen'keha, and description of the three morphemes which comprise the verbal agreement, Infl, Sec, and Num, including the Fission rules and VI lists associated with them.

Finally, I showed some sample derivations in order to concretely demonstrate how my analysis functions.

5. Summary, conclusions, avenues for further investigation

5. 1. Summary

In this thesis I have described transitive subject-object agreement paradigm of Kanyen'keha in great detail. This has included showing all agreement forms which appear in transitive contexts, detailing all argument features the agreement is sensitive to, and cataloguing the distribution of all syncretism which appears in the transitive paradigm. I also described some other features of the verbal agreement in lesser detail, including the behaviour and forms of the intransitive and reflexive paradigms, how noun incorporation interacts with agreement, and some similarities and differences between ditransitive contexts and transitive contexts.

I have also discussed two previous analyses of Kanyen'keha verbal agreement in detail, those of Baker (1996) and Bejar & Rezac (2009). I described some of the limitations and challenges to the predictions of both of these analyses, as well as what these analyses are able to account for in the behaviour of Kanyen'keha verbal agreement. I concluded that it is necessary and possible to construct a new and more accurate analysis of Kanyen'keha verbal agreement.

Accordingly, I have also proposed a new analysis of Kanyen'keha verbal agreement. My new analysis differs significantly from previous analyses of Kanyen'keha verbal agreement, primarily in that it uses a single agreement probe to derive subject-object agreement, rather than two agreement probes. As a result of this, my analysis largely relies on a complex morphological component in order to derive the significant surface complexity of Kanyen'keha verbal agreement. Most notably, I derive the person hierarchy effects which appear in Kanyen'keha morphologically, rather than syntactically.

5. 2. Conclusions

Although Kanyen'keha has previously been analyzed as a direct-inverse language by Bejar & Rezac

(2009), my analysis proposes that it is distinct from direct-inverse languages. The exact criteria which makes a language direct-inverse are not entirely clear or consistent throughout the literature (Bejar & Rezac 2009, Pancheva & Zubizarreta 2017, Oxford 2019, among others), but they commonly possess person hierarchy effects which can be derived by syntactic mechanics. In the analyses I have examined, direct-inverse languages are typically treated with a consistent object agreement, and an agreement which is affected by a person hierarchy, usually targeting the argument which ranks higher on a person hierarchy.

The person hierarchy effects which appear in Kanyen'keha are not able to be derived by extant analyses of direct-inverse language such as Bejar & Rezac (2009) or Oxford (2019). This is because Kanyen'keha possess two distinct morphemes whose grammatical functions which are affected by the person hierarchy. The primary person morpheme targets the argument which ranks higher, while the secondary person morpheme targets the argument which ranks lower, regardless of whether either argument is subject or object.

It is my hope that analyses both of Kanyen'keha and direct-inverse languages can be improved by distinguishing Kanyen'keha from direct-inverse languages and the person hierarchy effects which occur in it from the person hierarchy effects which occur in direct-inverse languages.

5. 3. Avenues for further investigation

It is my belief that this thesis generates opportunities for future research in two categories. One category is that of Kanyen'keha specific questions, and the other category is that of questions concerning language as a general faculty. I will discuss each in turn.

First, although my analysis is able to generate the complete transitive paradigm of Kanyen'keha, there are several aspects of my analysis which I believe are likely to be over-complicated,

underexplored, or otherwise demanding of additional attention. I list them below in (99).

(99) Investigable aspects of the analysis

a. Sec and Num Fission

b. Resolution of argument ranking in 3 → 3 contexts

c. [Gender] and distinctness of 3rd person arguments

d. Masculine singular arguments

e. Inanimate arguments

(99a) concerns that the Fission rules I propose for Sec and Num are extraordinarily powerful. Because the research background of this thesis concerns primarily direct-inverse languages, rather than Distributed Morphology, my Fission rules are ad-hoc and not likely to be entirely consistent with standard practice. Reformulating these rules may provide further insight into how labour is distributed between morphology and syntax in Kanyen'keha verbal agreement.

(99b) concerns that contexts pairing 3rd person arguments cannot rank arguments according to a person hierarchy in order to resolve morphological competition. In (100), I present the argument hierarchy which I derive by examining which argument is realized by the primary person morpheme in the 3 → 3 paradigm, but I do not have any method for deriving this argument hierarchy featurally, especially given that the primary person morphemes do not realize all of the features implicated in this hierarchy.

(100) Argument hierarchy for 3 → 3 contexts

Masc. sing. obj. > Masc. sing. subj. > Pl. obj. > Pl. subj. > Fem. Sing.

(99c) concerns that the [Pers] feature seems inadequate to capture the distinctness of 3rd person arguments from local arguments, causing me to implemented a [Gender] feature in order to increase distinction between 3rd persons and local arguments. The purpose of this is to prevent false insertions of

forms associated with 3rd persons, as I discussed during the sample derivation of (90b). This stopgap non-person feature to account for the behaviour of persons suggests that the person feature geometry may be able to be revised in order to improve the analysis.

(99d) concerns that masculine singular arguments are uniquely privileged in Kanyen'keha. (100) shows that masculine singular arguments occupy the top of the argument hierarchy for 3 → 3 contexts. Masculine singular arguments uniquely do not trigger a change of plural morpheme *wa-* to *hi-* like all other animate 3rd person arguments do. Many VIs appear in mixed contexts appear only with masculine singular arguments, while feminine singular or plural arguments are not afforded as much specific morphology. I model this privilege by tying many VIs specifically to [Masculine, +atomic], but this does not offer insight into why these arguments are privileged.

(99e) concerns that inanimate arguments pose many complications to analysis. Contexts with inanimate arguments attain the same forms as intransitive contexts, leading to Baker's (1996) claim that inanimate arguments do not participate in agreement. However, many VIs appear exclusively with inanimate arguments, a restriction which cannot be modeled in my analysis without creating an [Inanimate] feature. Even more confusing, many contexts pairing 1st persons with inanimate arguments attain the same forms as contexts pairing 1st persons with 3rd person feminine arguments.

Apart from these aspects which my analysis has directedly touched upon, there are questions of how to expand the domain of this analysis to cover a larger part of Kanyen'keha beyond the transitive paradigm. I described several such domains in section 2 of this thesis, and reiterate them below in (101)

(101) Matters beyond the transitive paradigm which bear investigation

a. Reflexive paradigm

b. Ditransitive paradigm

c. Interactions between noun incorporation and agreement

d. Interactions between putative possessor-raising and agreement

I will not go into further detail on these matters here, as I already described them in the complete detail which is available to me in section 2. Insight may be attained by collection of novel data investigating these matters, as well as any other configurations which affect the number of arguments a verb has, or originate arguments in different positions than the subject and object position of transitive contexts (i.e. ECM constructions, subject-raising constructions, expletive arguments, etc.).

I am certain I have not here described the complete set of what remains to be investigated in Kanyen'keha, but I have outlined that which is most obvious to me. I will turn now to language-general questions.

The primary question raised by my analysis is whether or not there are other languages similar to Kanyen'keha. Because I am proposing Kanyen'keha to be distinct from direct-inverse languages, I suggest it could be fruitful to generalize the properties of Kanyen'keha and investigate if there are comparable languages to establish some common class, like has been done for direct-inverse languages. The most salient property I identify for generalization in this sense is that of realizing subject-object agreement by one probe with Multiple Agree.

If Kanyen'keha truly comprises a distinct class of language in this sense, it may be able to give unique insights in cross-linguistic comparisons. As Multiple Agree has been proposed before for other languages, I would suggest comparison to other languages with Multiple Agree, to see if new insight can be gained into the behaviour of Multiple Agree. Comparison of Kanyen'keha to other languages with subject-object agreement, or with person hierarchy effects, might also yield new insights.

Insight into the behaviour of other Iroquoian languages might be gained by attempting transfer of my analysis onto the verbal agreement of other Iroquoian languages, or otherwise comparing the information about Kanyen'keha verbal agreement contained in this thesis to other Iroquoian languages.

Because my analysis proposes more distinctness of Kanyen'keha from other languages than similarity, I find it difficult to imagine concrete language-general questions that arise from my analysis. Further research into either Kanyen'keha specifically or the similarity of Kanyen'keha to other languages are both likely to yield more concreteness in this sense.

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